Visualizing Patterns of Preference and Trusted Media for Managing Strategic Communication

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Abstract—In managing strategic communication, media plays an important role for delivering and communicating information. Communicating and retrieving information using common media that include traditional (e.g. newspapers, television, radio, telephone) and online media (e.g. online news paper, blog, YouTube, Facebook, Yahoo Messenger and e-mails) are among the common activities of young IT literate generation. In this paper, we present an exploratory study to investigate the common and online media perception of undergraduate students relating to their preference and trust for retrieving information and communicating activities. Participants comprise of thirty eight Universiti Teknologi MARA (UiTM) Malaysia, undergraduate students who were computer literate as well as regular computer users. Data was analyzed using multidimensional proximity scaling and multiple response techniques. The results indicated that male and female students differ in their preferences and trust for common and online media activities. Female students were consistent whilst the males were rather inconsistent. Nevertheless, these findings contradict with Media Richness Theory (MRT) in which the one-way communication media are more preferred and trusted by the Malaysian young generation of IT literate. The results in this study would be useful for future research in investigating factors that could influence the behavior of users in seeking reliable information.

Index Terms—Strategic communication, preference, trust, media, multidimensional proximity scaling.

I. INTRODUCTION

Peoples' perceptions and the use of common media have increased attention in several studies for managing strategic communication [1-3]. Several mediums of communicating information have been identified besides having direct face to face communication. Information can also be delivered through many alternative forms of media such as newspapers, television, radio, telephone, e-mail, posters and many more. Since there are many ways to communicate information, the media that people prefer in receiving such information, may differ. There are several factors that can influence the medium of the communication. The background of these

people may influence their preferences in acquiring certain information. age, academic background, lifestyle, living environment, habits are among various factors that could affect preference.

This paper discusses the preference and trusted media by visualizing the media selection patterns in two ways. First, it explores the phenomena in order to gain insights and understanding of the common media used among the Malaysian young generation of IT literate. Second, it presents the exploratory findings through visualization of response patterns specifically focusing on current online media on one-way or two-ways communication.

This paper is structured as follows; Section 2 describes the related work whilst Section 3 presents the undertaken methodology. Section 4 provides the details results and analysis prior to the concluding remarks in Section 5.

II. RELATED WORK

Communication media offers different level of media richness. The media richness can be categorized into feedback capability, utilized communication channel, language variety and personal focus [3]. Fig. 1 depicts the higher level of media richness which leans to two-way communication.
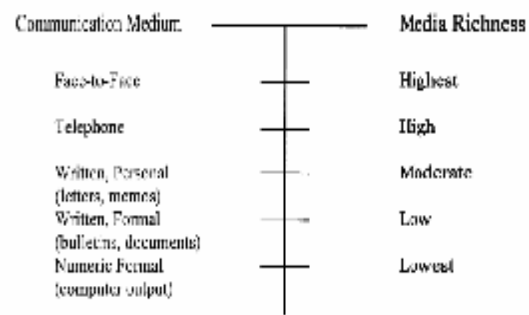

Fig. 1: Communication media and media richness [3].

Media richness may influence people perception towards the content of information. Its effectiveness results in bargaining time, outcome satisfaction and the desire for future negotiation interaction. Thus, the communication media for managing strategic communication should be chosen with care [4]. Research conducted by McGrath and Hollingshead [5] show the importance of choosing the right media to ensure the success of conveying information. Fig. 2 illustrates the tasks and media fit on information richness.

Increasing potential richness required for task success	Communication Media			
	Increasing potential richness of information →			
Task type (s)	Computer Text Systems	Audio Systems	Video Systems	Face-to-Face Communications
Generating ideas & plans	Good fit	Marginal fit Info too rich	Poor fit Info too rich	Poor fit Info too rich
Choosing correct answer: intellective tasks	Marginal fit Medium too constrained	Good fit	Good fit	Poor fit Info too rich
Choosing preferred answer: judgment tasks	Poor fit Medium too constrained	Good fit	Good fit	Marginal fit Info too rich
Negotiating conflicts of interest	Poor fit Medium too constrained	Poor fit Medium too constrained	Marginal fit Info too lean	Good fit

Fig. 2: The task and media fit on information richness [5].

