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TABLE OF CONTENTS

Table of Contents

i

Dimensions and dilemmas of digitalisation: Challenges of the fourth industrial revolution <i>* Oliver Hahn</i>	1-9
Positive orientation effect on aversive peer experiences such as cyber aggression and cyber victimisation <i>* Mimi Fitriana, Rizwanah Souket & Lian Jia Yie</i>	11-30
Perception of urban space through the lens of Pokemon Go <i>* Ng Foong Peng & Goh Chin Zhi</i>	31-58
The development of an e-assessment prototype for communication lecturers using three levels of digital literacy <i>* Nurul Nisa Omar & Yi Jun Phung</i>	59-74
Muslim ethics and sustainability guidance in Islamic environmental articles: An analysis of Utusan Malaysia and Berita Harian <i>* Mohamad Saifudin Mohamad Saleh, Nur Atikah A Rahman, Sharifah Nadiyah Syed Mukhiar & Rani Ann Balaraman</i>	75-87
Web interactivity and news credibility: Which is the stronger predictor to online news consumption in Malaysia? <i>* Ng See Kee & Bahiyah Omar</i>	89-106
The use of mobile technologies for learning in higher education: Students' readiness <i>* Cheng Ean (Catherine) Lee, Serena Wai Yee Leow & Xiang Jie Kong</i>	107-127
The effects of social media use and political communication networks on the Filipino youth's political participation <i>* Jon Benedik A. Bunquin</i>	129-147
Digital engagement in pronunciation learning: Effects on learning performance and language anxiety <i>* Fei Ping Por & Soon Fook Fong</i>	149-171
Differences in visual-textual platforms, technical-strategic communication & professionalism vs encroachment between Malaysian & American PR practitioners' social media practices <i>* Chuan Tek Pheung, Cheng Ean (Catherine), Lee & Lim Siz Siz</i>	173-187
Media reporting on heritage conservation: A study on The Star and New Straits Times online newspapers <i>* Tan Poh Ling & Karmilah Abdullah</i>	189-205

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Dimensions and dilemmas of digitalisation: Challenges of the fourth industrial revolution

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ABSTRACT

Media have always been subject to change. An essential part of these changes has been the fact that no older media have ever been completely extinguished, but instead have had to change and transform in relation to new media. This observation has been valid through various technological developments thus far. The era of the so-called Fourth Industrial Revolution is already in full swing. In addition to technological progresses that advance significantly and constantly, a growing and unstoppable phenomenon inherent in our daily life, digitalisation, has gained momentum. The Fourth Industrial Revolution does not only offer opportunities and challenges for media systems. This keynote address focuses on the challenges and the problems that have to be solved in the near future: it questions to what extent do we need, on a global level, adequate and updated political, economic, legal and regulatory as well as ethical frameworks in order to guarantee media accountability and transparency.

Keywords: ***media change, digitalisation, data journalism, immersive journalism, artificial intelligence (AI)***

INTRODUCTION: MEDIA CHANGES

Media changes evolve rapidly and have become ubiquitous in everyday life. Advanced technologies have already blurred the boundaries between traditional ways of media production and consumption and new distribution channels within media systems around the globe. Today, the phenomenon of media convergence plays a key role, alongside new forms of journalism that have emerged. These new forms include, amongst others, modern ways of interaction between humans and machines thanks to applications that facilitate human machine interfaces (HMI), or immersive journalism that offers hitherto unknown experiences to audiences in news dissemination and, thus, perceiving “reality”. Digitalisation, of course, is crucial for these developments. Digitalisation not only describes new technologies, but also a radical change of processes and routines throughout entire media systems. Thus, digitalisation can be considered as a catalyst that has significant influences on media outlets as well as on their production and reception.

Despite the far-reaching changes thanks to digitalisation, media changes are of course not a recent phenomenon. Formulated as early as 1913, “Riepl’s law” describes a certain kind of “rule” by which old media never completely disappear, but instead forced to transform and develop in relation to new media accordingly (Riepl, 2014 [1972, 1913]). Still today, this observation can be made while analysing ongoing digitalisation within the media industry, in general and within journalism, in particular. Although significant changes have already taken place or are underway, some long-term, successfully tested and proven media and journalistic work routines and flows are still applied within content production and distribution.

McLuhan (1964) coined the term “rearviewmirrorism” which could be understood as describing the way new developments are compared with existing technologies and systems. By doing so, appropriate strategies and established production processes within the media industry are applied to new developments (Schabacher, 2017). This approach aims at roughly predicting the development of new technological advancements and measuring them on the basis of past processes.

However, interpersonal communication and interaction patterns are accompanied by human-machine communication and interaction opportunities that might break the boundaries between biological and automatic, physical and virtual (public) spheres. Ground-breaking innovations in journalism have already been introduced. For instance, a wide variety of HMI applications have emerged in the journalism field (Kollerus, 2017).

We witness a transfer from “algorithmisation” to robotic or artificial intelligence (AI) in all parts of the individual and societal life. Moreover, AI is becoming increasingly important for the investigation and production of news content and is already widely used in journalism practices (Kollerus, 2017). More and more world-renowned media outlets such as *The Washington Post*, use bots for the creation of journalistic content: “The Washington Post also has a robot reporting program called Heliograf. In its first year, it produced approximately 850 articles and earned The Post an award for its “Excellence in Use of Bots” from its work on the 2016 election coverage. However, The Post is using their system to not replace journalists, but to assist them and make their jobs easier and faster. The Heliograf can detect trends in finance and big data to alert reporters to give them a heads-up for reporting.” (Martin, 2019) In the United States, there is an ongoing debate as to whether or not so-called “artificial humans” should be granted human rights, including freedom of expression (Schroeder, 2018). Thus, new technologies have not only blurred the boundaries between journalistic work and production processes, but have also introduced completely new elements into media systems.

ROLE OF DIGITALISATION AND MEDIA CONVERGENCE

Digitalisation has an important impact especially on production conditions while creating media content. These production conditions are significantly influenced by the changing requirements of new platforms. One example is the so-called mobile-first strategy of media corporations, which is focused on mobile and internet-based channels (Hill & Bradshaw, 2019). Moreover, a dramatic change of media content in general has to be conceded. First, a broader variety of media content far beyond traditional formats and genres can be observed. Secondly, there is a significant increase of audio-visual material on several platforms. Thirdly, links between different distribution channels and platforms have also led to an increase of cross-media and transmedia productions. Hence, it is of absolute interest for media corporations to carefully pay attention to distribution channels and their specific features in order to optimise the use of adequate media products and content as well as to intertwine them with the technological potentials of digitalisation (Hohlfeld, 2018).

However, these developments not only impact the technologies of media production, but also several elements of entire media systems. New markets have emerged within the media industry due to advanced formats and genres. Traditional media and their producers now face new competitors from digital media, trying to attract audiences' attention. Digital competitors such as social media and search engines have "renegotiated" the (societal) functions and roles of media and journalism. The role of journalists as "gatekeepers" has switched to "gatewatchers", particularly due to the high market shares of search engines (Wallace, 2018).

Technological innovations have not only given birth to new formats and genres, but have also intertwined existing ones. Media convergence has not only become obvious on the macro-level of the media system, but also on the micro-level of media products. New formats and genres have influenced media production and content reception. Thumbnails or click baits are some examples of the "attention-grabbing" conception and creation of content. In terms of an "economy of attention", this phenomenon could also be attributed to the change in the media reception behaviour of users. Due to an oversupply of information and sources, and constant exposure to them, users tend to just superficially "browse" through content within a very limited attention span (Bonfadelli & Friemel, 2017). Therefore, it has become important to publish the same and/or similar content on several platforms in order to reach a large number of users. In this context, we can observe a trend towards an increasing use of "second screens" in order to consume several digital services simultaneously (Meier, 2018). Here again the impact of digitalisation on media production and reception becomes obvious. Due to an oversupply of information and sources, consumers of media content increasingly rely only on a few platforms and providers in a restricted way that can lead to so-called "filter bubbles" and "echo chambers" (Wardle & Derakhshan, 2017). This includes new problems and challenges for journalism: "The fundamental problem is that 'filter bubbles' worsen polarization by allowing us to live in our own online echo chambers and leaving us with only opinions that validate, rather than challenge, our own ideas" (Wardle & Derakhshan, 2017, p. 50). This restrictive and selective mode of reception shows strong convergence effects within digital arenas, since it not only influences the creation and distribution of content, but also its use and consumption.

Overall, the role of digitalisation and media convergence has far-reaching effects on media systems. In addition, previously separate levels of journalism are now intertwined and interdependent.

NEW FORMS OF JOURNALISM

In addition to rather general technological changes in media systems, media changes impact existing forms of journalism while simultaneously contribute to the emergence of completely new forms of journalism. One example is data journalism: “[E]volving internet technologies initiated the emergence of easy-to-use and mostly free tools to refine, analyse and visualise statistical data, which—due to the ongoing digitalisation of information in the past decades—would provide a new and seemingly inexhaustible source for journalists” (Hahn & Stalph, 2018, p. 3). The analysis and interpretation of “big data” can be the starting point for journalistic investigation on international levels, such as the “Panama Papers” by the research collective, International Consortium of Investigative Journalists (ICIJ). Not limited to that case, processing and visualisation of “big data” have become central: “Data-driven journalism and its techniques of analysing and visualising statistical big data and new visual-analytical tools are cutting-edge approaches to uncover the truth and tell the story behind the story” (Hahn & Stalph, 2018, p. 4). Challenges for journalism include using innovative technologies and methodologies, summarising data sets, and presenting them in a comprehensible way without losing important information. Due to the huge amount of information available, several investigative journalists need to work together on an international scale in order to evaluate the researched data, contextualise and translate them into media content (Diaz-Struck & Cabra, 2018). Despite a strong focus on data processing, it has to be conceded that data sets do not substitute journalistic work, but instead complement it.

Explicitly without intending to equate journalism with activism, this aspect of complementary, not substitution, can be also found in other, non-journalistic, digital media content, such as “digital activism”, which cannot replace, but instead supports arguments and (mobilises for) protests in the streets. Social networks can be used to generate as much attention and information as possible for various events and protests; “digital activism” is “powerful when activists are well resourced and positioned to generate reliable information” (Currier & Moreau, 2016, p. 239). Taking the so-called “Arab spring” as an example (El Difraoui & Hahn, 2013), the use of digital platforms cannot substitute street demonstrations to affect political change. In this case, social media played an “important role in spreading information”, but until today it has remained contestable with regard to the extent “social media was a mobilizing force in the uprisings” (Mitchell, Brown & Guskin, 2012).

Depending on the reach of digital media and social networks, they can also be used for other forms of activism, such as “leaking” official documents or collecting signatures for petitions. In some cases, activism can have a helpful impact on journalism, for instance, in investigative journalism or advocacy journalism. However, while there may be overlaps in the work methods of journalism and activism, both these fields cannot be equated (Weichert, 2011).

Another new form of journalism is immersive journalism, using new technologies such as 360-degree video, virtual reality (VR), augmented reality (AR), three-dimensional imagery (3D,) and 4K resolution. However, it is questionable as to whether immersive journalism can still be considered as journalism since immersive journalism gives up on a journalistic axiom—at least according to the ideal of Anglo-American journalistic culture (Chalaby, 1996)—of “keeping critical distance” to a news story (Dean, 2017), while putting recipients in full proximity directly into a scene to report on, and, thus, enabling a high degree of interactivity: The “[c]ore innovation in VR storytelling is the fact that users are at the centre of the narrative, quite literally speaking” (Bösch, Gensch & Rath-Wiggins, 2018, p. 105). It is precisely through this inclusion of recipients that immersive media products could lead to more impactful media and messages. Hence, immersive journalism not only creates new channels, but also a completely new form of media (Bösch, Gensch & Rath-Wiggins, 2018). This new form of media opens up a vast variety of journalistic formats. In particular, stories produced by

reporters-in-the-field, aka “shoe-leather reporting”, could benefit from immersive effects. Additionally, immersive journalism might change media effects: “An important role of immersive journalism could be to reinstitute the audience’s emotional involvement in current events” (De la Peña et al., 2010, p. 298). Even print media, with the help of special technologies, can include immersive elements (Burgard-Arp, 2014). Without doubt, the use of innovative digital technologies and new forms of journalism provoke new debates about related regulatory and ethical issues.

Moreover, digitalisation not only creates new forms of journalism, but also new platforms that have a severe impact on media economies and media markets. Various social networks have not only offered new distribution channels, but have also opened up completely new business areas and models. The impact of social networks on societal and political life, depending on their reach and on direct accessibility of sources, has led to enormous competitive pressure on journalistic content (Hooffacker, 2016). Today, media corporations not only compete with each other for the attention of audiences, but also compete with other, non-journalistic content on digital platforms. In addition, newsrooms are no longer the only producers of media content; thanks to easy access to low-cost or even free production tools, almost everybody is able to publish content on the internet (Neuberger, 2014). User-generated content has made the amount of available content theoretically unlimited (Bauer, 2011). Consequently, new challenges for media professionals emerge because old roles of producer vs consumer are substituted by those of (oftentimes amateurish) “prosumer”. “Prosumers”, who produce and consume content, have already contributed to the growing stiff competition with professional journalists (Neuberger, 2018). Yet, journalism, operating also on digital platforms, is regarded as a necessity for quality (Neuberger, 2014). Thus, digital platforms inhere a great potential for journalistic content and media corporations.

NEW CHALLENGES FOR THE MEDIA LANDSCAPE

Media changes due to digitalisation bring about various challenges for the whole media landscape, far beyond technological implementations and financial models. In order not to lose its societal relevance, journalism has started to combine work processes and routines from the analogue era with new digital structures. Therefore, it seems necessary to combine technological innovations with existing journalistic processes and to integrate them into the production of content (Haim, 2019). However, journalism still plays an important societal function. In order to guarantee this function, legal regulations and ethical debates about new technologies are needed, without limiting the potential of innovation. Some existing legal frameworks have to be updated to meet the requirements of digital changes. For example, the political challenges that plague the alignment of user requirements with the characteristics of the digital space in the reform of copyrights within the European Union (EU) (Marx, 2019). This reform has provoked heated discussions within parts of the internet community who feared that a simple adaptation of the legislation from the analogue era and the strengthening of digital copyrights would threaten freedom of expression and restrict dissemination of content through so-called “upload filters” (Horchert, 2019).

Furthermore, increasing public interest in new legislations concerning digital space, in general and data protection, in particular proves the relevance and urgent need of modernised legal frameworks. One example is the General Data Protection Regulation of the EU, which is intended to improve the protection of consumers’ personal data and privacy (Beuth et al., 2018). This EU regulation also meets the need for internationalised solutions for digitalisation that does not stop at national or regional borders.

In Germany, for instance, the Network Enforcement Act (effective since 2017) aims at combating “fake news”, propaganda, agitation, hate speech, and criminal, offensive or at least contestable content, including financial sanctions and penalties (fines). On a global scale, digital and social media such as Facebook, Twitter and YouTube have commissioned companies and organisations, many of them based in low-income countries such as the Philippines, as so-called “content moderators”—nicknamed “The Cleaners” (Block et al., 2018)—to monitor, delete or block “fake news”, propaganda, agitation, hate speech, and criminal, offensive or at least contestable content. Working under enormous time pressure and not being allowed to talk about their work on the “digital waste dump” with their families and friends, many of those “content moderators” suffer from post-traumatic stress disorder (PTSD) or other psychological and mental health problems.

Almost all debates in these new legislations are accompanied by controversies of whether these new legislations might restrict freedom of expression and, thus, be considered as a measure of “internet censorship”, or protect users from “fake news”, propaganda, agitation, hate speech, and criminal, offensive or at least contestable content.

But the legal aspects of media changes are not the only ones that pose challenges. The ethical dimensions with regard to digital technologies have to be taken into consideration as well. Overload of information, unlimited access to production tools and effects of digital platforms pose the question of responsibility. In this context, the model of voluntary self-regulation seems to be appropriate in order to guarantee media accountability and transparency as an important pillar of a society. Following the example of existing press codices, voluntary codes of conduct for the digital space might seem to be appropriate options.

With regard to digital journalistic investigation, we face two important problems: (1) the authentication of content and sources and (2) the identification of originators of content and sources in the digital media.

As a result of information overload, journalists face even more important challenges compared to the analogue era, in proving to be credible by assuring the authenticity and transparency of the content to be published. Credibility is essential for journalism because “it is important that people can trust the media. After all, the media form part of the indispensable information and communications infrastructure of a society” (Schranz, Schneider & Eisenegger, 2018, p. 73). Credibility depends, amongst others, the extent to which journalistic content can guarantee authenticity and transparency, as two important indicators of quality journalism. Checking and double-checking the authenticity of content in order to ensure the reliability of messages, has become a primary task for journalists especially those working in the digital field. By the same token, transparency in presenting valid facts, empirical evidence and findings from investigation that can withstand intersubjective tests has become even more indispensable. This is especially true for new data collection methods, such as “crowdsourcing” when journalists are helped by audiences in analysing a huge amount of data and information. As such, these methods need to be presented in a transparent way.

Moreover, by using social networks, the somehow contradictory role of communication and data becomes evident: every kind of digital communication that takes place on a level visible to humans, simultaneously has an invisible counterpart on the data processing level (Stalder, 2017). Therefore, journalists might wish to explain to readers how they have managed to arrive at their fact-based conclusions as well as the context in which the collected data have been used. By doing so, journalists can help reduce the complexity of the digital environment and meet the demands for journalistic quality as expected by their audiences.

Further, in the digital environment, we have witnessed an increased spread of false information and statements. The term “fake news” has become particularly prominent. It has been instrumentalised mainly for strategic reasons, particularly in far-right or right-wing populism, as a generalising word that “waters down” its underlying meaning and, thus, has to

be differentiated: “Much of the discourse on ‘fake news’ conflates three notions: mis-information, dis-information and mal-information. But it’s important to distinguish messages that are true from those that are false, and messages that are created, produced or distributed by “agents” who intend to do harm from those that are not” (Wardle & Derakhshan, 2017, p. 20). This proposed distinction that includes the intention for spreading false information and statements, makes a precise and clear-cut classification of content possible: “Dis-information” (refers to created false information) which “deliberately” aims at discrediting and “harm[ing] a person, social group, organization or country”, is located in the intersection between “Mis-information” (is also false information) which is “not created with the intention of causing harm”, and “Mal-information” which is “[i]nformation that is based on reality, used to inflict harm on a person, organization or country” (Wardle & Derakhshan, 2017, p. 20). This differentiation of the concept of “fake news” is very useful against the backdrop of social networks that increasingly host more and more political disputes.

Furthermore, the question of new business models remains. One of which is a user-centred approach: “crowdfunding” (Herms, 2018), which is already seen to be successful in the gaming and film industry. The essential question that remains is how to convince users to pay for content. Innovations such as alternative models of payment adapted to users’ behaviour could offer viable options for the future.

CONCLUSIONS AND PERSPECTIVES

Technological developments, of course, have an impact on the media landscape. Due to digitalisation, new forms of journalism and media continue to emerge. The Fourth Industrial Revolution has already deeply changed our societal and political life. In order to guarantee fundamental rights to free communication, innovative solutions on an international scale have to be found, especially with regard to human-machine interactions.

