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Perceive Persuasiveness of Healthy Food Intake Motion Graphic Presentation used in Social Media

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Abstract

In this paper, we study the potential of motion graphics that are available in social media by embedding the selected ones to a persuasive support system which is aiming to persuade the users to change their behaviour towards healthier food intake. The system was design by combining Cialdini's principles of persuasion and Fogg's persuasive technology functional triad. We have measure the persuasiveness by three factors; effectiveness, quality and capability to a group of 48 young adults from two local universities Malaysian Easts Peninsular. The findings suggest that the system is persuasive in terms of quality and capability whereas the effectiveness has less persuasion to the users.

Keywords: Persuasive technology, perceive persuasiveness, motion graphics, behaviour change

Introduction

The persuasive technology aims to change behaviours using computer technology, with the execution of persuasion without coercion (Fogg, 2002). Researchers have develop a wide persuasive system invention targeting a variety of behaviour such as promoting general health (Halko & Kientz, 2010) quit smoking (Bin Ismail, 2012), *Potria* that promotes healthy eating habit (Mazzotta et al, 2007), SUPERHUB that encourage traveling safety (Wells et al, 2014) and ASICA that persuade skin cancer patients to take actions.

To achieve persuasion, many strategies were applied to the system such as personalization, self-monitoring and social influence which capable in triggering the behaviour change (Oinas-Kukkonen & Harjumaa, 2009). Other persuasive system used technology applications such as interactive user control (Orji, 2016), mobile game (2014), social media (Hassan, Shiratuddin, & Ab Salam, 2015), web 2.0 e-learning (Widyasari et al, 2019), mobile apps (Meedya et al, 2019), social robot (Ahtinen & Kaipainen, 2020) and fitness system (Oyibo & Vassileva, 2020). Fit 4 Life that guides for weight maintenance (Purpura et al, 2011).

In early 2000 and to 2010s, with the emergence of modern internet and computer technology, Cladini's Six Principles of Persuasion (Cladini, 1984) and Fogg's Behavioral Model (Fogg, 2009) has impacted the persuasive technology fields Before 2018, previous research seldomly highlight the perceive persuasiveness of each develop persuasive platform. Researchers tend to prove the effectiveness of all persuasive approach and some has positive, partially positive and negative effect (Orji & Moffatt, 2018), and all the highlighted research did not came out with certain measures to perceive persuasiveness.

However in 2019, a research conducted by a group of researchers from United Kingdom and Netherland (Thomas et al, 2019) which resulting a development of perceive usefulness scales. This study actually validates the scales using two different study targeting two different behaviour domains which are healthy eating behaviour and email security control, with argumentation scheme for each. Those

measurable factors are effectiveness, quality and capability.

Meanwhile in Malaysia, healthy eating is considered as 'weak' as the overall diet quality of the respondents was poor, with a mean Malaysian Healthy Eating Index score of only 45.3% which contributed to the rise of diet-related non-communicable diseases (Chong et al, 2019). Despite the high Malaysian healthcare quality, we considered a persuasive system as an alternative towards this issue based on two factors which are; (1) 29.49 millions (89.19%) internet users and (2) 29.22 millions (82.84%) social media users in Malaysia.

A study showed that in Malaysia, a majority of 7233 (86.6%) respondents felt anxious due to Covid-19 pandemic. A total of 7871 respondents (94%) find news updates to reduce their anxiety using social media. They also used social media to gather information and follow the updates through television and press conference. A total of 5251 respondents (62.7%) were aware of the counselling support provided during the MCO, and 4603 respondents (55%) felt comfortable to have counselling support by phone (Ahmad et al 2021).

With the potential of social media towards positive behavioral change and as social influencer, we used the criteria of psychological persuasion by Cladini and Fogg's Persuasive Technology Model to carefully select the social media platforms that convey positive healthcare habit and identify the perceive persuasiveness of the platform. We chose social media with embedded motion graphic presentation which is free (high usefulness and high users' motivation), and contains positive triggers (social media features) to stimulate behaviour change among

Objectives

The research has two objectives which are (1) to establish an adequate persuasive support system using social media and (2) to measure the perceive persuasiveness of motion graphic presented in social media for healthy behaviour change using three validated factors – effectiveness, quality and capability.

Methods

To establish an adequate persuasive support system, we have considered the three functional triad of persuasive technology (Fogg, 2002) as shown in **Table 1**. From a total of 80 randomly distributed population, selected respondents are filtered from 48 first year students from 2 universities. Respondents' age are 20-22, 14 males and 34 females. 26 Malays, 15 Chinese, 6 Indians and 1 Sabahan. The selected young adults does not have strong knowledge in nutrition and healthy food intake. They also did not have allergic or under a medication.