We are trying to gain insight of the most preferable and trusted media among the Malaysian young generation of IT literate, of whom we believe, will be the future key players of communicating information in various private and government agencies. Thus, in this paper, we present our research findings on the clustering pattern of preferences and trusted media in which they are allowed to name one or more forms of media that they prefer and trust. In this way, we are able to explore the preferred choice of communicating information for the specified target group. This group (university students) will have access to the Internet faster than newspapers, television, telephone, or any other form of information and communication technology [6]. Hence, university students are exposed to plenty digital information via online media such as online news paper, blogs, You Tube, Facebook, Yahoo Messenger and e-mails. Such online media has become the means of reaching wider audience regardless of time and place. The so-called online media or social media allows anybody to access information and disseminate them to anyone who is ready and willing to respond to the opinion and commentaries in interactive and dynamic manner [7].

Leu *et al.* [8] refer the abilities of the students to access and read online information as part of new literacy. They describe the new literacy as literacy that possesses five major functions:

- developing important questions,
- locating information,
- critically analyzing information,
- synthesizing information, and
- communicating information to others.

Thus, students must learn how to find the information, evaluate how significant the found information is to their needs; and how to use the information to construct their knowledge [6]. While they concentrate on the first three functions above, Leu *et. al* perceives that new literacy should include all of the functions. The later two functions are the crucial elements for current and future online behavior [8].

According to Lawrence [2], information is neutral and it does not have inherent meaning, but information can be manipulated to manage user perception. Therefore, synthesizing and communication information are depended solely on the individuals. In open-access media communication, the impacts of individuals' perception may be able to influence others instantly while reaching to borderless communities.

Even though, for over 20 years, international literacy studies have included locating information as for adolescent and adult literacy, most research on online information, however, is focused on search engine use [9] and online searching behavior [10-12]. Little is known, however, about students' preference and trust for certain online activities as well as factors that influence the online behavior.

III. METHODOLOGY

A. Study Design

A snap-shot survey was conducted to gather information on the online communication medium. A self-administered paper-based survey questionnaire was used to collect information on the preferred and trusted medium of communication used by the undergraduate students at the Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA. This study employed an exploratory statistical technique in order to investigate the proximities in the patterns of responses which relates to the preference and trust in using online media. Response data were processed using SPSS16.0 and analyzed via multidimensional proximity scaling and multiple response techniques.

B. Participants

Thirty eight undergraduate students of mixed gender group from different backgrounds who were regular computer users took part in the paper-based survey. They were selected based on several criteria which include having knowledge and exposure on different types of available online information and media communication. The participants were gathered in a room where they were given ample time to complete the questionnaires.

C. Instrument

The questionnaire comprises of 15 multiple choice items that measure respondents' perception and behavior. It requires students to state their preferences and trust for traditional and online media activities. The items were subdivided into two categories - preference (15 items) and trust (15 items) for online activities.

D. Data Management and Analysis Technique

Responses from the thirty eight participants were converted into binary codes in which for each answer, the value '1' represent a 'yes' or preferred activity and '0' represent a 'No' for non-preferred activity. Each attribute was labeled for reference and identification. Table 1 shows the label for attributes and their descriptions.

Table 1: Data attributes and description

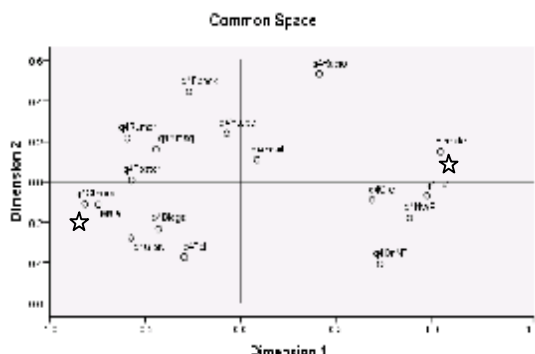| Name Of Attributes For Preference	Name Of Attributes For Trust	Description
q4NwP	q5NwP	Newspapers
q4TV	q5TV	Television
q4Blogs	q5Blogs	Any blog
q4Fbook	q5Fbook	Facebook
q4Poster	q5Poster	Poster
q4Crel	q5Crel	Close relation
q4Radio	q5Radio	Radio
q4Others	q5Others	Other media
q4OnNP	q5OnNP	Online news paper
q4GloN	q5GloN	Global news
q4Rumor	q5Rumor	Rumors
q4Ytube	q5Ytube	You tube videos
q4Ymsg	q5Ymsg	Yahoo messenger
q4e-mail	q5e-mail	Using electronic mail
q4Tel	q5Tel	Telephone