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Positive orientation effect on aversive peer experiences such as cyber aggression and cyber victimisation

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ABSTRACT

Internet has become a vital part of our modern-day society and in recent years, most youths are drawn to social media platforms (like Instagram, Snapchat, Twitter and Facebook). However, cyberbullying has gone rampant in tandem, affecting and scarring both the victim and perpetrator, leading to serious psychological issues such as depression, social anxiety, lower self-esteem and in some extreme cases, suicide. The current research aims to find out the positive orientation effect on aversive peer experiences such as cyber aggression and cyber victimisation among adolescents. This research hypothesized that 1) there is a significant relationship between positive orientation, peer experience relationship, cyber aggression and cyber victimisation, 2) there is a significant impact of positive orientation on cyber aggression and victimisation, 3) there is a significant difference between male and female adolescents in cyber aggression and victimisation. A sample of 338 university students in Malaysia, aged 19 to 25 years, was selected using the convenient sampling technique. The instruments use for data collection included cyber-peer experience questionnaire, Rosenberg self-esteem scale, satisfaction with life scale and positivity scale. The collected data were analysed using Pearson Correlation Coefficient (r) and T-test. The multiple regression analysis was also used to relate the predictors of life satisfaction, self-esteem, and optimism to the occurrence of cyber aggression and victimisation among adolescents. The findings reveal that there is a negative correlation between self-esteem and cyber aggression as well as optimism with cyber aggression and cyber victimisation. Findings from the multiple regression analysis indicate that both self-esteem and optimism were significant predictors on cyber aggression and cyber victimisation. Further, the T-test results reveal that there is a significant difference between male and female adolescents on cyber aggression, and no significant difference in terms of cyber victimisation.

Keywords: *aversive peer experience, cyber aggression, cyber victimisation, positive orientation, self-esteem*

INTRODUCTION

The Internet and social media are powerful means of communications that have cemented the lives of people together through interaction, content-sharing and collaboration. Internet penetration in Malaysia is very much related to the technological environment in the country. According to the Internet Users Survey 2017 (Malaysian Communications and Multimedia Commission, 2017), smartphone remained the most popular means for users to access the Internet (89.4%) as compared to other mobile devices like personal computers or laptops (36.3%), tablet (18.0%) while access through Smart TV and TV streaming box was reported at 6.7% and 5.6%, respectively. Kemp (2012) stated that almost 90% of Malaysian Internet users have registered social accounts. The Internet Users Survey 2017 also stated that there is a proliferation of social media usage due to the user friendliness of social media sites and applications. The same report claimed that of the 21.9 million social media users in Malaysia, 97.3% owned a Facebook account, while Instagram account ownership was reported at 56.1% and YouTube at 45.3%. The study also showed that men (57.4%) outnumbered women (42.6%) and the greatest percentage of users were within the age group of 20–34. Thus, owing to the affordability, speed, and convenience of the Internet, youth addiction towards social media is found to be alarmingly high, leading them to spend most of their time in the virtual reality. Sadly, this spike in social media usage has triggered the risks of internet abuse such as cyberbullying and cyber harassment. Cyberbullying is defined as a perceived act or decision on the part of another individual that arouses singular or multiple feelings of victimisation, embarrassment or harassment (O’Dea & Campbell, 2012). A recent study found that 3 in 10 Malaysian youths have been victims of online violence or bullying (UNICEF Malaysia, 2019). Another study found that participants from the urban areas were prone to indulge in internet violence as compared to the rural areas in Malaysia (Waheed, 2019). The increased rate of internet aggression and bullying has become a major public health concern as the rise of mental and behavioural problems among youths is observed (Bashir & Bhat, 2016).

Studies have shown that the effects of cyberbullying on victims result not only in emotional anguish, but also contribute to their vulnerable psychological distress, thus leading to the growth of mental depression, social anxiety, lower self-esteem, suicide, etc. (Nicole, 2007; Aricak, 2011; Bashir & Bhat, 2016). Additionally, research has also shown that being a victim of cyberbullying can negatively impact the physical, social, and cognitive functioning, development, and well-being (Cénat et al., 2014) of the youth which can hamper their personality in adulthood.

Cyber victimisation and cyberbullying can take place in two forms: electronic bullying and electronic verbal bullying (Aricak, 2011). Electronic bullying results from technical issues such as acquiring passwords or hacking into websites and is intended to cause harm and damage to others. This form of bullying contributes to electronic verbal bullying activities that involves acts such as humiliating, or insulting others through the Internet (Aricak, 2011). Subsequently, aversive peer experience occurs when a victim encounters negative treatment from their peers on social networking sites (SNSs) that result in acts representing cyberbullying and cyber victimisation (Notar, Padgett, & Roden, 2013). This form of experience on a regular basis can lead to a vulnerable mental health and declining comprehension of positive orientation in life (Caprara, Steca, Alessandri, Abela, & McWhinnie, 2010). Positive Orientation or in short (PO) was coined by Caprara et al. (2010) and speaks of the evaluation of oneself, one’s life and one’s future and how all these three elements share a common mode of viewing life experiences. These life experiences are termed as “Positive Orientation”. The concept of positive orientation can be understood as the core essence of life satisfaction, self-esteem and optimism (Caprara et al., 2010) and this

understanding is significantly related to an individual's optimal functioning, physical or mental health, happiness and social relationships (Petrovi, 2010). According to Caprara, Vecchione, Capanna, and Mebane (2009), the concepts of life satisfaction, self-esteem and optimism have a solemn impact on a person's personal feelings and actions as these concepts shape the current and predisposing future experience of the person. Thus, it can be agreed that technology's unprecedented ways for interaction has led many individuals especially the youth to choose and use digital technologies inappropriately in their efforts to harass, extort, intimidate, threaten, and intentionally exclude one another (Perry, 2015). The current study aims to provide insights for stakeholders such as researchers, parents and practitioners to develop potential interventions or prevention strategies that will reduce the occurrence of such behaviour amongst the youth.

The main objective of this research is to find out whether positive orientation influences students who have experienced aversive peer experience on social media platforms. The study also investigates the link between positive orientation and aversive peer experience on SNSs. Previous scholars have found self-esteem, life satisfaction and optimism to have a significant relationship with cyberbullying. However, very little is known about this in Malaysia as well as on the existence of relationships between the related variables. The current study seeks to identify the predictors for positive orientation in a Malaysian setting and to find out whether or not there are significant gender differences in positive orientation and aversive peer experience. The study also aims to explore the positive orientation effect on aversive peer experiences such as cyber aggression and cyber victimisation among Malaysian adolescents.

Bullying in the virtual world

Traditionally bullying in the physical world has been a prevalent form of aggression that usually includes name-calling or humiliating a person in public (Alim, 2016). Bullying in the virtual world, being both pervasive and persistent, can be in many forms like harassment (sending offensive messages), sexting (getting someone to share pictures or videos), flaming (online fights), cyberstalking (stalking people through their information online), impersonation (hacking into a person's account) and trickery (tricking someone to reveal their personal information (Willard, 2007). Bullying in the virtual world occurs within a split second without being bound by any space and time constraint, while bullying in the physical world happens in the form of overt aggression (Kowalski & Limber, 2007). In this case, the medium used to harm the victim becomes the marked difference between the two. Many of the social interactions taking place in virtual spaces are available everywhere through SNSs and this virtuality reduces the need for traditional face-to-face interactions that are confined to real-life physical places (Kirik, Arslan, Çetinkaya & Gul, 2015). Kowalski and Limber (2007) found that the most common medium used in cyberbullying was instant messaging, that affected 66.7% of their sample participants while other mediums, such as chatrooms and email, at 24.7% and 24.2%, respectively. In the physical world, bullying takes more time and effort, and involves lesser or limited target audience and bystanders. In contrast, in the virtual world with the usage of electronic media, the potential to reach a larger targeted audience increases rapidly (Sticca, 2013).

Perpetrators in cyberbullying

In the world of the internet, things can escalate quickly and sometimes too fast and beyond the control of both the perpetrator and the victim especially when the content posted is viewed and shared by other users. The fact that internet is available everywhere and people are connected to each other through SNSs can cause irreversible harm to the victim (Chen, 2017). In most cases, individuals commit cyberbullying because they perceive it as a way of redeeming their self-worth and thus redirect their stress and frustration that is often brought on by the harsh reality of life such as unrealistic expectations and pressure from parents, teachers and peers, family problems, or even poor academic performance in school (Perry, 2015). This characteristic of cyberbullying is enhanced through the online advantage of hidden perpetrator identity which enables the presence of anonymity between the victim and the bully. In such cases, the perpetrator believes that their hidden identity frees them from the traditional constraints of pressure, morality, conscience and ethics that are often expected by the society (Notar et al., 2013). In addition, Poland (2010) contended that the anonymous nature of online bullying may prompt other students who are not bullies in real life to become a cyberbully as well, since it presents an advantage of harming without the need for any physical interaction and little planning as well as lower chances of being caught (Englander & Muldowne, 2007). The feeling is described as “lesser remorse over their act” because they are not able to feel or witness the harm they inflict directly or indirectly on the victim. To add on, the perpetrator chooses to strike a victim, as they believe that their real identity would not be identified and it wouldn’t affect their daily life (Donegan, 2012). This safe hidden position allows perpetrators to exhibit multiple bullying roles and experiment on different victims without having to fear the negative remarks or consequences that might occur in contrast to a face-to-face encounter which is the traditional way of bullying (Lenhart, Madden & Hitlin, 2005). In most cyberbullying cases, the perpetrators can continue finding new victims because their real identity remains hidden with little to no trail or evidence to locate them because they can easily create a new identity for themselves (Essays UK, 2013; Notar et al., 2013).

Victims in cyberbullying

The victim in both forms of bullying is deeply affected physically, emotionally and psychologically. Sakellariou, Carroll and Houghton (2012), found that 45% of their male survey participants claimed that being cyberbullied was just as distressing, or more distressing than, traditional forms of bullying.

Most often, the victim’s position is vulnerable due to the non-altruistic actions of the bystander. According to Salmivalli, Lagerspetz, Jörkqvist, Österman, and Kaukiainen (1996), there are four main types of bystanders: assistant of the bully, reinforcer of the bully, defender of the victim and, passive onlooker. The actively targeted bystander subsequently becomes the focus of harm (Slonje, Smith, & Frisen, 2012). In their research, Slonje et al. (2012), investigated the harm of cyberbullying and found that 72% of their sample did not take part in distributing the perpetrator’s content or material to others, 9% forwarded the content to their friends and 6% forwarded the content to the victim with the intention to harm or bully.

These victims are left with lifelong psychological scars that inflict and affect their daily life experiences. According to Raskauskas and Stoltz (2007), young people such as students who have experienced cyberbullying reported feeling sad or depressed and wanting to avoid going to school. Several researches found out that prolonged exposure to being cyberbullied, cyber victimised or bullied in the traditional way are directly linked to higher rates of psychological issues such as social anxiety (Juvonen & Gross, 2008; Fredstrom, Adams, & Gilman, 2011; Kowalski & Limber,

2012; Campbell, Spears, Slee, Butler, & Kift, 2012). Social anxiety refers to the fear of facing a social situation or scrutiny by others (Reid & Reid, 2007). These victims of social anxiety are often unable to perform their daily routines and become an easy target for bullies (Kowalski & Limber, 2007).

A more severe psychological impact of cyberbullying is depression. Numerous researchers have found that victims of cyberbullying exhibit symptoms of social anxiety and depression. According to Dooley, Pyżalski, and Cross (2009), individuals who are exposed to cyberbullying for a prolonged period of time may face a higher risk of developing negative psychological issues. Hinduja and Patchin (2010) claimed that depression resulting from cyberbullying often lead to severe mental health problems that may result in self-inflicted injuries and suicidal thoughts. Similarly, Van der Wal, de Wit, and Hirasing (2003) stated that cyberbullying increases the chances of developing suicidal intention by approximately 20%. Suicide is often seen as the breaking point for the victims to end the intense negative feelings and emotions that are overwhelming them. Some may resort to other remedies. For example, Mitchell, Ybarra, & Finkelhor (2007) found that victims of cyberbullying often engage in substance abuse. Also, Harding (2013) found that both the perpetrators and the victim of cyberbullying have higher rates of consuming alcohol, cigarettes and marijuana as compared to those not affected. Other victims may retaliate and redirect their frustration and aggression towards other victims (Perry, 2015). A research by Australian Human Rights Commission (2012) suggests that substance abuse, resulting from cyberbullying, may lead to further involvement in cyberbullying. Thus, there is a need to intervene and identify solutions to solve this problem. The current study seeks to identify predictors for positive orientation and to determine the significant relationships between positive orientation and aversive peer experience.

Positive orientation (PO) and its predictors

Positive orientation has been described as representing the three inter-related elements in interpersonal relationship, namely life satisfaction, self-esteem and optimism. These three components of positive orientation affect people's social relationships, beliefs, perception of future, physical and mental health (Petrovi, 2010). Sumner (1996) stated that life satisfaction is a positive evaluation of the conditions of life and is a judgment that, at least on balance, measures up favourably against the standards or expectations of people in their life. Diener (1984) further explained that life satisfaction is an overall assessment of feelings and attitudes about one's life at a particular point in time ranging from negative to positive. Beutell (2006) highlighted the importance of life satisfaction in people's physical and mental health in which it affects the longevity and other outcomes in life that are often considered positive in nature. Likewise, Chow (2009) implied that a higher level of satisfaction will lead to a better physical health condition in the future.

Positive orientation is also associated with self-esteem. Self-esteem is the overall evaluation or perception about oneself (Harter, 1999). Self-esteem is significantly higher in younger children but will gradually decline as they grow into adolescent, when body image or other factors related to puberty, start to emerge and trigger expectations to fit in (Robins & Trzesniewski, 2005; Trzesniewski, Donnellan, & Robins, 2003). Self-esteem can be separated into two major categories: high and low self-esteem. Individuals who have higher self-esteem feel happier, more satisfied than people with lower self-esteem and usually maintain a healthier mental well-being by focusing on positive thoughts, even when they are experiencing unfavourable events (Ishii, Sugimoto & Katayama, 2012). According to Hunter, Linn & Harris (1982), the elderly who have

lower self-esteem have significantly higher scores on depression, anxiety, somatisation and had poorer health, more pain and higher disability.

Optimism is another key feature in describing positive orientation (Srivastava & Angelo, 2009; Carver & Scheier, 2002). Several researchers have documented the benefits of optimism across decades. According to Sunita & Mishra (2013), physical health, psychological well-being and social relationships are positively correlated with optimism. Other studies have confirmed that there is a positive relationship between optimism and coping strategies, such as distancing oneself from negative stressors, looking for social support, formulating positive emotions, performing positive re-assessment and focusing on the positive aspects during a stressful situation (Conversano et al., 2010; Scheier, Weintraub & Carver, 1986; Nes & Segerstrom, 2006).

Though substantial research has looked at the effects of positive orientation on people's life, very limited approaches have been employed to study the impact of positive orientation on aversive experience and SNSs. In this regard, Mirucka, Bielecka and Kisielewska (2016) found that a majority of their sample aged 50 to 90 years old scored high in positive orientation and tended to feel younger than their actual age. Another similar research found that participants with positive orientation tended to live longer and have long-standing impact on prognosis in old age (Pitkalaa, Laakkonena, Strandberga & Tilvisa, 2004).

METHODOLOGY

The current study employed a quantitative method that specifies two or more quantitative variables from the same group of participants and determines the relationship or co-variation between the two or more variables. Correlational analysis was conducted to identify the relationship among the selected variables. A quantitative correlational design is often used to identify the relationship within multiple measurable variables with the intention to explain, predict or control a phenomenon (Leedy, 1993). This technique also serves as the most effective method for a research study because of its non-obstructive manner of obtaining data and proving significant relationship/s between the study variables (Creswell, 2008).

The current study's sample consisted of 338 participants from both public and private Malaysian universities (186 males and 152 females) and were selected using the convenient sampling technique. An online questionnaire (Google Docs) was distributed through social media platforms like Facebook. The questionnaires were also administered physically in a few selected universities. Participants also completed an information consent form prior to answering the questionnaire.

Several instruments were used to gather sufficient data which addressed the variables used in this study: positive orientation and aversive peer experience on SNSs. Positive Orientation or Positivity Scale (PS) was used to measure participants' optimism towards their future. PS is a 15-item questionnaire consisting of 5-point Likert-type scale questions with responses ranging from *Always agree* to *Never agree*. Further, Satisfaction with Life Scale (SWLS) was used to measure the global cognitive judgments of one's life satisfaction. Participants indicate how much they agree or disagree with each of the 5 items using a 7-point scale with responses that range from *Strongly agree* to *Strongly disagree*. Rosenberg Self-Esteem Scale was also utilized to measure participants' self-worth by measuring both their positive and negative feelings. The scale is believed to be uni-dimensional and all items are answered using a 4-point Likert scale format with responses ranging from *Strongly agree* to *Strongly disagree*. Social Networking-Peer Experiences Questionnaire (C-

PEQ) was also used to assess participants’ aversive peer experiences on SNSs that includes 18 total items on two subscales measuring cyber aggression and cyber victimisation.

RESULTS

The Statistical Package for the Social Science (SPSS) was used to perform statistical analysis for the raw data collected from the participants. The demographic information of the participants were also analysed using descriptive statistics. Pearson correlation was used to measure the relationship between the selected variables while multiple regression analysis was conducted to predict the Positive Orientation effects on aversive peer experience on SNSs. Further, independent t-test was also used to test the hypothesis of gender differences between male and female, and aversive peer experience on SNSs. Table 1 shows the descriptive analysis of all participants (N=338) with 186 males (55%) and 152 females (45%).

Table 1. Descriptive analysis of total participants

Normality (N=338)

	Skewness	Kurtosis
Cyber Aggression	1.36	2.25
Cyber Victimization	1.26	1.83
Rosenberg Self-esteem Scale	.148	1.24
Satisfaction in Life Scale	-.38	-.09
Positivity Scale	-.14	-.80

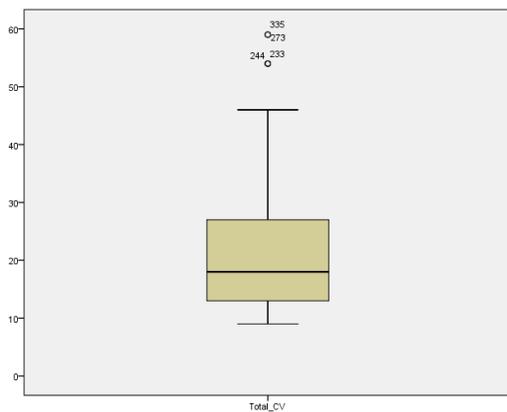


Figure 1. Boxplot of cyber victimisation

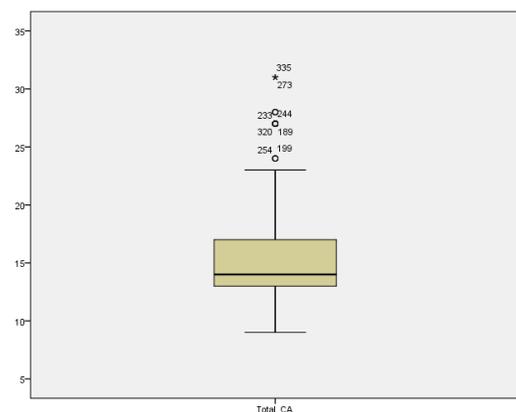


Figure 2. Boxplot of cyber aggression

Positive orientation effect on aversive peer experiences such as cyber aggression and cyber victimisation

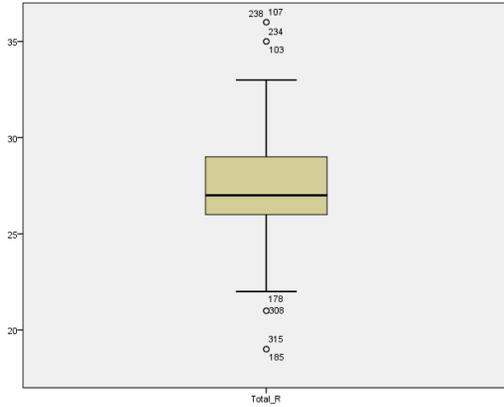


Figure 3. Boxplot of RSES

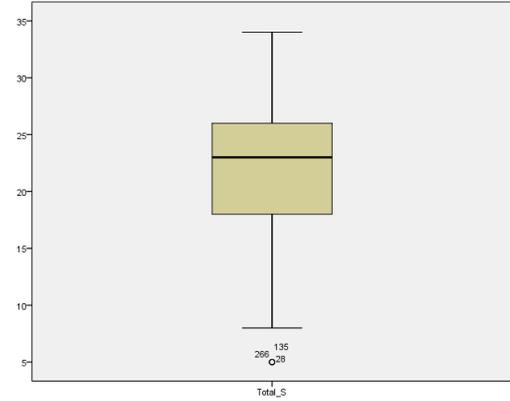


Figure 4. Boxplot for SWLS

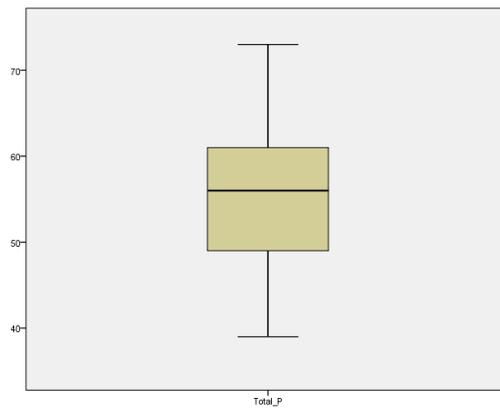


Figure 5. Boxplot of PS

Table 1 shows that the skewness and kurtosis for cyber victimisation, cyber aggression, Rosenberg self-esteem scale (RSES), satisfaction with life scale (SWLS) and positivity scale (PS) are within the normal range as the values are all between -3 and 3 . In Figure 2, the boxplot of cyber aggression shows an extreme outlier and it was removed from the data pool in order not to affect the results. In Figures 1, 3, 4, and 5, there is no extreme outlier found in the data.