Table 1. The establishment of persuasive support system using persuasive technology functional triad.

Functional Triad (Fogg, 2002)	Strategies	Identified Persuasive System
Social actor (Creates relationship)	2 qualified personal trainers for healthy food intake	Platform : Telegram Instruction for healthy food intake: Doctors/Nutritionist certified
Tool (Increase Capability)	A platform that user friendly.	motion graphic from YouTube and Facebook.
Medium	A social media platform that	Training time : 30 days 2nd of June – 3rd of July 2022

Functional Triad (Fogg, 2002)	Strategies	Identified Persuasive System
(Provide experience)	connects instructor and respondents. All parties can interacts each other.	

The motion graphics used in the persuasive system has gone through a validation process by a nutritionist and a doctor from the Department of Family Medicine HUSM. Table 2: Show the persuasion strategies used to obey the Cialdini Principle of Persuasion.

Table 2. Principle of persuasion (Cialdini, 1984) used in the persuasive system.

Persuasive Principles	Strategies	Procedures used
Authority	Contents were approved by a doctor and a nutritionist	Briefing session
Social Proof	Feedback from peers when asked by the instructors	Questions were asked during session.
Consistency	Instructors will show the effectiveness of the training	Respondent can check their weight and come to outpatient clinic if they have health problems
Liking	Motion graphic were compelling and appealing	Motion graphics is easy and viewing is effortless.
Social Proof	Peer support in the group	Respondents are encouraged to have fitness tracker to compare each other's activity
Scarcity	Some content were instructed to give negative impact of unhealthy diet.	Motion graphics is easy and viewing is effortless

Quantitative survey instrument was derived from scales of perceive persuasiveness that measures three factors and nine scale items (Thomas et al, 2019) as in Table 3. The instrument has undergone reliability testing with a pilot test using 10 respondents which resulted α = 0.81. To measure each scale, we used 5 Likert scale scheme with 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

Result

By measuring the mean of each factors' scale, we can conclude the finding as in Table 3.

Table 3. Mean Score

Factors	Scale Items		Mean Score
Effectiveness	1.	The message in motion graphics will cause changes in my behavior.	3.31
			3.42

Factors	Scale Items		Mean Score
	2.	This message causes me to make some changes in my behavior	3.98
	3.	After viewing the motion graphic, I will make changes in my attitude	
Quality	4.	This message is accurate.	4.21
	5.	This message is trustworthy	4.44
	6.	I believe this message is true.	4,06
Capability	7.	This message has the potential to change user behavior.	4.19
	8.	This message has the potential to influence user behavior	4..15
	9.	This message has the potential to inspire users	4.52

N=48

Discussion

Based on the findings. We can conclude that in terms of quality and capability, the proposed persuasive system might have significant impact to persuasiveness. However, the system is slightly less persuasive in terms of effectiveness factor. During the healthy food intake training, the two instructors have detected some issues with the understanding of the content presented mainly in English language. When asked in the discussion group, some students from Malay demographic group have trouble in fully understanding the content. The worst of them are a student who can only understand 50% of all the presented content. They have to personally asked the instructors for the contents that they had missed. For further research, it is appropriate to prepare motion graphic contents with respondents' preferred language.

The motion graphic support system has the potential to trigger positive behaviour change when the mean score for the Factor 3 is positively persuaded. Basically, the motion graphic used are from certified content with speakers were doctors, nutritionists and a sportsman. Therefore, we can consider that the respondents were persuaded by the quality of the motion graphic and has decided to change the behaviour at the moment.

The use of familiar social media platform with maximum ease-of-use is clearly shown by the positiveness of capability factor. The system is costless, does not require special trainings to be operated and clearly can motivates the behaviour change during the training.
However, this research does not guaranteed the prolonged behaviour change after the absence of instructors' guidance. We can also tested the measurement among the healthy respondents and not individuals with specific health issues.

Conclusion

Perceive Persuasiveness has three measurable factors derived by explanatory and confirmatory factor analysis, which are able to give us a glimpse of the impact of the motion graphic used in social media. The persuasive system must strictly follow the principle of persuasion and the persuasive technology behavioral model that can help the instructors and developers to plan persuasive strategies. These approaches allows us to reveal the potential of motion graphic as a positive trigger to healthy food intake behavioral change.

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