The data was analyzed using multidimensional proximity scaling technique where it enables the users' response patterns to be formed and visualized into two-dimensional solutions. Multidimensional scaling (MDS) starts with a data set of proximities, which indicate the degree of similarity or dissimilarity among elements in a defined set. The objective of multidimensional proximity scaling is to take proximities data and represent the elements in small dimensional space so that the distances among the elements in the space accurately represent the original proximity measures [13-15].
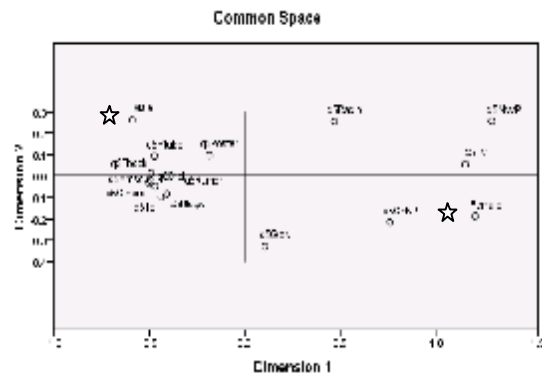
IV. RESULTS AND ANALYSIS

The survey results are presented in two-dimensional MDS method with four different clustering patterns; 1) preferred common media, 2) trusted common media, 3) preferred online media, and 4) trusted online media. In this way, comparison between traditional and online media, as well as comparison between elements within the online media can be made.

A. Common Media

In this study, the chosen common media that comprises of 15 types of media are what most university students would use as part of their daily activities for the purpose of seeking information or communicating with others. Fig. 3 illustrates the preferred and trusted for all types of media.

(a) Preferred medium

(b) trusted medium
Fig. 3: Proximities in response patterns

In Fig. 3(a), it shows that the preferred medium of commuincation for male students are blogs, global news, telephone, poster, Yahoo Messenger, Facebook and You Tube. Female students, on the other hand, prefer the conventional medium of communication such as television and newspaper more than their male counterpart. Online newspapers seem to be the least favourable among the female students. However, both male and female students equally prefer email as their medium of communication.

When it comes to trusting the media for giving reliable information, male students are more consistent in their preferences for Facebook, Yahoo Messenger and You Tube. However, they indicate a low trust for blogs, rumour and telephone and a much lower trust for global news. On the other hand, female students are consistent in their trust for the preferred medium with television and newspaper being the two most trusted medium whilst online newspaper is the least trusted medium. Global news and radio are found to be the least trusted medium for both male and female students. The results can be seen in Fig. 3(b).

Table 2 displays the preference ranking for all participants relating to the preferable and trusted medium of communication.

Table 2: Ranking of preferred and trusted media
(a) Ranking of preferred medium

	Responses			
	N	Percent	Percent of Cases	Ranking
q4NwP	30	11.5%	79.5%	7
q4TV	35	13.7%	84.6%	1
q4Blogs	13	5.0%	34.2%	7
q4Fbook	17	6.5%	44.7%	8
q4Poster	9	3.5%	23.7%	11
q4Crel	28	11.1%	74.4%	4
q4Radio	20	4.3%	52.5%	9
q4Others	2	.8%	5.3%	13
q4OnNP	27	10.4%	71.1%	3
q4GloN	7	2.7%	18.4%	12
q4Ytube	19	7.3%	50.0%	7
q4e-mail	20	7.7%	52.6%	1
q4Tel	11	4.3%	34.5%	10
Total	260	100.1%	684.2%	