Table 2. Frequency for gender of participants

Variable		Frequency	Percentage (%)
Gender	Male	186	55.0
	Female	152	45.0
	Total	338	100.0

Table 2 shows that the total number of participants (N=338) consisted of 186 males (55%) and 152 females (45%). Although the number of male participants is slightly higher than the female participants, there are no significant differences between both genders in data.

Table 3. Correlation between cyber aggression and cyber victimization

		Cyber Aggression	Cyber Victimization
Rosenberg	Pearson Correlation	-.130	-.096
Self-esteem Scale (RSES)	Sig. (2-tailed)	.017*	.077
Satisfaction with life scale (SWLS)	Pearson Correlation	-.093	-.096
	Sig. (2-tailed)	.088	.080
Positivity Scale (PS)	Pearson Correlation	-.164	-.129
	Sig. (2-tailed)	.003*	.018*

* $P < 0.05$

Table 3 displays the correlation between cyber aggression and cyber victimisation using different scales (RSES, SWLS and PS) which indicates a negative relationship between cyber aggression and cyber victimisation. There is a significant negative relationship between cyber aggression and RSES [$r(336) = -.17, p < 0.05$], and between cyber aggression and PS [$r(336) = -.164, p < 0.05$]. However, there is no significant relationship between cyber aggression and SWLS. Results in Table 3 also indicate no significant relationship between cyber victimisation and RSES, and no significant relationship between cyber victimisation and SWLS. However, it indicates a significant negative relationship between cyber victimisation and PS [$r(336) = -.129, p < 0.05$].

Further, Table 4 presents the results of multiple regression analysis of three predictor variables (self-esteem, life satisfaction, optimism) on cyber aggression. The results indicate that variables self-esteem [$\beta(-.11), t = -2.01, p < 0.05$], and optimism [$\beta(-.135), t = -2.138, p < 0.05$] are significant predictors on cyber aggression. In contrast, life satisfaction is not a significant predictor variable [$\beta(-.35), t = -.381, p > .05$] on cyber aggression.

Table 4. Multiple regression analysis of cyber aggression* $P < 0.05$

	Standardized Coefficient	T	Sig
	Beta		
Self-esteem	-.109	-2.006	.046*
Life Satisfaction	-.024	-.381	.703
Optimism	-.135	-2.138	.033*

Table 5. Multiple regression analysis of cyber victimisation

	Standardized Coefficient	t	Sig
	Beta		
Self-esteem	-.082	-1.487	.138
Life Satisfaction	-.048	-.766	.444
Optimism	-.092	-1.454	.147

Table 5 presents the multiple regression analysis results of three predictor variables (self-esteem, life satisfaction, optimism) on cyber victimisation. The results imply a non-significant

predictor variable of self-esteem [β (-.082, t = 1.4987, p >0.05)], life satisfaction [β (-.048), t = -.766, p >.05)] and optimism [β (-.092), t = -1.454, p > 0.05)] on cyber victimisation. In other words, these three variables have no effect on cyber victimisation.

Table 6. Independent t-test between gender and aversive peer experience

	Gender	N	M	SD	Sig. (2 tailed)
Cyber Aggression	Male	186	15.35	4.01	0.666
	Female	151	15.16	4.04	
Cyber Victimisation	Male	186	22.17	9.55	0.001*
	Female	151	18.70	8.90	

* P <0.05

An independent T-test was conducted to compare the difference between cyber aggression and cyber victimisation for gender. The results show that there is no significant difference in cyber aggression for males (M = 15.35, SD = 4.01) and females (M =15.16, SD = 4.04) with t (334) = .432, p > 0.05. Conversely, there is a significant difference in cyber victimisation among males (M =22.17, SD 9.55) and females (M = 18.7, SD = 8.9) with t (334) = 3.43, p <0.01. This implies that the males participants reported more incidences of being cyber victimised in comparison to the females.

FINDINGS AND DISCUSSION

The purpose of this study is to examine the relationship between positive orientation and aversive peer experience on social networking sites among university students in Malaysia. Cyberbullying and cyber victimisation are the two inseparable phenomena of social media usage which can exact disastrous impacts on one's overall well-being and mental health.

Self-esteem, cyber aggression and cyber victimisation

Numerous research which focused on self-esteem and cyberbullying found that individuals who experienced cyberbullying tend to have lower self-esteem and other related negative effects in life (O'Brien & Moules, 2013; Chang et al., 2013; Cénat et al., 2014).

The current study confirmed that students who experienced cyber aggression showed significantly lower self-esteem, in comparison to those who experienced cyber victimisation. However, the results contradict a previous study by Patchin & Hinduja (2010) that claimed students who experience cyberbullying as a victim or perpetrator showed lower self-esteem in comparison to students who never experienced any form of cyberbullying. Some studies have found that individuals who experience cyber victimisation and develop lower self-esteem will be severely impacted in terms of psychological well-being and adjusting in life and even an increased tendency to commit suicide (Palermi, Servidio, Bartolo, & Costabile, 2017; Van der Wal et al., 2003; Van Geel, Vedder, & Tanilon, 2014). Such research confirmed the tremendous negative impact cyberbullying can have on one's self-esteem.

The current study found the correlation between self-esteem and cyberbullying significantly established, thus indicating that cyberbullying has a significant relationship with self-esteem in positive orientation. As such, being a victim or perpetrator of cyberbullying might result in negative impacts which can lead to severe consequences in their lives. Concurrently, although

the results of the current study indicate a significant relationship between cyber aggression, cyber victimisation, self-esteem and positivity, it is evident that there is no form of relationship between life satisfaction and the measured variables. This is discussed next.

Optimism, cyber aggression and cyber victimisation

The findings of the current research suggest that there is no proven relationship between cyber aggression, victimisation and life satisfaction. Thus, the mean of the two measured variables indicates cyberbullying as a negative experience for life satisfaction. This corroborates with Waisglass (2017) who in his study, confirmed a negative correlation between life satisfaction and cyber bullying. The impact of life dissatisfaction increased the experience of cyber aggression and victimisation. Leung, Wong & Farver (2018) also found that cyber victimisation as well as cyber aggression were both negatively correlated with life satisfaction. Another study also revealed similar findings whereby victimisation among peers affected youth perception towards life satisfaction (Varela, Guzman & Alfaro, 2018). The present study confirms that cyber aggression increases the likelihood of reduced life satisfaction among students.

This study also found the variable optimism as one of the strongest predictors for aversive peer experience on SNSs. Optimism was found to be significantly correlated with both cyber aggression and cyber victimisation. This corroborates with Snyman & Jennifer's work (2015) that found cyberbullying is negatively correlated with stress and job satisfaction and optimism is the best protective factor against the negative impacts of cyberbullying. Waisglass (2017) in his study also found a strong negative correlation between cyberbullying and optimism. Thus the current study contends that optimism is one of the best ways to cope with cyberbullying and this variable can serve as the alternative intervention or coping strategy for cyberbullying.

Gender differences on aversive peer experience

Aversive experiences on social media are very likely to exact damage on victims, and according to Brown, Demaray & Second (2014), cyberbullying can negatively affect one's physical, social, and cognitive functioning, development, and well-being. Multiple researches and studies across decades have found that aversive experiences on SNSs can affect an individual's self-esteem and cause psychological problems such as social anxiety, social stress depression and more which may cause affect their daily life and future. For example, Juvonen and Gross (2008) found that victims of cyberbullying and traditional school bullying have higher rates of social anxiety compared to individuals who did not experience any. Fredstrom et al. (2011) found symptoms of a lower level of self-esteem and higher level of social stress as well as anxiety and depression amongst victims of online bullying incidents. A correlational study done by Robin & Susan (2012), found that both the bully and the victim of cyberbullying and cyber victimisation showed significant signs of depression, anxiety, self-esteem, self-reported health problems, school absenteeism, skipping school because of illness, and grade issues. Victims overwhelmed by negative feelings such as hopelessness or fear for a prolonged period of time might opt to end everything as attested to an estimated 4500 students who have committed suicide due to cyberbullying (Murray, 2012).

The findings of the current study indicate a significant gender difference for cyber victimisation, but not cyber aggression. Further, results show that males experienced more incidences of cyber victimisation as compared to females. Numerous researches also present similar gender differences with regard to aversive peer experiences (Li, 2006; Sharma, Kishore, Sharma, & Duggal 2017). These studies found that males are more likely to be the victims of both traditional bullying and cyberbullying. In contrast, Craig et al., (2009) showed that females

reported higher levels of cyber victimisation as compared to males. Similarly, Brzezinski (2016) claimed that females tend to display indirect or relational aggression and use media such as SNSs to express their aggression. Similar findings have been found in other studies (Marcum, Higgins, Freiburger, & Ricketts, 2012; Heiman & Olenik-Shemesh, 2015). On the other hand, a few other studies found no significant differences between males and females in cyber aggression and cyber victimisation (Beckman, Hagquist, & Hellström., 2013; Brzezinski, 2016).

RESEARCH IMPLICATIONS

Cyberbullying is a very complex phenomenon which needs systematic observation and evaluation to formulate a comprehensive ‘coping strategy package’ involving numerous disciplines and perspectives. There is a strong need to investigate possible new alternative interventions to cope with aversive peer experiences and to elevate the awareness of the society on the impacts of cyberbullying. Findings from this research can help develop potential coping mechanisms for aversive peer experience on SNSs in different settings such as schools or workplace. According to Kowalski and Limber (2007), current cyberbullying intervention methods should not be considered as a one-size-fit-for-all solution as the digital world continues to evolve and obsolete current prevention methods rapidly. Thus, future research will need to progressively find new possible intervention and prevention mechanisms to address cyber bullying and cyber victimisation.

Adult supervision

Adult supervision has been discussed in various research fields for its gradual impacts on youth behaviour. As cyber bullying can come from various sources, the supervision of young people’s internet consumption should be strengthened with the help of adults at home and in the society. There is an ongoing rationale that makes cyberbullying conceptually distinct from other forms of traditional bullying which is the lack of supervision in electronic media (Patchin & Hinduja, 2006). In real life, when incidents like bullying cases or fights occur, someone for instance, school instructor or administrator will intervene or prevent it from happening (Holt & Keyes, 2004). But in the virtual world, there is no clear individual or person in charge who serves to regulate this deviant behaviour from taking place (Tokunaga, 2010). Supervision from any parties is often challenging as a victim could be targeted anytime and anywhere due to the ease of access of SNSs from phones, laptops that almost everyone owns nowadays. According to Juvonen and Gross (2008) who conducted a survey on 1,454 students, an alarming 90% of students choose not to inform adults regarding any cyberbullying that has occurred. Another study conducted by Hinduja and Patchin (2007) similarly found that 56% of the victims will share incidents of cyberbullying with their friends but fewer than 9% of the victims will report to school instructors or any adults. In contrast, a study conducted by Li (2006) found that most students (64%) believed that school instructors can help stopping cyberbullying if they report it in.

Although no one person is solely responsible for supervising young people’s usage of electronic media, individuals such as parents and school instructors should take up this responsibility. According to Juvonen and Gross (2008), the issue of cyberbullying should be addressed collectively by parents and teachers. In most cases, it is believed that cyberbullying initially begins in school and eventually reaches home (Cassidy, Jackson, & Brown, 2009). Apart from school instructors, parents should supervise their children’s screen time and observe any peculiar behaviour. Researches have suggested that low levels of parental involvement in

children's internet usage is highly related to higher incidences of a young person becoming a perpetrator or victim of cyberbullying (Vandebosch & Van Cleemput, 2008).

Power imbalance to empowerment

There is a different physical strength between the bully and the victim in traditional bullying. But in cyberbullying, the bully does not have to be stronger physically; they just need the intention to carry it out. Studies have shown that in real life, these victims of cyberbullying are perceived by the perpetrator as weaker, equally strong or sometimes stronger than themselves (Vandebosch & Van Cleemput, 2008). As physical strength is not a factor included in the picture, a perpetrator simply wants to vent his/her stress and frustration towards someone by means of online media regardless of their status as the weaker or stronger person.

For the victim, knowing the anonymous perpetrator, having limited physical strength might lead to self-empowerment. Although the perpetrator remains securely hidden behind their anonymity leaving the victims experiencing intense negative emotions such as frustration, anger, worry, fear and hopelessness, the victim needs to empower himself/herself to fight back against any form of bullying (Akbaba & Eroğlu, 2013; Vandebosch & Van Cleemput, 2008).

Legal enforcement

According to Malaysia's Computer Crimes Act 1997, Section Three, unauthorised access to computer materials can be fined not more than RM50,000 or a prison term of not more than five years if found convicted. In Section Four, it is stated that unauthorised access to computer materials with the intent to commit or facilitate an offence is liable to a fine of not more than RM150,000 or a prison term of not more than 10 years, if found convicted.

Moreover, Communication and Multimedia Act (1998), Section 233, states that any improper use of network facilities or network services that solicits or initiates any comment, request, suggestion or other communication which is obscene, indecent, false, menacing or offensive in character with intent to annoy, abuse, threaten or harass another person; or initiates a communication using any applications service, whether continuously, repeatedly or otherwise, during which communication may or may not ensue, with or without disclosing his identity and with intent to annoy, abuse, threaten or harass any person at any number or electronic address, can face sentences of a fine not more than RM50,000 and a prison term not more than one year. In 2017, the Ministry Education of Malaysia announced that a new law was being drafted to tackle the issue of cyberbullying, based on systems used by other countries. While the legal framework and policy have been established and continue to be enhanced, incidences of cyberbullying continue to be rise alarmingly in Malaysia and accordingly, higher aversive experiences on SNSs for youths. The present findings could further support in strengthening the legal framework and enforcement for cyberbullying.

Involvement of parents and school authorities

While legislation and school policies are available to prevent and reduce bullying (Perry, 2015), without the direct involvement of parents and school instructors, the effort is meaningless. In school, teachers, school principals or administrators play the important role of providing sufficient awareness and knowledge regarding bullying, stressing on proper ethical conduct and preventing students from indulging in cyberbullying (Aune, 2009). Another suggestion from Willard (2007) recommended that schools provide materials to increase awareness on cyberbullying to empower students and help school enforcement to respond to cyberbullying. Organizing campaigns and events to boost awareness on traditional bullying and cyberbullying is essential in equipping students with the right knowledge and skills to handle acts of bullying in the cyberspace (Perry, 2015).

There is limited Internet supervision especially outside of chatrooms. Adults are rarely present to intervene when cyber victimisation occurs, as suggested by the reported discrepancies between children's and parents' online monitoring activities (Wang, Bianchi, & Raley, 2005). In addition, even if parents are vigilant in monitoring their children's online activities, only 21% of cyber victims report being victimized in public domains such as online chatrooms, which allow for some degree of supervision. The remainder of online cyber victimisation occurs in less supervised platforms, including text messages, e-mails, and online bulletin boards (Patchin & Hinduja, 2006).

An effective way of mitigating the risks of cyberbullying was recommended by Mesch (2009) which is to incorporate an evaluation method which involves both adults and children discussing the usage of internet and developing rules or common ground whereby both parties spend time together while accessing internet content. This method has been found to decrease the risk of cyber victimisation among adolescents.

Based on the multiple explanative and explorative methods discussed in addressing aversive peer experiences in cyberbullying and cyber victimisation, the current research suggests that family-focused and community-based interventions should include systematic assessments of problems related to social media usage. Such an intervention is adopted from Walsh (2007) and emphasizes on the core principles and values of family as well as community resilient-oriented approach for recovery from tragedies such as aversive peer experiences. This approach significantly underlines the family function and community support in helping youths recover from traumatic experiences. The family-focused and community-based interventions are generally related to methods provided by the members of the family as well as the attention given by the society to the youths. Figure 6 describes the dual reciprocal determinism of the interventions involved in dealing with aversive peer experiences in cyberbullying and cyber victimisation.

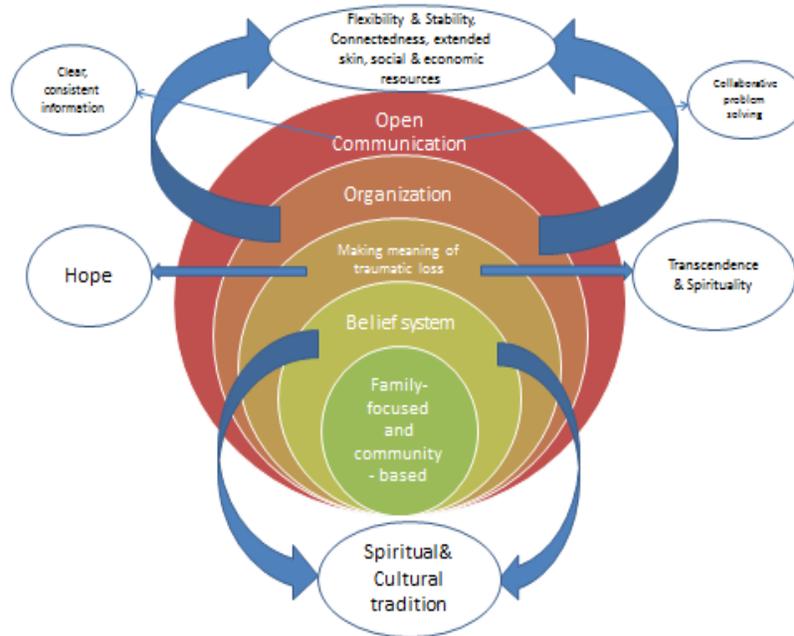


Figure 6. A multi-systemic intervention of aversive peer experiences

CONCLUSION

In conclusion, aversive peer experiences on SNSs such as cyberbullying and cyber victimisation can affect and scars the victim mentally, emotionally, and even physically. Numerous researches found the relationship and similarities between traditional forms of bullying and cyberbullying, which in most cases are experienced by victims. Some other research has also found that the lack of supervision and awareness on how to prevent cyberbullying and cyber victimisation on the part of parents and school instructors may also contribute indirectly to the growth of cyberbullying incidences. The victims of cyberbullying, in their effort to escape from the overwhelming negative effects often find solace in substance abuse such as consuming alcohol, smoking, marijuana etc., and at times, turn into cyberbullies themselves, thus continuing the destructive cycle of cyberbullying by directing their anger and frustration towards other innocent victims.