(b) Ranking of trusted medium

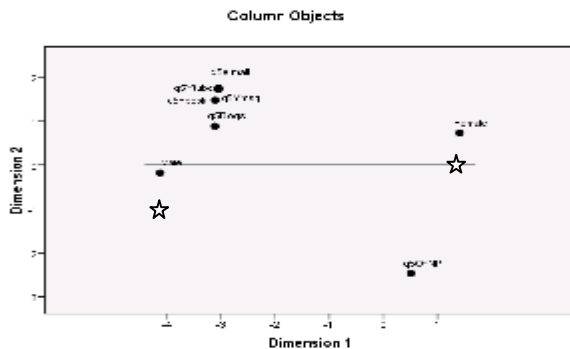|	Responses			
	N	Percent	Percent of Cases	Ranking
q5TvwT	25	23.3%	96.1%	1
q5Nv	51	30.7%	8.0%	2
q5Blogs	5	3.3%	11.5%	2
q5FTuck	5	2.1%	7.9%	8
q5Hum	5	5.3%	21.1%	6
q5Ccrel	4	2.1%	7.9%	9
q5Radio	19	12.7%	11%	7
q5Others	1	.7%	3.0%	13
q5OnXP	23	14.7%	57.9%	3
q5HIM	15	10.3%	33.5%	4
q5Tube	3	2.0%	7.9%	9
q5email	2	1.4%	5.1%	11
q5Tel	3	2.0%	7.9%	9
Total	150	100.0%	35.7%	

With majority of the sample being female dominance, it has gained the majority vote for television and newspaper as among the most preferable medium of communication. Online newspaper comes in third, following the two conventional media of communication. However, this technique could not indicate the proximity in the multiple responses given by the respondents. Therefore, what seems to be the most preferable medium for female may not turn out to be the most preferable medium for male.

B. Online Media

The two-dimensional solutions in Fig. 4(a) shows that males prefer to use blogs, email and You Tube more than females in searching for online information. On the other hand, females tend to use Facebook and Yahoo Messenger slightly more compared to the males. However, both male and female respondents are quite similar in their preferences for the online newspaper.
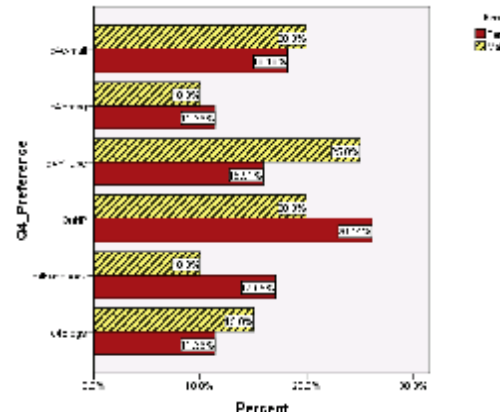

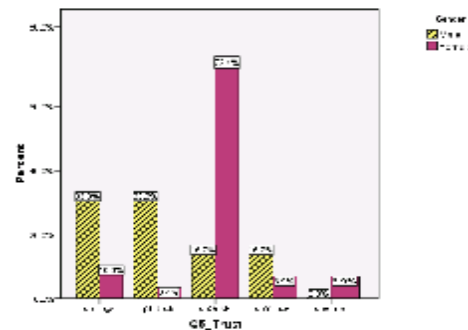(a) preferred medium

(b) trusted medium

Fig. 4: Proximities in response patterns

The two-dimensional solutions in Fig. 4(b) show that female respondents believed that online newspaper gives them more reliable information. Males on the other hand, believe that blogs, Yahoo Messenger, email, You Tube and Facebook give them more reliable information. Females' response patterns on trusted medium for online activities are found to be consistent with their response pattern on preferred medium.

From the clustered bar chart in Fig. 5(a), You Tube is the most preferred choice for majority of male respondents while online newspaper is the most preferred choice for majority of female respondents. In terms of trusted medium (Fig. 5(b)), majority of female respondents go for online newspaper in searching for a more reliable information whilst male respondents equally trusted blogs and Facebook for reliable information.