To fully comprehend the current online usage problems and understand online bullying, the current research investigated the effects of positive orientation on aversive peer experiences in cyberbullying and cyber victimisation. The study revealed the significance of variables such as positive orientation of self-esteem and optimism, but not life satisfaction amongst youths in determining the impacts of cyberbullying and cyber victimisation. Further, the link between positive orientation and the aversive experience of students on SNSs was established whereby positive orientation was proven significantly effective in determining the outcomes of aversive peer experiences. This corroborates with numerous researches which have shown the impact of positive orientation on decreasing tendency in the rate of suicidal attempts, by practising positive emotions and thoughts and enhancing overall health and life orientation.

The current study highlights the importance of family-focused and community-based interventions in dealing with aversive peer experiences among youths. The suggested interventions could be beneficial in many ways whereby family and community can simultaneously develop

empowerment and enrichment strategies for youngsters to uplift their potential in a more progressive and coherent way. While social media could be one of the leading factors of aversive peer experiences among youths, such social networks and linkages could also provide the same youths with more resilience and self-empowerment in handling negative experiences and outcomes.

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Perception of urban space through the lens of Pokemon Go

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ABSTRACT

Augmented reality games have created a paradigm shift on social patterns and spatial experience, particularly in urban environments. The impact of space experience during gameplay is underpinned by the interrelations between systems and rules in gaming and urban theories. Augmented reality games such as Pokemon Go (PG) have activated the social pattern, pedestrian movement and public engagement in urban space by overlaying the data of augmented space on urban space. Current studies suggested that spatial engagement through the augmented reality can inform alternative design approaches within the public realm. This present study particularly builds on the premise that augmented reality influences the use of dormant space and creates accidental gathering spaces during PG gameplay. Taking Desa Park City, an urban residential area that is activated by PG as a case study, this paper examined the interface of physical space, augmented reality and the users engagement of space. Observations of 33 activated urban spaces are mapped to compare the spatial qualities activated by the augmented space. The findings suggested that the algorithm of PG frames the engagement of users within the urban space, which are linked to the settings of the physical space such as large scale structures, seating, accessibility and level of privacy. The paper argued that the relationship between real, augmented and perceptual space offers alternative user experiences and social patterns in engaging with urban space, contributing potential design strategies to activate otherwise dormant urban spaces and its potential to unify people from different culture group through the global universal perception of space. It provided an alternative method to study the social pattern of urban space based on the algorithm of game, which can be used to observe different types of space and culture interlaced with virtual space.

Keywords: *augmented reality, Pokemon Go, public space*

INTRODUCTION

This study examined the interface of physical space, augmented reality and the engagement of space through user perception in urban public space. It derived its relevance from two related perspectives in 21st century contemporary public space: firstly, the augmented reality and its impact to the use and experience of physical space, and secondly, the augmented reality as alternative perceptions of such spaces with implications toward people-space interaction through design.

Relationship between augmented reality and the built environment

Augmented reality is defined as the synthesised image of physical space with superimposed computer-generated images that enhance the perception of reality (Margeson, 2017). In recent years, the application of augmented reality into real space has been evidenced through the use of city planning games in urban design. For example, *Minecraft* has been used as a participatory tool to communicate with the local community to design public space (Westerberg & Heland, 2015). Augmented reality games have also been used for the restoration of the harbour area in Denmark. Similarly, the local council of Riu region utilised an augmented reality mobile game that can modify the underground system of Riu region to collect data on the desired needs of the local community (Borries et al., 2007).

The invention of augmented reality game, *Mogi* in 2000 had further reduced the gap between gaming and the built environment. It had overlaid augmented reality onto physical space by creating an alternative perception of real space, creating a new social pattern and pedestrian movement in urban space (Borries et al., 2007). The social and spatial impacts of augmented reality games have created awareness of it within architectural research.

Relationship between principles of augmented reality and social behaviour of users

Principles of augmented reality in mobile games impacted the social behaviour of users within the built environment. Firstly, the principle of discoverability is a key aspect that affects the behaviour of players in terms of pedestrian pattern in urban space (Calafiore & Rapp, 2016). Augmented space contains information that can be delivered to anywhere virtually (Manovich, 2006). However, from the phenomenological perspective of the human subject, studies have suggested that physical space might still have the priority as the information of augmented reality is relying on one's visual field. It takes an important role to allow the players to respond playfully while navigating in physical space. Social behaviour of augmented reality game players is also influenced by the principle of persistence – the total availability of all time to play, i.e. the data in augmented space persist even if the players are not using it (Calafiore & Rapp, 2016).

Besides that, mobility has been identified as another principle that affects the perception of space. It used to be the most challenging aspect in augmented reality mobile game as it required the computing data to create context awareness and device heterogeneity (Calafiore & Rapp, 2016). Due to the development of technology, the issue of mobility has been resolved with technology such as Google and Open Street Map which provide detail information on the built environment globally.

Relationship between augmented reality and perception of space in Pokemon Go

Urban planners and designers have spent the last 50 years trying to activate unused public spaces, create walkable cities and encourage sociability through urban design. Anecdotally it seemed that augmented reality games have shed some light towards creating good urban spaces. Current studies showed how it has activated public spaces, increased community interactions and facilitated exploration of urban spaces. In particular, augmented reality game such as *Pokemon Go* (PG) has created a shift in urban experiences.

In 2016 PG was released by Niantic, as a markerless augmented reality game that required a sensor in mobile devices to detect the physical space to combined superimposed virtual image to the physical space. Since the launching of PG, it became one of the top applications that surpassed other social media such as Twitter and Facebook (Kooragayala & Srini, 2016). PG had created a paradigm shift in how the social and environmental contexts of spaces are experienced. Based on recent studies, PG increased the number of pedestrian and social encounters between strangers (Costa, 2017; Margeson, 2018). The interaction between strangers is important for community formation as suggested in Oldenburg's Third Place Theory (Costa, 2017). In the environmental perspective, multiple layers of augmented space can be overlaid on urban space through augmented reality game without eliminating the function of physical space (Margeson, 2018). These layers can activate the urban space through the data from augmented space with the wireless network (Borries et al., 2007; Costa, 2017). Players can also add the data in the augmented space such as owning a gym in PG as a method to create memories and leave trace on the urban space (Buccitelli, 2017). As a result, the players are more engaged in the urban space. Besides that, the perception of the social context of urban space has been altered through the lens of augmented space as the method to perceive ambient information is different than the usual way (Margeson, 2017). Generally, the players rely on the data on augmented space to explore urban space. Eventually, they will move to places that they have never been before to create a new pedestrian pattern (Sheller, & Urry, 2016; Gong, Hassink, & Maus; Costa, 2017). This phenomenon has been observed by Sheller and Urry and named it as "new mobility" paradigm. However, a study of PG on urban space has suggested that the spawn rate is not the priority reason for choosing gathering space for PG players (Costa, 2017). In other words, PG players are not completely reliant on data in augmented space to choose their gathering space. Another study has suggested that the augmented reality game players are more aware of the spatial quality of urban space as their purpose of walking in urban space has changed from leisure walks to hunting Pokemons (Manovich, 2006; Buccitelli, 2017). Based on previous studies, the priority to select a public gathering space for gameplay can be affected by augmented space or the spatial quality of urban space. The identity of both spaces should be well examined, as Rheningold has suggested, where the urban planners should be able to respond to the changes from the activities that emerge from people who use technologies (Borries et al., 2007).

Defining real, augmented and perceptual space

For this paper, the definitions of spatial concepts used are derived largely from the disciplines of architecture and gaming. The notion of real and physical space referred to its architectural definition. Physical space is defined as a continuous, unbounded extension in three directions, three-dimensional volume bounded by real tangible elements. Ching (1979), Von Meiss (1990) and Norberg-Schulz (1980) argued that visual elements are composed to create boundaries of enclosure

that defines space. Hence, physical space is defined by visually real objects in three-dimensional space which our bodies move through.

Deriving from the field of gaming, the augmented reality referred to the space that combines superimposed virtual images to the physical space (Margeson, 2017), The augmented space contains digital data, and this data set can be delivered to anywhere virtually (Manovich, 2006). It is a space where it combines visually real and unreal, where the augmentation of real space affects the perception of space (Schrier, 2006; Cox, 2017; Margeson, 2017).

Perceptual space is related to space that can be perceived, or seen. Such perception is unique and subjective constructed from the perspective of the individual within the space. In other words, the perceptual space relied on one's visual field and was largely the result of a constructive process that generally causes the perceiver to see the world not as it is but in a way that is conditioned by augmented reality.

Research context

The interrelationship between augmented reality, the built environment and user behaviour suggested that it is a premise worth studying as it impacts and provides cues to how urban spaces are activated and perceived by users. The PG phenomena witnessed globally led to an increasing interest in an alternative perspective towards opportunities to reclaim and rethink the design of urban public spaces. Taking this as a point for departure, this study examined how the superimposition of augmented reality of PG onto real physical space impact on the perception of urban public space.

Building from the earlier studies on the influence of augmented reality on the perception of space, this study particularly is built on the premise that augmented reality influences the use of dormant space and creates accidental gathering spaces during PG gameplay and analyses the relationship between the augmented and the physical space. It extended current studies to examine how the augmented reality of PG influences the perception of space, and how it activates potential public spaces which are dormant and accidental. The spatial qualities of physical space are analysed by relating the augmented space and urban theories to determine the priority selection of gathering space. The study extended alternative ideas of public space via the augmented platform as a means to develop 21st century public spaces. When physical space is re-interpreted through mobile technology, augmented reality has the propensity to activate spaces and make it lively through its mobility and social patterns. The informal gathering space has been reclaimed through this spatial interface. These reclaimed spaces have spatial qualities synonymous to urban theories and principles.

LITERATURE REVIEW

Situating the study into the current scholarship, the literature review is organised into three sections: firstly, the augmented reality principles and algorithm of the mobile gameplay; secondly, the impact of PG to perceptions of urban public space, and thirdly, its influence towards the discussion on the design of urban public space.

Augmented reality of Pokemon Go

The augmented space of the game consisted of three things – *Pokemon*, *Pokestops* and *Gyms*. The game objective was to collect the in-game item and to conquer the gyms at specific hotspots that

are preprogrammed in urban space. To catch *Pokemon*, players are restricted to the movement speed of 30km/hr to avoid players driving while playing (Margeson, 2017). *Pokestops* are marked on the map with blue icons that only appears on the map if the user walked within a radius of 1 to 1.5km. To interact with *Pokestops*, the users have to be at least 150 meters from it. Therefore, it required the users to walk around to play the game. Different types of *Pokemon* will appear based on the urban environment. For example, water-type *Pokemon* will summon in urban space that has a lake or river. Thus, players have to explore the environment for specific types of *Pokemon* (Margeson, 2017).

Originally, a *PokeStop* is created by transporting the “portal” from another game created by Niantic, the *Ingress* in 2016. The players are required to visit a specific location consistently for months to create a portal for PG. After the drastic increase of PG players, the business communities are taking the opportunity to involve in the trend to attract users. As a result, Niantic has provided an opportunity to create a sponsored *Pokestop* such as McDonald’s that has created 3000 *Pokestops* in Japan which likely contributed to the foot traffic in McDonald’s to catch *Pokemon* in 2016.

Despite increased foot traffic in public areas, PG has caused troubles to neighbourhoods. Niantic had accepted conferences call with the City Attorney to address the issue of overwhelming users as there are too many *PokeStops* in a given area as at July 2017 (Abbord, 2016). Places such as homes, cemeteries and museums that have been set up as *Pokestop* caused inconvenience to non-players. Therefore, Niantic has decided to change the base map from Google Maps data to OpenStreetMap data in 2017. The comparison of these maps is shown in Figure 1.

OpenStreetMap (OSM) is a world-wide collaborative project aiming at providing free map data to the public (Groux, 2018). The public can contribute by sharing their data such as uploading their GPS traces to improve the map. The benefits of using OSM is that less populated locations are more detail in OSM than Google Map as the map is edited by the community (OSMF, 2018). OpenStreetMap Foundation collaborated with Niantic to adjust the algorithm of the game to provide *Pokestop* at a potential area so that the players will have a better experience overall.

On the positive side, the transformation of OSM has allowed the users to decide the location of *Pokestops* as long as they follow the given guidelines by OSM. Players are forbidden to map historical or temporary events and features. It was also advisable not to map the local legislation. As a result, the studies have observed that PG players were adding more parks and deleting schools in an attempt to follow the good practice (OSMF, 2018).

Negatively, the transformation has changed many lively PG areas into barren wastelands. Many *Pokestops* are found out missing after the updates causing loss to a huge number of players. Locations of *Pokestops* are now completely reliant on players, while Niantic is just focusing on designing the game (Groux, 2018).

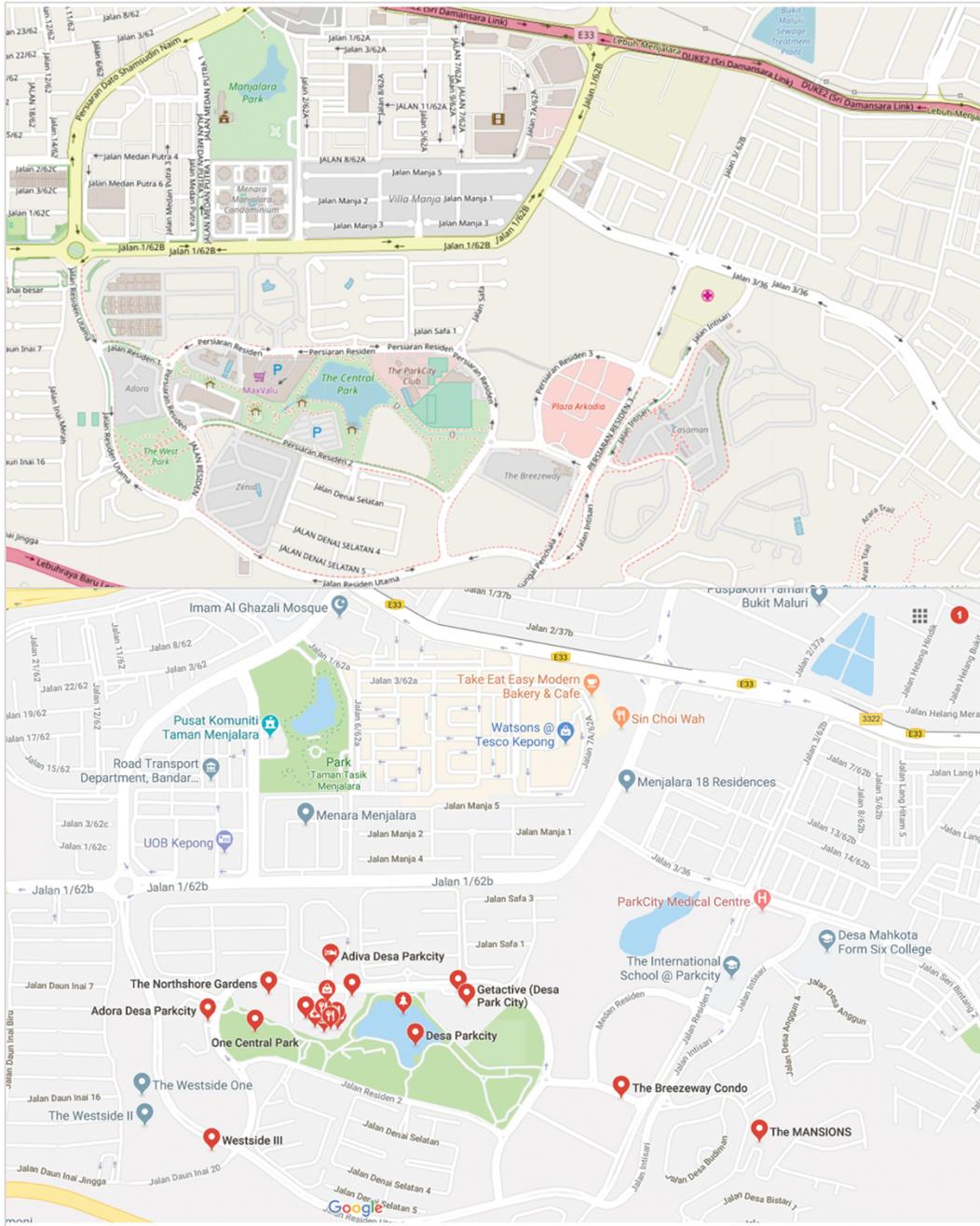


Figure 1. A visual comparison between Google Maps and Open Street Maps (Google & OSM, 2018)

Impact of Pokemon Go to the physical environment of public space

From the perspective of pedestrian movement, PG navigates the players to space that they have never been to in the cities; therefore it creates a new mobility pattern in both physical and augmented space (Gong, Hassink & Maus, 2017; Costa 2017). This type of movement is categorised as a fully mobile pattern, which known as the phenomena of the environment plays as an active part to drive the user in using the device while on the move (Shelly & Urry, 2017). In the perspective of urban city planning, usage of data on the mobile phone which known as augmented space, can be considered as part of the mobility pattern of humans (Yang, Zhao & Lu, 2016). Strength of interaction between different areas can be determined by the flow of data in augmented space. The physical space is possible to impact the pedestrian movement too. Margeson has observed that the movement of PG players is influenced by the scale of objects in urban space (2018). These objects in various scale and form have provided a sense of suggestiveness to the players to walk or rest (Gehl, 2013; Margeson, 2018) .

PG provides an alternative way to perceive information of nature and built environment as the players observe their surrounding as a hunting ground during gameplay (Walther, 2015). The perception of place varies through the virtual objects in augmented space and the presence of players in physical space (Buccitelli, 2017; Costa, 2017). The augmented space allowed players to reconceptualise or transform the urban space by turning non-functional space into informal meeting space and ordinary space has become a playful space (Gong, Hassink & Maus, 2017; Costa 2017). This is because a game object in augmented space of PG are placed according to the algorithm of the game regardless of whether other indication may be physically present (Buccitelli, 2017). The crowdsourcing method of placing the game object provided an opportunity for the players to be more interactive with the urban space by leaving their on marks virtually. Therefore, urban space became important and meaningful to players (Lynch, 2014; Buccitelli, 2017).

On the other hand, the presence of players in a physical space may also send signals to non-players that the space they are occupying is public and accessible (Buccitelli, 2017). Costa (2017) has observed that players are gathering in non-designated urban space. The observation is compared with Whyte's theory that people as the fundamental part of the attraction. Right people are there to make it come alive (Whyte, 1980; Oldenburg, 1999), therefore augmented space of PG leads the physical urban space into a successful public space (Costa, 2017). Existence of players on the street has improved sense of security to the non-players too as they will provide "eyes on street" based on Gehl's urban theory (2017).

Augmented reality of Pokemon Go and its influence on public space design

Resulting from the impact on PG on the built environment, recent studies drew relations between augmented reality through PG and urban design principles and discussed how public spaces can be designed and altered. Scholars have suggested providing more usable elements in urban space to design public space (Gehl, 2013; Margeson, 2018). Costa (2017) has suggested that public space should provide elements that can be altered to their use. The studies have also explained that the addition of a movable chair can also be magnified to be defined as public space. Another study proposed that a longitudinal seat is suitable to accommodate a large amount of PG players as the nature of shape has avoided direct eye contact between strangers (Costa, 2017).

Based on Gehl's "12 Quality Criteria", large scale elements are important for great public space (Gehl, 2013; Margeson, 2018). Large scale elements provide an opportunity to take advantage of the local climate. Based on the studies, structures such as a large concrete bridge that creates shades can be used to provide shades and protection to pedestrians inappropriate scale to

protect from noise, cars, rain and wind. Consequently, shaded space provides an opportunity for social encounter. Margeson (2018) and Jacobs (1995) suggested that the elements of great public space that are affected by mobile games should be the elements that are already highly dynamic. Thus, the presence of people invites more people to stay in the public space. In summary, a large scale element is important to create a sense of suggestiveness to invite the public to stay at the public space (Gehl, 2013).

Besides that, the arrangement of the elements in space is important too. The layout of public space has suggested various colours, texture and scale offer positive aesthetic and sensory experiences to the pedestrians (Costa, 2017).

The variety of perception creates a sense of mystery and suggestiveness that draws the public to the public space (Gehl, 2013 & Costa, 2017), as public space should be visible to pedestrians. Based on the studies, Costa has observed that low wall beside pedestrian walkway is activated, rather than the designated park that is disconnected from the pedestrian walkway of the main road (2017). Pedestrians are there to provide a sense of security to the PG players (Gehl, 2013 & Costa, 2017). In short, more human scale or large scale of elements should be placed on spaces that are visible to the public to design great public space (Jacobs, 1995; Margeson, 2018; Costa, 2017).

For this study, the elements of public space most likely to be affected by mobile games are those elements which are already highly dynamic. This includes specific features noted by Jacobs and others, namely pedestrian activity levels; variety and mystery; responsiveness; and the potential for social contact. They provide a framework to answer research questions of this present study.

RESEARCH METHODOLOGY

This research employed a case-study method. A case study is “an exploration of a bounded system or a case (or multiple cases) over time through detailed, in-depth data collection involving multiple sources of information-rich in context” (Creswell, 1998, p. 61). It enables a researcher to closely examine the data within a specific context (Yin, 2014). Desa Park City was chosen as a case study because it exemplified the manifestation of the phenomenon being studied. Located adjacent to Bandar Menjalara, Kuala Lumpur, it is a contemporary residential area where the urban spaces are activated by PG. A large central park is surrounded by guarded residential areas. Commercial area and education area are located beside central park too for the convenient of the planning of public transport. Figure 2 shows the distribution of space in Desa Park City illustrating central park at the centre of the neighbourhood, which forms the core public space.



Figure 2. Area distribution at Desa Park City

In 2006, PG was released by Niantic and a big crowd of the public gathered at Desa Park City. It has become a hotspot for PG since 2016 ("What's a Pokestop? - PG Game Guide", 2016). Figure 3 illustrates the PG phenomenon around the central park.



Figure 3. PG player in Desa Park City (2016)

The primary source of data was collected from first-hand observation on the behaviour of users in Pokestop/Gyms which have been found in Desa Park City. The data collection through observation and its analysis enabled the understanding of public life within the built environment. The data was collected through observation to record the “life” that occurs in the 33 study areas, as well as the qualities of the surrounding “space”. It was collected to find out on the (1) pedestrian movement, (2) perception of space, and (3) spatial qualities of public spaces under the influence of the augmented reality of PG. The data mapped the original function of space, whether it is a designated or accidental gathering space and the elements that are within the urban public space.

The data was then illustrated in diagram form, tabulated, and analysed based on urban theories that have been linked to Pokemon Go research from the literature review. In particular, it was analysed to the principles of urban public space by Gehl (2013), who argued that the notions of scale, senses, movements, interests, behaviour, and engagement in their surroundings are ingredients that create lively spaces for people.

Table 1. Theoretical framework for analysis

Physical Setting of Urban Space	Physical Space Characteristic	Augmented Space Characteristic
Pedestrian Movement	Element in Human Scale	Objects that are inappropriate height for sit, stand, lean on.
	Element in Large Scale	Objects that are tall enough to provide shades for pedestrian. Seats that are large enough to accommodate a big group of PG players.
	Elements that Form Visual Complexity	Various combination of objects in different texture, colour, scale and materials create a sense of invitation for PG players for gameplay.
	Elements for Visibility	Placement of seats that are closed to an area that has a high density of pedestrian. Visible to other pedestrians to create a sense of protection to PG players.
		All places are connected within an information network. Mobile data indicates strengths of interaction between spaces Information data as the purpose of navigation Data provides an additional layer to physical space, transform space identity.

RESULTS

Pedestrian movement under influence of augmented space

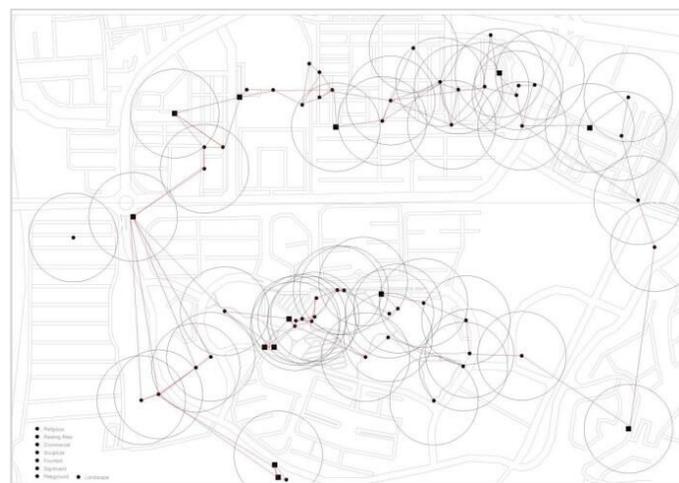


Figure 4. Pedestrian movement under influence of augmented space



Figure 5. Pedestrian movement without augmented space (OSM, 2018)

Figures 4 and 5 indicate the comparison of pedestrian movement under the influence of augmented space and without the influence of augmented space in macro-scale. The comparison is illustrated to understand the impact of overlaying augmented space on Desa Park City in term of pedestrian movement and social pattern.

Firstly, the collected data has indicated that the mobile network has connected Desa Park City and the adjacent neighbourhood districts with a thin network and as a loop. Studies have claimed that the flow of data in augmented space can be used to determine the strength. Therefore, the data proposed that the community of Desa Park City has minimal interaction with the neighbourhood district. Most of the network is connected within the Desa Park City, thus most of the interaction remains in Desa Park City.

Secondly, the comparison of the illustrated map has indicated that commercial area of Central Park in Desa Park City contains the densest mobile network, whereas there is a limited mobile network within the housing areas. Based on the studies, the location of in-game items in PG was a result of crowd-sourcing by the local community that play PG. Another study has stated that the priority of selecting gathering space is the spatial quality of physical space. The collected data proposed that these denser areas have the most urban space that carries the spatial quality of good public space.

steel structure with green plants can provide shades to the PG players as illustrated in Figures 7 and 8.

Similarly, Desa Park City signboard (Pokestop 17) is also built on a large scale at the boundaries of Desa Park City providing weather protection to the PG players shown in Figures 9 and 10. The sense of protection is also applied through the visibility of the space to the public. Both of the signboards are locating beside roads and pedestrian walkways. Therefore, the pedestrians and drivers are there as “eyes on the street” to the PG players. Such a context made the PG players feel safe during the gameplay.

The difference between these two spaces is that Desa Park City signboard offered positive aesthetic in term of visual complexity. The mix and match of colour tone of signboards, together with the stone texture and green plants as a backlash of signboard has form high degree of visual complexity that gives the PG players sense of invitation to transform the space as a playspace. Based on observation, no PG players show up for gameplay at Pokestop no.15 that is located between parking space and football field. It was due to its orientation that did not provide shade during evening time.



Figure 7. Signboard of The Park City Club

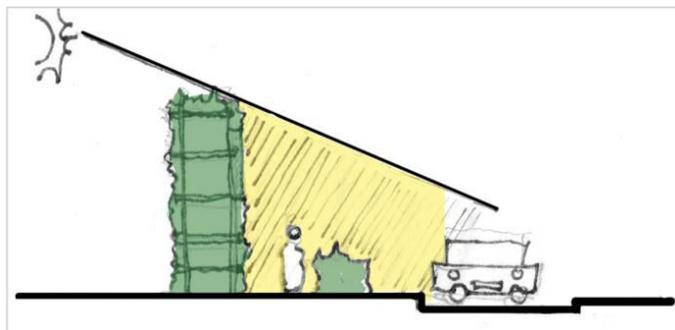


Figure 8. Elements of public space



Figure 9. Signboard of The Park City Club



Figure 10. Elements of public space

Smaller scales of signboards carried the quality of urban space too, as illustrated in Figures 11-14. The height of the signboards allowed the player to lean on it and stand beside it for shading based on its orientation. The location of signboard suggested that pedestrians are the one that gives a sense of security to the PG players. Visibility is varied based on the position between pedestrian, signboard and PG players. It created a sense of suggestiveness for the users to alter the function of the space base on the interest of PG players.



Figure 11. Signboard of Central Park

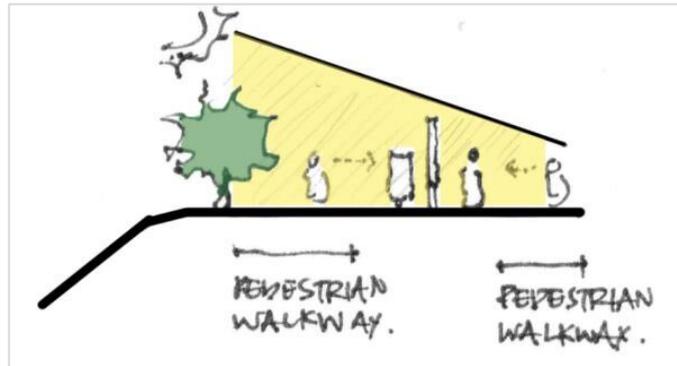


Figure 12. Elements of public space



Figure 13. Signboard of Central Park

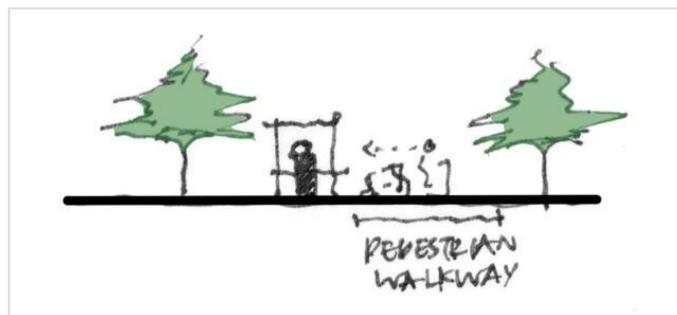


Figure 14. Elements of public space



Figure 15. Landscape at Central Park

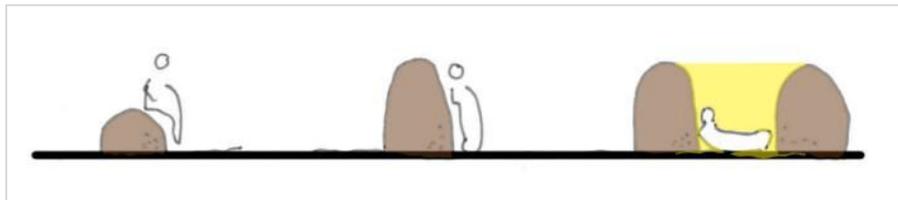


Figure 16. Interacting with space in different posture

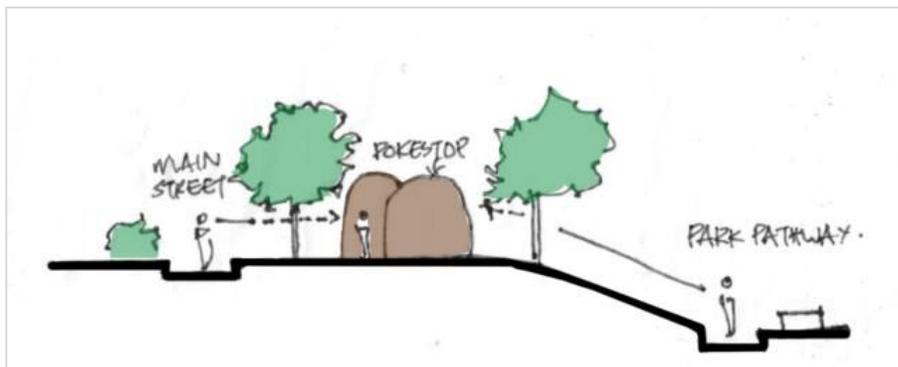


Figure 17. Elements of public space

Another example was the Pokestop no.25 - the dried up waterfall. The Pokestop itself was a decorative landscape without additional function; the mini waterfall dried up as the management did not manage it well, the unpleasant view did not attract central park users to rest around the place. The lack of other users in this place became an advantage for the players as they can stay on the bridge for a long time without the need to worry about blocking the circulation on the bridge. With the additional virtual layer on PG, more users stopped along the bridge. The navigation of PG players is affected by human intervention in the abstract map rather than the actual map. The navigation also caused more unplanned encounters of strangers that have a similar purpose.



Figure 18. Large sculpture at Desa Park City

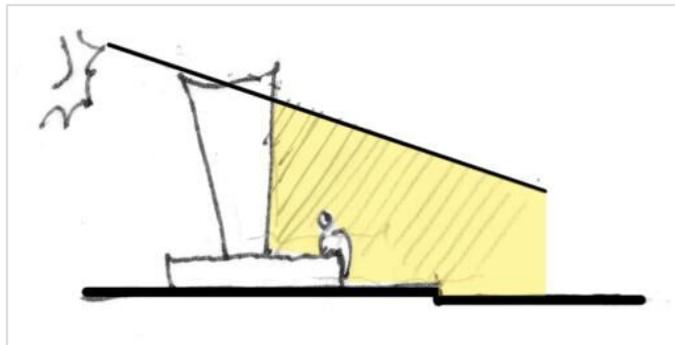


Figure 19. Elements of public space

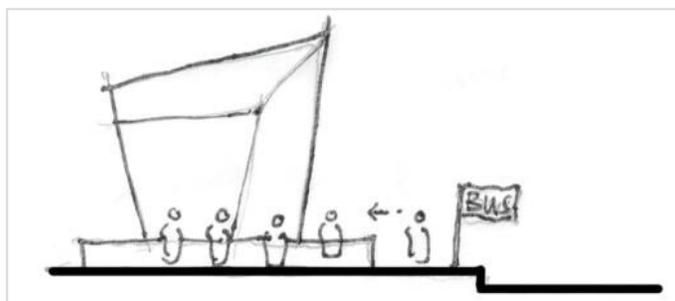


Figure 20. Pedestrian at bus stop as eyes on street



Figure 22. Baptist church as pokestop at Desa Park City

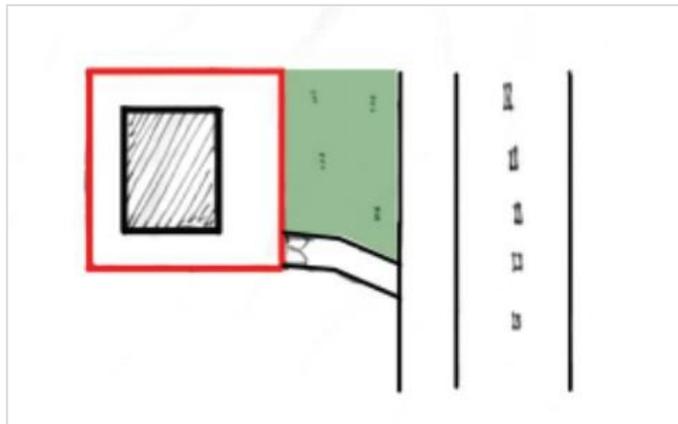


Figure 23. Boundary fence block accessibility of pokestop

Table 6 and Figure 21 show that 3 pokestops/gyms are found around religious buildings. Based on the observations, not all the pokestops are activated by PG players. The religious buildings that are marked as pokestop have not been used by the PG players. Firstly, the location of pokestops was far from the main pedestrian walkway. Pedestrian has to pass through a steep slope to reach the pokestop. As shown in Figures 22 and 23, the pokestop is surrounded by a boundary fence, thus it does not give a sense of invitation to the public that it is a place that allows the public to access.

Similarly, the temple is not activated by PG player due to several reasons. Based on observation as shown in Figures 24 and 25, the temple is not visible from the pedestrian walkway. PG player has to take effort to walk through the steep slope to reach the temple. The accessibility to the pokestop was not convenient compare to the other pokestop nearby. Besides that, there was no sunlight access into the building, making PG players feel insecure as it is not visible to other people. Other than that, the temple did not give a sense of invitation to the PG player as the entrance of the Chinese temple is blocked by the plants.



Figure 24. Temple as pokestop



Figure 25. Visibility and distance from pedestrian walkway

DISCUSSION AND CONCLUSION

This study has analysed the relationship between the augmented and the physical space through a case study of Desa Park City by examining how the augmented reality of PG influences the perception of space, and how it activates potential public spaces which are dormant and accidental. The findings have implied several points: firstly, augmented reality enabled accidental gathering “space” as users spatialised pokestops which at times appears as objects as “space”; secondly, new public space is claimed through expansion on mobility and social patterns beyond the designated

public spaces during gameplay; and thirdly, these accidental spaces became gathering spaces because their spatial qualities and settings are aligned to principles of good public space.

Activating informal and accidental gathering spaces

Concurring with other studies, the finding has suggested that the additional layer of PG's augmented space has changed the perception of space where PG leads the player to informal and non-space as public gathering space. When physical space is re-interpreted through mobile technology, augmented reality has the propensity to activate spaces and make it lively. The informal gathering space has been re-claimed through this spatial interface.

For example, the finding has suggested that decorative objects such as landscape and sculpture have become a space for gathering even though the physical functions of these objects are purely decorative. In the perspective of PG players, Pokestops are defined as space, hence spatializing the space around the objects. As a result, PG players are not choosing gathering space based on the physical identity of the urban space. The finding has shown that more urban space outside of the designated commercial area in Desa Park City is activated under the influence of augmented space, expanding the function of gathering beyond the designated physical areas.

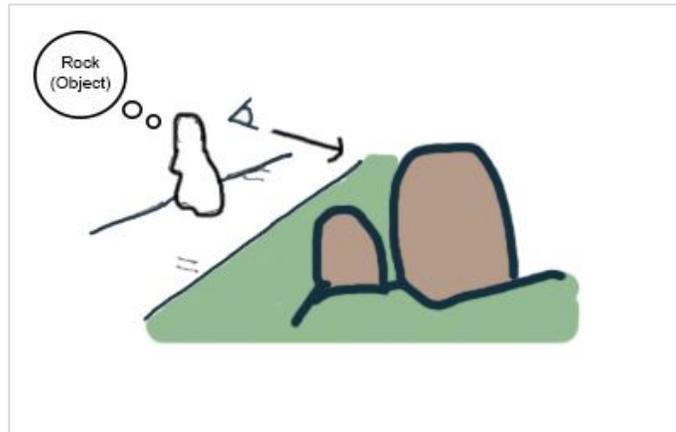


Figure 26. Perception of non-players

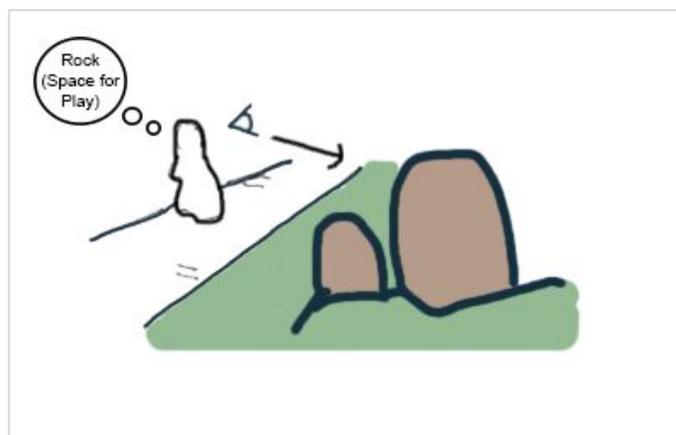


Figure 27. Perception of PG players

Algorithm of PG and social patterns

The finding has suggested that the algorithm of the game affects the choice of urban space for their gameplay. Crowdsourcing method is applied by PG to choose the location of Pokéstops. Local communities that are playing PG have the right to select the desired location for Pokéstop. A study has suggested that the flow of data can be used to determine the strength of the interaction between spaces. Hence, the Pokéstop pattern in augmented space is reflecting the current social pattern of Desa Park City. As additional roles are given to the PG players, the finding has suggested that gameplay has become an inspection of the site to select potential space for Pokéstop. Therefore, the influence of spatial quality of physical space and perception occurs as mentioned above.