(a) preferred medium

(b) trusted medium

Fig. 5: Comparison between male and female users

Tables 3(a) and 3(b) show that female respondents are consistent in their preferences and trust for online newspaper. However, there is inconsistency between preference and trust in other online activities.

Table 3: Female rank usage
(a) Prefered online activities

SQ4 Frequencies (Among Females)

		Responses			Rank
		N	Percent	Percent of Cases	
SQ4	q4Blogs	10	11.4%	35.7%	5.5
	q4Fbook	15	17.0%	53.6%	3
	q4OnNP	23	26.1%	82.1%	1
	q4Ytube	14	15.9%	50.0%	4
	q4Ymsg	10	11.4%	35.7%	5.5
	q4e-mail	16	18.2%	57.1%	2
	Total	88	100.0%	314.3%	

(b) Trusted online activities

SQ5 Frequencies (Among Females)

		Responses			Rank
		N	Percent	Percent of Cases	
SQ5	q5Blogs	3	10.3%	13.6%	2
	q5Fbook	1	3.4%	4.5%	5
	q5OnNP	21	72.4%	95.5%	1
	q5Ytube	2	6.9%	9.1%	3.5
	q5e-mail	2	6.9%	9.1%	3.5
	Total	29	100.0%	131.8%	

In Tables 4(a) and 4(b), male respondents are more consistent in their preferences and trust for online newspaper and You Tube. However, there is a slight inconsistency between preference and trust in other online activities.

Table 4: Male rank usage
(a) Preferred online activities

SQ4 Frequencies (Among Males)

		Responses			Rank
		N	Percent	Percent of Cases	
SQ4	q4Blogs	3	15.0%	50.0%	6
	q4Fbook	2	10.0%	33.3%	4.5
	q4OnNP	4	20.0%	66.7%	2.5
	q4Ytube	5	25.0%	83.3%	1
	q4Ymsg	2	10.0%	33.3%	4.5
	q4e-mail	4	20.0%	66.7%	2.5
	Total	20	100.0%	333.3%	

(b) Trusted online activities

SQ5 Frequencies (Among Males)

		Responses			Rank
		N	Percent	Percent of Cases	
SQ5	q5Blogs	2	33.3%	50.0%	3.5
	q5Fbook	2	33.3%	50.0%	3.5
	q5OnNP	1	16.7%	25.0%	1.5
	q5Ytube	1	16.7%	25.0%	1.5
	Total	6	100.0%	150.0%	

V. CONCLUSION

From the exploratory analysis, we discovered that male students have higher preference for the online communication media such as blogs, global news, telephone, poster, Yahoo Messenger, Facebook and You Tube whilst female students are more towards the conventional medium of communication such as television and newspaper. In addition, male students indicate a high trust for their preferred medium of communication whilst females are rather moderate in their trust for the preferred medium.

In relation to the online media behaviour, it is obvious that male and female students differ in their preferences and trust for certain online media. Females are rather consistent in their preferences and trusted media for a certain online activity whilst the males are rather inconsistent in their preferences and trusted media for several online activities. This is evident as female students prefer and trust the online newspapers more than the other activities for seeking information. While male students tend to prefer the newspaper in searching for information, they however, trust the blogs, You Tube, Yahoo Messenger and emails more than the other online activities as the reliable source of information.

The finding is consistent with Media Richness Theory (MRT) where the young males of IT generation prefer and trust the two-way communication media rather than the one-way communication media. On the other hand, it does not apply to the young females of IT generation where this gender group prefers and trusts the one-way communication media rather the two-way. These findings have been supported by the multidimensional proximity scaling technique which has enabled us to visualize the responses far better than the multiple response technique. Based on the analysis of multiple response technique, the highest ranking for preferred and trusted media is gender bias and has leaned towards one-way traditional media while the multidimensional proximity scaling has enabled us to investigate the preference and trust regardless of the gender size. The results in this study would be useful for future research in investigating factors that could influence the behavior for young generation of IT literate in seeking reliable information. Therefore, in the next stage of our study, factors that influence the behaviour of the respondents to occur as such shall be investigated.

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