The studies have indicated that PG made the urban spaces to connect through a thin network, people are forced to move to places that they have never been to create a new mobility paradigm. However, the finding is suggesting that the pedestrian movement of PG is based on the spatial qualities of the spaces that are suitable for the PG players to stay. Rather than concluding the pedestrian movement are being forced to move to these places, based on the finding, it is more likely that PG players are attracted to the sequence of narrative experience that is provided via augmented space in PG. Therefore, the unique narrative experience has led to extended social pattern formation within Desa Park City and the adjacent neighbourhood areas.

In sum, the algorithm of the games takes an important role for the PG players to be engaged and leave their trace and memories in the urban space. With the algorithm of the game that allows the involvement of participant to engage with the gameplay, alternative perspective for the PG players to see the physical space. Therefore, PG players will take the initiative to explore the physical space.

Spatial quality of activated urban space

The findings on gathering spaces found in Desa Park City has demonstrated that there are corresponding principles between augmented reality and urban design principles. While Pokémons understand the elements, critical mass and density that make a lively and attractive city for people, the physical environment plays a vital influence in activating space while users are engaged in the augmented reality, hence suggesting the importance of urban design principles of public spaces. The findings suggest several principles that will activate public spaces. Without them, public life will not take place.

Firstly, large scale elements should be placed in urban space for protection to activate the space. Based on the studies, large scale elements should be placed in urban space to provide shades to the PG players to provide comfort cooling space for the players. According to the findings in Desa Park City, large scale objects such as signboards are marked as Pokéstop. Based on the observation, PG players preferred to gather at the signboard that is built with vegetation. Besides that, PG players have been standing beside the signboards even though there are trees exist in walking distance. It is due to the orientation of signboards that are unintentionally orientated to create a shaded area during the evening. This finding has a similar approach with Jan Gehl's principle of good public space, as a good public space should take advantage of the local climate to offer positive sensory experience. In summary, the finding has suggested that a good public space should provide weather protection according to the sun orientation and provide vegetation for quality sensory experience.

Secondly, seats in various size and forms should be provided to create a sense of invitation for public users. Based on the earlier studies, Costa (2017) has suggested that the players prefer to have longitudinal seating for gathering purpose, to avoid eye contact with the users. However, it

can be observed that the PG players in Desa Park City did not have a preference in the shape of the seating, as long as they can avoid direct eye contact with others. They were gathering in various Pokestop that have different shape of seating that is provided, whether it was intentionally or not. Based on the finding, round shape objects can be utilised as a seating area as the nature of the shape allows the PG player to view the surrounding and avoid direct eye contact with the person that is sitting beside them. Landscape object such as rocks that are arranged in cluster order with different size creates a sense of playfulness to the users. In conclusion, these findings have suggested that good public space should provide seats in various form and scale that allow the users to alter the function of physical space to their use.

Thirdly, Costa had also suggested that good public space should be accessible to pedestrians. The findings demonstrated that the activated urban spaces via PG in Desa Park City were mostly having direct access from the pedestrian walkway. Pkestops that were distant from the circulation path have not been activated by PG players. This was due to the movement of people drawn by people, and they were generally drawn to denser concentrations or flow of people. Based on the observation in Desa Park City, public space should have direct access to public transport as well. Pokestop that set beside bus stop pickup point has been activated as it is more convenient for the PG players to have direct access to the Pokestop. Therefore, urban space can be activated by providing alternative pathways to distribute the flow of people in the area. Urban spaces that are unable to connect with the pedestrian walkway should set as a pickup point for public transport to draw people to activate the urban space.

Lastly, the finding has suggested that good public space should provide a certain level of privacy to the users. Even though the presence of pedestrian provides a sense of security, however, PG players did not feel like being watched by the pedestrian all the time while doing their activities in public space. Based on the findings, the physical elements such as tree or rocks in the surrounding have become filter layer from the pedestrian. In addition to the studies, the orientation of seats should be taken into consideration to be visible to the pedestrian, yet it should provide privacy to the public space users at the same time.

The findings of this study suggested that the relationship between the augmented reality through PG and the physical environments are reciprocal. These findings are aligned with both earlier studies which on one hand suggested that the augmented space of PG is influencing the selection of gathering space for gameplay and other studies that argued that the spatial quality of physical space takes priority for the selection of gathering space as the PG players are more aware of the physical space during gameplay.

Potential design strategies to activate spaces

The relationship between real and augmented space offered an alternative user experience and social patterns in engaging with urban space, contributing potential design strategies to activate otherwise incidental and informal urban spaces. For augmented reality, in its capacity to transform public space into places that people value, use and enjoy, to become integral to the 21st-century city, requires further exploration by designers, architects and other sociological disciplines to shape these new experiences.

The crowdsourcing method that included the involvement of the local community to edit the augmented space has created data that indicates the social pattern of the local community. Future research should use augmented reality created by PG to observe the pattern of the local community. Besides that, PG has the potential to unify people from different culture group, ethnic and background to create a global universal perception of space. The same method can be used to

observe different type of space, different type of culture to examine whether the space is localised or international.

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The development of an e-assessment prototype for communication lecturers using three levels of digital literacy

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ABSTRACT

This paper looks at the development of an e-assessment prototype as part of the digital transformation for the usual assessment practices among communication lecturers. This prototype is an innovative educational technology that was created for the easy evaluation of student assignments. The e-assessment prototype was developed based on the three levels of digital literacy of communication lecturers. The first level measured the lecturers' digital competency by assessing their Technological Pedagogical Content Knowledge (TPACK) through sets of questionnaires. The second level determined the features and requirements of the e-assessment through focus group discussions among lecturers. Finally, in the third level, an e-assessment prototype that meets the features and requirements identified was created. The sample of respondents who participated in this study were lecturers from the School of Communication and Creative Arts in KDU University College, Malaysia. This paper documents how the findings of the three levels of digital literacy were used as the foundation for developing an e-assessment prototype called Operational Metric Assessment and Rubrics (OMAR). This e-assessment prototype, consisting of features and requirements as determined by the sampled lecturers, is useful in evaluating and assessing student work.

Keywords: ***digital competency, digital literacy, digital transformation, e-assessments prototype, educational technology***

INTRODUCTION

The use of technology in assessment activities not only enhances educators' current evaluation practices, but also provides opportunities in digitalising assessment methods (Nicol & Miligan, 2006). Educational technology platforms have improved many assessment practices through activities such as online tests or quizzes, technology-based instructional materials, blended learning and so on (Moersch, 1995). Additionally, it is important for educators to have a better understanding of using digital tools to evaluate assignments by following a rubric guideline for evaluation purposes (Shahadat, 2015). Therefore, adopting technology-based applications to generate electronic assessment prototypes is a step forward in lecturer assessment practices. Further, it is important to assess lecturers' attitudes and opinions to gauge their perspectives on the features and requirements needed before developing a technology-based e-assessment prototype.

The purpose of developing this prototype is to assist lecturers evaluate student work more easily. Furthermore, a focus on digital literacy is necessary prior to developing new media where educators can fully utilise the benefits of technology (Nicol & Miligan, 2006). Technology adoption in the educator's daily routine is also essential to the instructional needs of the usual practices that do not necessarily involve teaching (Moersch, 1995). As assessment is a major part of being an educator, a more innovative approach towards evaluating student assignments is thus deemed necessary. Besides that, a digitalised assessment system enables content requirement to be satisfactorily standardised to improve the lecturer's efficiency (Harris, Grandgenett, & Hofer, 2010). This paper will document the process of developing an e-assessment prototype to assist lecturers with their current practices.

RESEARCH BACKGROUND

Prior to developing a new technology application, it is vital to understand lecturers' attitude and familiarity of using technology as a medium of teaching. Furthermore, the appropriateness of technology can also be seen as one of the aspects of an instructional plan (Harris et al., 2010). There are many types of assessments that evaluate an educator's technology integration knowledge; one of them is a well-known concept called Technological Pedagogical Content Knowledge or TPACK (Mishra & Koehler, 2006). This concept assesses an educator's technology proficiency by following the guideline of Technology Integration Assessment Rubric (Hofer, Grandgenett, Harris & Swan, 2011). TPACK evaluates how technology is used to understand content, comprehend pedagogy and applied to tasks such as assessment practices.

Educators usually create an assessment rubrics to measure learners' level of understanding of a subject based on the allocation of marks given for their work (Hamid, Waycott, Kurnia & Chang, 2014). The appropriate use of technology will enable educators to generate a more standardised rubrics across the whole educational programme besides attaining pedagogical benefits. However, this depends on the educators' digital literacy which includes their technological literacy, informational literacy, communication literacy and multimedia literacy (Guitert, Romeu & Romero, 2010). It is important for educators to familiarise themselves with the existing digital platform before focusing on a new platform, and this is why digital literacy is a prerequisite prior to developing and introducing a new technology-based approach (Gallardo-Echenique, 2015). The development of digital literacy is assessed via three stages, namely digital competency, digital usage and digital transformation as presented in Figure 1 (Martin & Grudziecki, 2006).

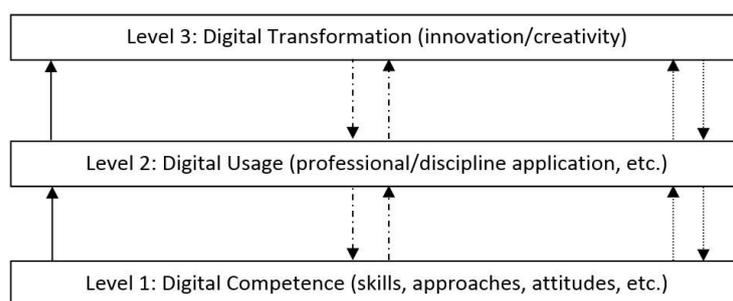


Figure 1. Three levels of digital literacy development

As shown in Figure 1, the first level reflects educators' approaches, attitudes and skills towards technology, or in other words, their digital competency. The second level reflects educators' familiarity in using digital as part of their profession; in this case, it refers to digital usage in assessment activities. The third level reflects the innovation and creativity in developing new technology to be adopted as part of the educators' practices. This will reveal a new concept of digital transformation, or more specifically, the creation of an e-assessment prototype. In order to study digital literacy and develop a new technology, all three levels must be evaluated.

In light of technology's ubiquity that has changed how humans work, digital literacy is increasingly seen as a necessary skill to acquire. Digital literacy refers to the expertise of an individual in utilising ICT with efficacy as well as the ability to carry out tasks in a digital environment (Jones-Kavalier & Flannigan, 2008). Additionally, digital literacy is also related to the awareness, attitude and ability of using digital tools appropriately towards identifying, accessing, managing, integrating, evaluating and synthesising digital resources (Martin, 2008). Furthermore, technology has transformed both students and lecturers' daily practices (Lee, 2014).

Educators' digital literacy or competency is an important factor that gauges the specific requirements needed to adopt technology into their teaching and learning processes. The dynamic industry expects lecturers to leverage digital tools and resources so as to maximise their full potential as an educator (Borthwick & Hansen, 2017; Teoh & Yap, 2018). Since technology advances rapidly, educators' development process in relation to the concept of digital competency requires greater attention (Khalid, 2015).

A suitable assessment method for evaluating digital competency is Technological Pedagogical Content Knowledge (TPACK). Based on the TPACK approach, the technology component has recently been added as an extra element in the intersections (Shulman, 1986; Mishra & Koehler, 2006). This approach articulates the relationships between content, pedagogy and technology. There are seven components of assessment: technology knowledge (TK), content knowledge (CK), pedagogy knowledge (PK), pedagogical content knowledge (PCK), technological content knowledge (TCK), technological pedagogical knowledge (TPK) and technological pedagogical content knowledge (TPACK). These components are used as a correlation study to assess educators' knowledge for technology integration (Hofer et al., 2011).

While the full immersion of technology in education is still dependent on the educator's literacy, it is important to study how technology can bring a new approach to educational practices such as digitisation of assessments (Nicol & Milligan, 2006). Effective technology integration in assessment activities can be a prominent evaluation model for educational technology (Pierson & Borthwick, 2010). Furthermore, the shift from traditional-based

evaluation model towards the effective use of technology-based evaluation model is highly encouraged to meet the needs of the current generations of digital age learners (Lee, 2014).

METHODOLOGY

The methodology for this research consisted of three phases of data collection which are guided by the three stages of digital literacy development as presented in Figure 1. As the purpose of this study is to develop an e-assessment prototype, results from the data collection were used as the guideline in generating the list of features and requirements that need to be fulfilled by the prototype. The sample of participants for this study consisted of lecturers from School of Communication and Creative Arts in KDU University College, Malaysia. The content assessment focused on media studies since this is the lecturers' area of expertise. The three phases of data collection are described next.

Phase 1: Digital competency

The first phase investigated the digital competency of the lecturers from School of Communication and Creative Arts in KDU University College, Malaysia. Thirty lecturers were given sets of questionnaires to be answered. The questionnaires were crafted based on past questions related to the concept of TPACK (Mishra & Koehler, 2006). In this phase, quantitative data analysis was employed to evaluate the level of lecturers' digital skills as well as approaches and familiarity in technology practices. The selection of lecturers were based on their area of expertise which is media studies and their exposure to teaching using technology.

Phase 2: Digital usage

The second phase looked at the requirements for digital usage towards developing a new digitalised approach of electronic assessment practices. Ten lecturers took part in two focus group discussions answering sets of questions created prior to the sessions. In this phase, the qualitative data analysis was employed to assess lecturers' feedback and generate the list of suggested features and requirements necessary for the e-assessment prototype.

Phase 3: Digital transformation

The third phase looked at digital transformation or new innovation; in other words, how the current assessment practices can be digitalised. In this phase, findings on the generated features and requirements were used as a basic guideline to develop the e-assessment prototype. This prototype is expected to assist lecturers easily evaluate students' assignments.

FINDINGS & DISCUSSIONS

The findings and discussions on the results of digital competency via TPACK assessment, digital usage from the focus group discussions and digital transformation of an e-assessment are presented next.

Phase 1: Digital usage (TPACK)

The seven components of assessment, namely technology knowledge (TK), content knowledge (CK), pedagogy knowledge (PK), pedagogical content knowledge (PCK), technological content knowledge (TCK), technological pedagogical knowledge (TPK) and technological pedagogical content knowledge (TPACK) were evaluated via mean scores. The analysis is based on the scores of 1 for poor, 2 for fair, 3 for good, 4 for very good and 5 for excellent.

Table 1. Technology knowledge (TK) among lecturers

No.	Statement	Mean	Remark
1	I know how to solve my own technical problems.	3.05	Good
2	I can learn technology easily.	3.91	Good
3	I keep up with important new technologies.	3.23	Good
4	I frequently play around the technology.	3.23	Good
5	I know about a lot of different technologies.	2.82	Fair
6	I have the technical skills that I need in order to use technology	3.32	Good
Total		3.26	Good

The total mean of the Technology Knowledge (TK) is 3.26 and is classified under the “good” category. The only statement which scored below average (2.82) suggests that most lecturers do not have an extensive range of technology comprehension. However, the rest of the scores indicate that the lecturers have sufficient knowledge regarding technology-operated devices.

Table 2. Content knowledge (CK) among lecturers

No.	Statement	Mean	Remark
Communication Studies			
1	I have sufficient knowledge about communication studies.	3.26	Good
2	I can use my communication skills well.	3.86	Good
3	I have various ways and strategies of developing my understanding of the communication field.	3.68	Good
Social Studies			
4	I have sufficient knowledge about social studies.	3.59	Good
5	I can use my social skills well.	3.77	Good
6	I have various ways and strategies of developing my understanding of the social studies field.	3.68	Good
Media Studies			
7	I have sufficient knowledge about media studies.	3.36	Good
8	I can use multiple media platforms well.	3.55	Good
9	I have various ways and strategies of developing my understanding of the media field.	3.59	Good
Total		3.59	Good

Content knowledge (CK) among lecturers falls under the “good” category with a total mean of 3.59. Among all the studies listed, social studies received the highest average mean, followed by communication and media studies. It implies that lecturers are knowledgeable in the subject matter. Good content knowledge can avoid misrepresentation of topics to students (Ball & McDiarmid, 1990).

Table 3. Pedagogical knowledge (PK) among lecturers

No.	Statement	Mean	Remark
1	I know how to assess student performance in a classroom.	3.95	Good
2	I can adapt my teaching based on what students currently understand or do not understand.	4.09	Very Good
3	I can adapt my teaching style to different learners.	3.95	Good
4	I can assess student learning in multiple ways.	4.09	Very Good
5	I can use a wide range of teaching approaches in a classroom setting.	3.90	Good
6	I am familiar with common student’s understandings and misconceptions.	4.00	Very Good
7	I know how to organise and maintain classroom management.	3.45	Good
Total		4.01	Very Good

Amongst all the content assessments, pedagogical knowledge (PK) received the highest mean score of 4.01 and is classified under the “very good” category. This suggests that lecturers have strong teaching skills and are able to adapt to meet students’ needs.

Table 4. Pedagogical content knowledge (PCK)

No.	Statement	Mean	Remark
1	I can select effective teaching approaches to guide student thinking and learning in communication studies.	3.45	Good
2	I can select effective teaching approaches to guide student thinking and learning in social studies.	3.68	Good
3	I can select effective teaching approaches to guide student thinking and learning in media studies.	3.62	Good
Total		3.59	Good

Pedagogical content knowledge (PCK) represents lecturers’ pedagogical skills in teaching the subject matter (Shulman, 1986). Table 4 shows that lecturers scored a total mean of 3.59 for this assessment. This implies that the lecturers are able to select effective teaching approaches for communication, social studies and media courses.

Table 5. Technological content knowledge (TCK)

No.	Statement	Mean	Remark
1	I know about technologies that I can use for understanding and doing communication studies.	3.18	Good
2	I know about technologies that I can use for understanding and doing social studies.	3.32	Good
3	I know about technologies that I can use for understanding and doing media studies.	3.18	Good
Total		3.23	Good

For, technological content knowledge (TCK), a mean value of 3.23 was scored, which falls in the “good” category. This assessment looked at the suitability of selecting technology features that fit the nature of the subject matter well (Mishra & Koehler, 2006). The score implies that lecturers possess both good technological and pedagogical skills for the courses they teach.

Table 6. Technological pedagogical knowledge (TPK)

No.	Statement	Mean	Remark
1	I can choose technologies that enhance the teaching approaches for a lesson.	3.77	Good
2	I can choose technologies that enhance students' learning for a lesson.	3.86	Good
3	I am thinking critically about how to use technology in my classroom.	3.68	Good
4	I can adapt the use of the technologies that I am learning about to different teaching activities.	3.95	Good
5	I can select technologies to use in my classroom that enhance what I teach, how I teach and what students learn.	3.77	Good
6	I can use strategies that combine content, technologies and teaching approaches that I learned about in my coursework in my classroom.	3.86	Good
7	I can provide leadership in helping others to coordinate the use of content, technologies and teaching approaches at my school and/or district.	3.5	Good
8	I can choose technologies that enhance the content for a lesson.	3.86	Good
Total		3.63	Good

The assessment for technology pedagogical knowledge (TPK) scored a total mean of 3.63 which falls under the “good” category. This assessment looked at the ability of lecturers in utilising pedagogical skills with the help of suitable technology platforms. As shown in the table above, the lecturers are capable of choosing, adapting and providing leadership in adopting suitable technology for their teaching activities.

Table 7. Technological pedagogical content knowledge (TPACK)

No.	Statement	Mean	Remark
1	I can teach lessons that appropriately combine communication studies, technologies and teaching approaches.	3.24	Good
2	I can teach lessons that appropriately combine social studies, technologies and teaching approaches.	3.39	Good
3	I can teach lessons that appropriately combine media studies, technologies and teaching approaches.	3.19	Good
Total		3.27	Good

The final assessment was conducted for technological pedagogical content knowledge (TPACK) which is the result of each of the 6 intersections from Table 1 to Table 6. The statements measure the final relationship between the knowledge that combines technology, pedagogy and content studies. This type of knowledge is developed when lecturers are able to utilise technology effectively and appropriately to study the subject content and combine it with their teaching activities (Schmidt et al., 2009). Looking at the final mean score of 3.27, TPACK falls under the “good” category. This implies that the lecturers demonstrate good competency in using technology to acquire knowledge and to teach. In summary, lecturers from the School of Communication and Creative Arts possess a good level of digital competency with an overall mean score of 3.27 for TPACK, followed by the mean scores of 3.26 for TK, 4.01 for PK, 3.59 for CK, 3.63 for TPK, 3.59 for PCK, and 3.23 for TCK. This implies that the lecturers are familiar with using technology and they are more than ready to be introduced to a new technological innovation approach as part of their teaching practice.

Phase 2: Digital usage (requirement & features)

Following the good TPACK scores, the next stage was to investigate the lecturers' preferences towards the digital usage of electronic-based assessment technology. The purpose was to generate a list of features and requirements needed to improve the lecturers' current practice in

evaluating student work. The following table documents the findings from the focus group discussions with 10 lecturers. The generated features and requirements were then applied in developing the e-assessment prototype.

Table 8. Topics of content features

List of Topics	
Topic 1	Standardized and easy-to-use rubrics
Topic 2	Operationalize metric calculation
Topic 3	Automatically generated feedback
Topic 4	A video marking capture and recording
Topic 5	Generation of assessment report

As shown in Table 8, five topics emerged during the discussions with regard to content features. Participants recommended a standardised and easy-to-use rubrics, operationalised metric calculation, automatically generated feedback, a video marking capture and recording, and assessment report generation for the e-assessment prototype. These features were proposed to assist lecturers evaluate student work more easily and also to minimise unnecessary or repetitive tasks such as writing similar feedbacks and standardising the calculation metric to ensure consistency in all the generated marks. The lecturers believed that the usual assessment practice has limitations in its efficiency and the utilisation of technology can improve their current practice.

“If there is a technology-based assessment, I wish for it to be a standardized rubric or perhaps an application that can search for rubrics that is suitable for the assignment.” (Participant 10)

“It would be nice to have an application that can record students’ work because when it comes to presentation or performance, it is good to be able to record it first and then view and assess it later. Maybe the technology can help us to formulate the presentation assessment in such a way.” (Participant 08)

“When we are handling big classes, we noticed sometimes we write same comments while assessing their work and our comments become shorter and shorter over time.” (Participant 01)

“For me, if the coursework is out of 50, I will set the rubrics calculation to be out of 50, only then I will manually double it up to be out of 100. Sometimes I have rubrics that calculated up to 40 marks, then I will convert it to out of 20, followed by turning it to out of 100. It is never standardized to 100 marks.” (Participant 09)

“When there’s a written report submission, for example, there will be a rubric that lists down what is needed to assess the work according to the learning outcome. Then we just print it out and mark manually. It will be nice if we can actually run the marks or generate assessment report digitally.” (Participant 03)

From the focus group topic discussions, the five generated list of features are required to be implemented in the e-assessment prototype.

Table 9. Topics on prototype requirements

List of Topics	
Topic 1	Ability to reduce time in assessing students' work
Topic 2	Ability to increase productivity in assessment activities
Topic 3	Ability to encourage going paperless

Table 9 shows the topics that emerged from the discussions on the requirements for the e-assessment prototype. The participants' recommendations on the proposed requirements consisted of the prototype's ability to reduce time in assessing student work, increase productivity and going paperless. The participants believed that the use of technology is supposed to reduce workload and not increase it. Only then will they be more efficient in evaluating student work. On top of that, the use of e-assessment should also be able to reduce paper wastage by lessening the practice of printing out hardcopy versions of student assignments.

“When there are more than 100 students in a class, time is the essence. I don't have enough time and this will affect productivity. So, technology is supposed to help us in reducing the time and increase productivity by allowing us to manage to assess multiple works without jeopardizing the quality of assessments.”
(Participant 04)

“I would like to give feedback to all students individually but because of the large number, I do not have the time to do so. Ideally, it is good to give feedback one by one but it will require a lot of free time which is a luxury that I don't have and it will be good if technology can assist with this.” (Participant 05)

“We would like to go paperless and limit our work as much as possible. If we already require doing softcopy, I don't see why we need to do it again for hardcopy. If I do not need to do the paperwork, I will just run everything online.”
(Participant 02)

Phase 3: Digital transformation (e-assessment prototype)

Following the generated list of features presented in Table 8, an e-assessment prototype called Operational Metric Assessment & Rubrics (OMAR) was created. The core function of this prototype is to be able to run a metric calculation by operationalising the pre-set rubric assessments. Table 10 describes the list of proposed features as well as their functions for the OMAR prototype.

Table 10. Proposed features for the e-assessment prototype

Content features	Functions and descriptions
Standardised and easy-to-use rubrics	This enables the easy drafting of assignment rubrics with a more standardised metric of mark allocation.
Operationalised metric calculation	The metric calculation is operationalised by following the set of marks assigned based on different level of performances in the rubrics.
Automatically generated feedback	Enables lecturers to run an auto-generated feedback that has been pre-set prior to assessing student work with an extra option for lecturers to personalise their feedbacks.
A video marking capture and recording	Enables lecturers to record students' presentation and allow them to bookmark parts where lecturers can view and assess the presentation afterwards.
Generating assessment report	This feature enables lecturers to convert and export their assessment report in a pdf version for archiving or distribution purposes.

In addition to the generated topic in Table 8, there are five generated content features. To implement the proposed features into the e-assessment prototype, it will be carried out according to the specific function that each feature represents. The first feature, standardised and easy-to-use rubrics, will provide lecturers a more standardised and digitised version in drafting assignment rubrics. The rubrics will provide mark allocations for the different levels of performance such as poor, good or excellent. The second feature enables lecturers to operationalise the metric calculation of the assignment based on the pre-set rubrics. Lecturers will only need to select the assigned level and key in the marks accordingly and the digital platform will automatically run the metric calculation of the assessment. The third feature enables lecturers to generate automatic feedback. Right after the lecturers have set the assessment rubrics, they can assign a pre-set feedback by following the level of performances that can be generated once they have run the metric calculation and have assigned allocated marks. In this way, lecturers can avoid writing the same feedback or comments repetitively. The fourth feature is a video marking capture and recording ability which is designed specifically to assess student presentations. This function helps lecturers to record student presentations and bookmark the part(s) where they may wish to review and assess later. The final feature is the generation of assessment report. This function enables lecturers to save and export the assessment report in the pdf version for archiving or distribution purposes.

The Operational Metric Assessment & Rubrics (OMAR) e-assessment prototype was also created using the requirements presented in Table 9. These requirements were gathered from the participants' feedback on how the e-assessment can assist their current teaching practices. Table 11 describes and elaborates how the OMAR prototype fits the proposed requirements. There are three main requirements: the ability to reduce time, increase productivity and encourage the paperless practice. The OMAR prototype meets the first requirement on saving time since it can help lecturers run the operational metric calculations and generate automatic feedback. To help increase lecturer's productivity, the prototype can assist lecturers with an easier grading approach, a more standardised rubrics throughout the whole course and an additional option to encourage personalising feedback or comments for students.

Table 11. Requirements of the e-assessment prototype

Requirement	Description
Can reduce time assessing student work	Reduced time for grading through the operationalised metric calculation which runs a mathematical calculation. Lecturers can opt to generate automatic feedback based on the level of performance as set by the rubrics to avoid writing the same feedback on student submissions.
Can increase productivity in assessment activities	Introduces an easier method in the grading and calculation of marks through the operationalised metric from the rubrics. Provides a more standardised method of generating rubrics and assessment requirements throughout the whole course. Provides the option of adding individual comments even with the availability of auto-generated feedback to encourage personalised responses for students.
Can encourage going paperless	Lecturers can assess the assignments via the application instead of printing a hardcopy of the rubrics as per current practice. Students can submit a softcopy version of the assignment as the hardcopy version is no longer needed. Lecturers can save and export the full report of the assessment in the pdf version for easy sharing with student.

Lastly, the prototype supports going paperless. It provides lecturers the option to fully assess student work online without having the need to print a hardcopy version of the assignment. Additionally, the generated feedback and assessment report can be exported in the pdf version for archiving or distribution purposes.

The prototype comes with a clear flow of assessment activities on how lecturers can run the metric calculation of the assignment rubrics. Figure 2 shows the flow of the OMAR e-assessment prototype.

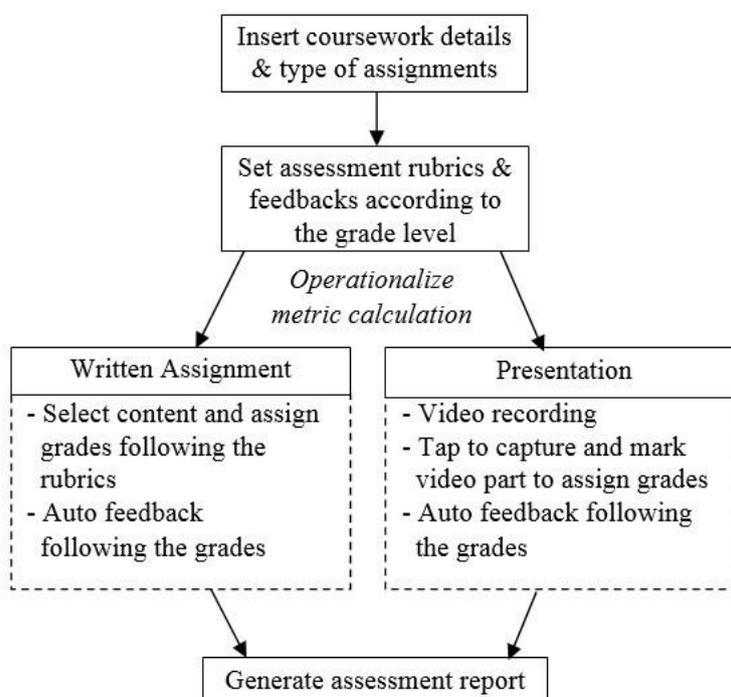


Figure 2. Flow of OMAR prototype

For the first step, lecturers need to key in the details of their assignments such as types of assessment, course name and other key information. Next, the lecturers will either use a ready-made rubrics template or create their own rubrics according to the preferred content, metric calculation of the marks and level of grading as shown in Figure 3. Each segmented content has specific marks within the calculation metric.

	Unacceptable (1-40)	Poor (50-59)	Fair (60-69)	Good (70-79)	Excellent (80-100)
Case study introduction Weightage: 5	Inadequate introduction of the case with almost no mention of key points & subtopics at all.	Poor introduction of the case study, does not adequately introduce the key details. Poor or no description of subtopics.	Fair reproduction of the case study but the key points were not clear. Only briefly describe the subtopics.	Good introduction of the case study. Key points & discussion of subtopics to be reviewed.	Strong and precise introduction of the case study, key points & clearly delineates the reviewed subtopics.
Clarity of the case study Weightage: 30	Inadequate content structure with little or no information on the case study. The whole body of content is difficult to understand.	Poor content structure with no clear information on the case study. Sequencing and transitions are very hard to follow.	Content structure on explaining the case sometimes interferes with clarity. Sequencing and transitions are not very easy to follow.	Good content structure with clear explanation on the case study. Sequencing and transitions are easy to follow.	Content and the logic of ideas flow smoothly from one subtopic to another. Sequencing and transitions between paragraphs make clear discussion of the case.
Interpretation / Analysis Weightage: 40	No analysis or interpretation and very difficult to understand of the issues.	Demonstrate poor ability to analyse & interpret the issues. Insufficient understanding of the case.	Demonstrate basic ability to analyse & interpret the issues. Understanding at a beginning level.	Demonstrate a proficient ability to analyse & interpret the issues. Good understanding.	Demonstrate an excellent ability to analyse and interpret the issues. Solid understanding.
Conclusion Weightage: 10	No review of relevant conclusion with no discussion on the impact of the case.	Poor review of conclusion and does not discuss the relevant impact of the case.	Fair review of conclusion but not enough discussion on the impact of the case.	Good review of conclusion with adequate discussion on the topic case.	Strong review of key conclusions with insightful discussion on the impact of the case.
Support Weightage: 15	No significant research study to support the case.	Very few and insignificant sources to support the case study.	Acceptable research sources but not enough case evidence.	Good selection of research sources to support the case.	Strong peer-reviewed research based support of the case study.
Total Weightage: 100	Rubric Title: <input type="text" value="Enter Title..."/>				<input type="button" value="Cancel"/> <input type="button" value="Save"/>

Figure 3. Pre-set rubrics

Once the lecturers have selected the rubrics template or have personally assigned the details of the rubrics, they can edit the pre-set feedback based on the level of performance. Similarly, lecturers can use the ready-made feedback template or edit their own feedback by following the grade level for each grade segment. The next step is for lecturers to operationalise the metric calculation on a selected assignment. There will be two versions of assignments available for lecturers to assess in this prototype; written assignment or presentation.

The screenshot displays the operationalised metric interface. On the left, a rubric grid is visible with performance levels A1, B1, C1, and E1. On the right, a score calculation panel shows the following scores: A1 Score: 89, B1 Score: 32, C1 Score: 34, and Set Score: 90. The interface includes buttons for 'Give Score', 'Save', 'Back', and 'Generate'.

Figure 4. Operationalised metric based on the assigned rubrics

As shown in Figure 4, if lecturers operationalise the rubrics on a written assignment, they may assess several parts of the submission and assign the grade by choosing the level of performance set by the rubrics. The keyed-in marks will be automatically calculated at the end.

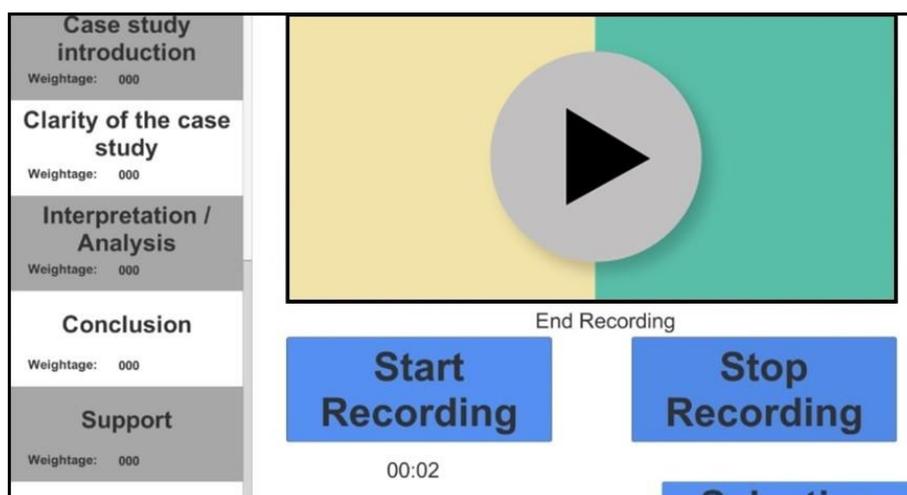


Figure 5. Video recording and marking capture

As shown in Figure 5, if lecturers operationalise the rubrics on presentation, they can record the presentation and bookmark the parts which they wish to assess in addition to running a metric calculation. The part(s) that has/have been bookmarked can be reviewed later and this enables lecturers to properly assess rather than having to do it during the presentation. This helps lecturers be more efficient in assessing student presentations.

Case study introduction A1	0	Clarity of the case study B1	0	Interpretation / Analysis C1	0	Conclusion D1	0	Support E1	0
Case study introduction A2	0	Clarity of the case study B2	0	Interpretation / Analysis C2	0	Conclusion D2	0	Support E2	0
Case study introduction A3	0	Clarity of the case study B3	0	Interpretation / Analysis C3	0	Conclusion D3	0	Support E3	0
Case study introduction A4	0	Clarity of the case study B4	0	Interpretation / Analysis C4	0	Conclusion D4	0	Support E4	0
Case study introduction A5	0	Clarity of the case study B5	0	Interpretation / Analysis C5	0	Conclusion D5	0	Support E5	0
Case study introduction A6	0	Clarity of the case study B6	0	Interpretation / Analysis C6	0	Conclusion D6	0	Support E6	0
Case study introduction A7	0	Clarity of the case study B7	0	Interpretation / Analysis C7	0	Conclusion D7	0	Support E7	0
Case study introduction A8	0	Clarity of the case study B8	0	Interpretation / Analysis C8	0	Conclusion D8	0	Support E8	0
Case study introduction A9	0	Clarity of the case study B9	0	Interpretation / Analysis C9	0	Conclusion D9	0	Support E9	0
Case study introduction A10	0	Clarity of the case study B10	0	Interpretation / Analysis C10	0	Conclusion D10	0	Support E10	0
Weightage of 0%		Weightage of 30%		Weightage of 40%		Weightage of 10%		Weightage of 10%	
F1	0	G1	0	H1	0	I1	0	J1	0
F2	0	G2	0	H2	0	I2	0	J2	0
F3	0	G3	0	H3	0	I3	0	J3	0
F4	0	G4	0	H4	0	I4	0	J4	0
F5	0	G5	0	H5	0	I5	0	J5	0
F6	0	G6	0	H6	0	I6	0	J6	0
F7	0	G7	0	H7	0	I7	0	J7	0
F8	0	G8	0	H8	0	I8	0	J8	0
F9	0	G9	0	H9	0	I9	0	J9	0
F10	0	G10	0	H10	0	I10	0	J10	0
Weightage of 0%		Weightage of 0%		Weightage of 0%		Weightage of 0%		Weightage of 0%	
Score For Assignment: 46.15%				Assessment % of 20%: 9.23%				Save File As PDF	

Figure 6. Assessment Report

Figure 6 shows the last step where lecturers can generate the assessment report in the pdf version so that they can either distribute the report to the students or keep it in the archive. This will take place once all the assignments have been assessed and all the rubrics components marks have been keyed in. As the metric will be calculated automatically, lecturers do not need to calculate students' scores or grades manually. The OMAR e-assessment prototype was developed based on the list of features and requirements generated from the focus group discussions. This ensures that this prototype meets the needs of lecturers who want to evaluate their students' assignments more easily and efficiently.

CONCLUSIONS

Many researches continue to look at the incorporation of technology in education practices and create innovative inventions to assist educators in their daily tasks. However, with regard to the digitalisation of assessment activities, there are not many approaches that incorporate the operationalising of assignment rubrics into metric calculation. Thus, the Operational Metric Assessment & Rubrics (OMAR) e-assessment prototype, a new innovative technology for the easy evaluation of student assignments, fills this gap. In this paper, the authors documented the process of developing the OMAR e-assessment prototype based on three levels of digital literacy development as a guideline. The first level assessed lecturers' digital competency to ensure that lecturers are familiar with technology as part of their teaching practices. The competency was measured using TPACK. The second level looked at lecturers' digital usage to understand their opinions and perspectives in using electronic-based assessment. The findings were used to generate a list of features and requirements needed for developing the e-assessment prototype. The third and final level looked at the digital transformation where a new technology innovation was introduced to enhance the current practice. At this level, the OMAR e-assessment prototype was created based on the features and requirements generated in the second level. The e-assessment prototype was created to reduce lecturers' workload, increase their productivity and encouraging them to go paperless. This corroborates with past studies which showed that digital platforms can increase lecturers' efficiency. Developing a prototype has many beneficial implications including the innovative use of educational technology to support the teaching and learning process.

Statements on open data, ethics and conflict of interest

- The authors can be contacted for the raw data.
- Ethical approvals were gained from the hosting institution.
- The authors declare that there is no conflict of interest.

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Muslim ethics and sustainability guidance in Islamic environmental articles: An analysis of Utusan Malaysia and Berita Harian

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ABSTRACT

Unlike the Western tradition, environmental news in Malaysia reported in Malay newspapers is influenced by Islamic ethics in adherence to the holy Quran. Islamic environmental news reported by Muslim journalists is commonly embedded with Islamic elements, such as the citation of Quranic verses and hadith. As such, this study investigates the ethics and sustainability guidance found in Islamic environmental news published by Utusan Malaysia and Berita Harian from 2012 to 2017. The content analysis approach was employed to discover the type of Muslim ethics and sustainability guidance knitted in both newspapers. In-depth interviews were carried out with 11 journalists from both Utusan Malaysia and Berita Harian to determine the reasons behind incorporating Muslim ethics and sustainability guidance in their Islamic environmental news reporting. The outcomes of the content analysis reveal that ummah (community) was the most represented Muslim ethics in Utusan Malaysia's Islamic environmental articles, and tawhid in Berita Harian, while amana (responsibility) appeared to be the mostly used sustainability guidance in both newspapers. From the interview sessions, ummah emerged mostly in Utusan Malaysia's Islamic environmental articles as, according to some journalists, environment has to be taken care of by all (ummah). As for Berita Harian, tawhid was the mostly used Muslim ethic in Islamic environmental news as it reminded Muslim readers the need to be aware. Most respondents from both Utusan Malaysia and Berita Harian agreed that amana was frequently used in their Islamic environmental articles due to the fact that the environment itself is the responsibility given by the Almighty God to humans, thus the significance for emphasising the term in the articles.

Keywords: *Islamic environmental news, Muslim ethics, sustainability guidance, Islam, newspaper*

INTRODUCTION

In the early 1960s and 1970s, massive industrial revolution resulted in serious environmental degradation, especially environmental pollution and excessive exploitation of natural resources (Al-Damkhi, 2008). Over the decades, the environment has continued to deteriorate and climate change today is a major concern worldwide due to its negative impacts on human health and security (Short, Caminade & Thomas, 2017). Apart from igniting awareness and change of behaviour for environmental sustainability, more efficient ways of using creative communication is crucial for global environmental advocacy (Morgan, 2018). In the efforts of addressing these environmental problems, environmental education among stakeholders, especially the public, is utterly crucial (Gupta, 2014). Through informal environmental education, the media have an integral role in educating the public on the severity of the escalating environmental issues (Mohamad Saifudin, Shaidatul Akma, Balaraman, & Sharifah Nadiyah, 2018) and more importantly, in encouraging the public to participate actively in environmental preservation (Gupta, 2014).

Within the local context of Malaysia, journalists from Malay newspapers have incorporated elements of Islam in their environmental news to highlight the importance of environmental sustenance to the community, as well as to prevent the nature from further harm in accordance to their faith (Mohamad Saifudin & Nik Norma, 2019). The Islamic teachings emphasise the concept of oneness, as there are distinguished connections between the environment and humans (Khyas, 2015). In this regard, Malaysian environmental news published by the Malay newspapers to date is mostly shaped by the endearing values and ethics of Islam, as stipulated in the holy Quran, along with citations of Quranic verses and Hadith (Sayings of the Prophet Muhammad) (Mohamad Saifudin & Nik Norma, 2019).

In recent times, the trend in Malaysian environmental journalism shows that it is being increasingly inspired by the practices of Islam. Muslims are taught about the creation of the universe by the Almighty God (Gada, 2014), and therefore, they are instructed to care for the environment, to deter from damaging it (Ashtankar, 2016), and most importantly, to keep it in balance (Herdiansyah, Jokopitoyo & Munir, 2016). Hancock (2018) stated that, “environmentalism is believed to be a religious duty, either directly (as humankind is the steward of the Earth) or indirectly (as Islamic teachings discourage wastefulness and prohibit financial interest, thus requiring Muslims to behave in environmentally responsible ways and find alternatives to capitalism)”. Hence, a majority of Malay Muslim journalists have begun infusing teachings of Islam, such as citations of Quranic verses and hadiths, to further emphasise on the importance of celebrating, caring, and protecting the environment, besides instilling love and empathy from the community. With the incorporation of Quranic verses, as well as Islamic values and elements, news that promotes good acts of environmentalism is highlighted to believers in relation to the equilibrium of deeds for Judgement Day. Thus, the impact of environmental news is perceived to be greater on readers, especially in changing their minds and behaviour towards the protecting the environment and humanity.

Despite the growing influence of Islamic teachings on environmental journalism, studies that explore Islam and the environment are scarce (Kamlaa, Gallhofer & Haslam, 2006). Only a handful of studies have looked into the effect of Islam on environmental news reporting within the context of Malaysia (Mohamad Saifudin & Nik Norma, 2019). Despite the vast media coverage on Islam, inclusive of its political and social issues, no study, either local or international, has placed focus on the media coverage of Islamic environmental news. To be precise, prior studies have looked at how Islam and political issues, such as international wars, were covered in the media (Ettinger, 2008); how issues on the caricatures of Prophet Muhammad were framed in Malaysian mainstream media (Dafrizal, Faridah & Fauziah, 2011); and the representation of Islam through the media coverages of terrorism and

Islam (Sofia Hayati, Fauziah, Md Salleh, & Moh Nizam, 2013). Additionally, most studies related to environmental news have disregarded Islamic elements or values (Mariah, Raihanah & Md. Salleh, 2004; Hamidah, Adnan, Kamaliah, & Haroon, 2012; Siti Suriani, Liana & Lee, 2014). Having said that, the influence of Islam on environmental news or journalism remains unexplored. Therefore, in bridging the gap of past studies, this study investigates how Islamic elements have influenced environmental news reporting in Malaysia. Intrinsically, this present study is guided by the following questions:

RQ1: What types of Islamic ethics are adopted in *Utusan Malaysia* and *Berita Harian* Islamic environmental news?

RQ2: What types of sustainability guidance are included in *Utusan Malaysia* and *Berita Harian* Islamic environmental news?

RQ3: What are the reasons of utilising Islamic ethics and sustainability guidance in *Utusan Malaysia* and *Berita Harian* Islamic environmental news?

LITERATURE REVIEW

In essence, the extant literature reveals that only a handful of studies have examined environmental journalism and its connection to Islam within the context of Malaysia. Nonetheless, some studies have looked at the connection between Islam and the environment or sustainability in general. Zabariah (2011) assessed the link between Islam and sustainability by listing eight principles of Islam associated with the guidelines of sustainability for humans stipulated in the holy Quran, including: (a) *adl* (justice), (b) *mizan* (balance), (c) *wasat* (modesty), (d) *rahmah* (mercy), (e) *amana* (trustworthiness), *taharah* (spiritual purity and physical cleanliness), (f) *haq* (truthfulness and rights), and (g) *ilm nafi'* (usefulness of knowledge and science). Saniotis (2012), upon discussing Muslim ethics and ecology, outlined three fundamental ideas of Islamic ethics in ecology, namely (a) *tawhid* (divine unity), (b) *khilafah* (trusteeship), and (c) *akhirah* (the hereafter). Similarly, Kamlaa et al., (2006) highlighted that the key guiding concepts and principles of Islam display a clear association between Islam and environment, including (a) *tawheed* (unity of god), (b) *khilafah* (vicegerency), (c) *umma* (community), (d) *adl* (justice), (f) *ihsan* (kindness), (g) *hikma* (wisdom), and (h) *tawadu* (modesty). From the African viewpoint, Olayiwola (2015) claimed that the Islamic way of life can be a solution for the rising environmental problems, apart from creating a greener, safer, and better future for mankind. In general, a number of past studies have revealed a clear link between Islam and the environment.

As depicted earlier, limited studies, regardless of context, have assessed the media coverage of Islamic environmental news, which is worth expanding. Although a few past studies have placed emphasis on how Islam and political issues are represented in the media, especially in light of international wars or conflict (Ettinger, 2008), studies on the media coverage of Islamic environmental news are scarce. In the local context, Dafrizal et al. (2011) examined how issues regarding the caricatures of Prophet Muhammad were framed by two Malaysian mainstream media. Their findings reveal that the controversial issue was mostly framed by the Malaysian media as a religious sensitive issue. Another popular issue that has been studied is the representation of Islam and politics through the media coverage of terrorism and Islam. Sofia Hayati et al. (2013), who looked into portrayal of Islam and

terrorism by the international media, such as *The Economist* and *TIME*, found that the international media still painted a negative picture of Islam and terrorism in their coverage.

The present trend of studies about environmental news coverage in Malaysian media newspapers focuses on general environmental news without any link to Islamic values. For instance, Mariah, Raihanah, and Md. Salleh (2004), as well as Hamidah et al., (2012), assessed the environmental news coverage in Malaysian newspapers, namely *The Star*, *Utusan Malaysia*, *Nanyang Siang Pau*, and *Tamil Nesan*. Interestingly, both studies found that most of the environmental issues featured were in the form of environmental disaster coverage. Meanwhile, Siti Suriani, Liana, and Lee (2013) who examined the factors of environmental news selection in Malaysian media newspaper, discovered that news values, editors' decision, journalists' experience and the office location as well as readers' interest are the main factors for news selection.

While a number of studies have discussed the influence of Islam on journalistic values, not many have specifically focused on environmental news journalists. Steele (2011), in studying Malaysian and Indonesian journalists, found that Islamic values, such as being truthful in reporting, are strongly embedded as a journalistic value among them. In a similar vein, Pintak (2014), in the context of Muslim-majority countries (Arab region, Indonesia, and Pakistan), discovered that Islamic values, such as truth (*haqq*), independence (*nasihah*), and justice (*'adl*), greatly influenced journalistic values in most of the journalists in these regions. With regard to the value of truth (*haqq*), for instance, a majority of the respondents agreed that it is crucial for journalists to be objective and balanced (respecting other beliefs) in their reporting.

Similar to the case of journalistic values, no study has specifically evaluated the challenges faced by journalists in communicating Islamic environmental information. In this regard, environmental information itself is complex and subtle (Archibald, 1999; Corbett, 2006; Adomßent & Godemann, 2011) thus challenging for journalists to translate, simplify, and deliver meaningful environmental messages to the public (Hijmans, Pleijter, & Wester, 2003). In fact, some environmental issues, including climate change and global warming, are too abstract (Trumbo, 1996), hence the difficulty to unthread such issues to the public. Furthermore, topics pertaining to the Islamic view and the environment can be dry, intricate, and heavy for the readers. To avoid this, Mohd. Shuhaimi and Sohirin (2012) prescribed the media to integrate more interactive content, such as cartoons, to convey information in a more interesting and attractive manner.

As advocated by Olayiwola (2015), Islamic teaching can be an effective solution in addressing the escalating environmental crises. In this regard, the media is a great platform, not only to transmit information, but also to educate the society about environmental news (Hamid, Hussein & Chu, 2010) and more importantly, to become an eco-citizen who is actively involved in sustainability activities (Vincenti, 2016). Therefore, this study not only bridges the gap identified in prior studies, but also looks into the thread of Islamic environmental information in selected newspapers and its influence on journalistic values.

METHODOLOGY

This study examines the incorporation of Islamic ethics and sustainability guidance into environmental issues published in two Malaysian Malay newspapers, and the reasons for doing so. In meeting the study objectives, the mixed-method approach of content analysis and in-depth interview were adopted. The reason for using the mixed-method approach is to enable quantitative and qualitative data triangulation (Doyle, Brady, & Byrne, 2016). The triangulation of both study approaches offers a more comprehensive insight that generates

meaningful conclusions to complex issues (Clark, 2019). The mixed-method approach that integrates quantitative and qualitative methods maximises the strength and minimises the shortcomings of each method, thus enhancing the study outcomes (McCrudden, Marchand, & Schutz, 2019).

First, the quantitative content analysis, which refers to a method that analyses words and messages embedded in communication texts (Schwartz & Ungar, 2015; Pashakhanlou, 2017), was conducted on two mainstream Malay newspapers with the highest circulation and readership in the country. Based on the latest statistics issued by the Audit Bureau of Circulation Malaysia (ABCM) from January to June 2018, *Utusan Malaysia* recorded the highest circulation of 107,609 copies per day, while *Berita Harian* recorded the second highest circulation with an average total of 82,252 copies per day. Both newspapers are among the oldest Malay newspapers in the country with more credibility in Islamic environmental communication (Mohamad Saifudin & Nik Norma, 2019). It is noteworthy to highlight that *Utusan Malaysia* has officially stopped its operations on 9 October 2019 due to the adverse financial conditions faced by the organisation. Next, a quantitative method was performed to analyse the frequency (Clark, 2019) and the trend (Soldatenko & Backer, 2019) of Islamic environmental news in both newspapers.

For the purpose of this study, samples of all online Islamic environmental articles published by *Utusan Malaysia* and *Berita Harian* from 2012 to 2017 (six-year period) were gathered. The samples were collected from 2012 onwards as no Islamic environmental article was found in 2011 from both newspapers (Mohamad Saifudin & Nik Norma, 2019). During data collection, the keyword search technique (Soldatenko & Backer, 2019) was employed whereby “Islam and environment”, “environment and Allah”, and other similar terms were used to search the archives of both online newspapers. Only relevant terms were used to identify the articles (Julien & Fourie, 2015). All the collected articles were deductively coded using the coding categories developed based on literature review (Ruggiero & Green, 2017), particularly in accordance to Saniotis’ (2012) Muslim ethics and Zabariah’s (2011) sustainability guidance. Some new categories also emerged from the analysis.

Next, the results of the quantitative content analysis were used as a guideline to develop interview questions. The interview, a method that enables researchers to understand the perspectives and experiences of respondents (Silverman, 2017) in exploring relevant issues (Longhurst, 2009), was conducted with 11 journalists from *Utusan Malaysia* and *Berita Harian* in order to cross-check and verify the outcomes derived from the content analysis. The interview sessions enabled the exploration of intricate issues, including Islamic environmental issues, which are difficult to probe via other techniques, such as questionnaires (Longhurst, 2009). The purposive sampling technique was adopted by interviewing journalists who have specifically covered environmental or Islamic news. Besides purposive sampling, snowballing sampling was also used in this study, whereby new respondents were introduced by other respondents through recommendations due to their experiences in writing Islamic and environmental news articles. The selected journalists were approached to participate in this study via phone calls and emails (Klammer et al., 2019).

For the interviews, all the participants consented for audio recording (Bush-Kaufman, Barale, Walsh, & Sero, 2019) and more importantly, were briefed on informed consent (Ekström, Bruhn & Elinand, 2019). They were informed that their involvement in the interview was based on a voluntary basis and they were allowed to withdraw from the study at any time should they want to do so. All respondents were given an identification code, such as EJ1, EJ2, and so on, to maintain their anonymity (Mohamad Saifudin & Nik Norma, 2019). The interview questions were set in an open-ended format and in the Malay language. The interview sessions were conducted at the respondents’ workplace when they were more carefree and comfortable (Klammer et al., 2019). The interview sessions lasted between 20

and 30 minutes. Based on the data saturation technique, no new responses were retrieved from the respondents (Jones & Taylor, 2018; Bush-Kaufman et al., 2019) after interviewing 11 journalists, and the interview sessions were stopped.

Out of the 11 respondents, 6 were from *Utusan Malaysia* and 5 were from *Berita Harian*. Most of the journalists from *Utusan Malaysia* were males (N=5), and similarly, the number of male journalists (N=3) exceeded that of female journalists (N=2) from *Berita Harian*. A majority of respondents from *Utusan Malaysia* (N=3) were seniors who have more than 15 years of working experience, while those from *Berita Harian* (N=4) were mostly young journalists with working experience less than six years. All respondents from both organisations have a bachelor's degree, hence representing a group of elite professionals in Malaysia. Implicitly, journalists from *Utusan Malaysia* were from a diverse background of studies, whereas those from *Berita Harian* came from the field of communication. It is crucial to note that the profile of the interviewees had no relation to the interview outcomes, as it only serves as an overview to gain information regarding the background of respondents involved in this study.

As for data analysis, the interview data were transcribed in verbatim by a professional transcriber (Donne et al., 2018; Njølstad, Mengshoel, & Sveen, 2018; Bush-Kaufman et al., 2019). The MAXQDA software program was utilised to manage the transcription, while the interview data were coded using qualitative content analysis.

FINDINGS

Table 1 presents the number of Islamic environmental articles published in *Utusan Malaysia* and *Berita Harian*. Between 2012 and 2017, *Utusan Malaysia* published 64 Islamic environmental articles, while *Berita Harian* had published only 48. For *Utusan Malaysia*, most of its Islamic environmental articles (N=26) had embedded the *ummah* Muslim ethic, whereas *Berita Harian* incorporated more *tawhid* Muslim ethic in their Islamic environmental articles (N=23). Answers were sought from the interview sessions with the selected journalists on the reasons for integrating these Muslim ethics in their Islamic environmental articles.

From the interview, EJ3 from *Utusan Malaysia* emphasised that readers are the *ummah* (community) and it is important for journalists to include the *ummah* Muslim ethic in Islamic environmental articles. Most respondents from *Utusan Malaysia* agreed that *ummah* was the most frequently used Muslim ethic in their Islamic environmental articles, as *ummah* emphasises the importance of togetherness or unity of Muslims in preserving the environment. Meanwhile, EJ6 from *Utusan Malaysia* commented as follows:

“If a journalist had wanted to write an [Islamic environmental issue] like this, of course it needs the cooperation and unity of *ummah*. In Islam itself, *ummah* is the main focus in everything, including the environment” (EJ6).

Based on the interview with *Berita Harian* journalists, *tawhid* is the most used Muslim ethic in Islamic environmental articles, as it reflects the belief that Muslims always need to be aware. A respondent from *Berita Harian* highlighted the following:

“*Tawhid* is about the belief in God. If something not right is happening [environmental problem], we include the *Tawhid* value [to educate them]” (EJ7).

Table 1. Muslim ethics in Islamic environmental news

Muslim ethics	<i>Utusan Malaysia</i>	<i>Berita Harian</i>
<i>Tawhid</i> (unity of God)	12	23
<i>Iman</i> (belief)	14	4
<i>Ummah</i> (community)	26	16
<i>Akhlak</i> (attitude)	5	0
<i>Ibadah</i> (worship)	4	2
Sustainability	3	3
Total	64	48

Based on the results of content analysis, *amana* was the most common sustainability guidance that appeared in both *Utusan Malaysia* (N=23) and *Berita Harian* (N=28) articles. When asked in the interview, why *amana* was the most common sustainability guidance used in their Islamic environmental news reporting, the respondents claimed that it portrays the responsibility of humans (Muslim) towards the environment, hence was crucial to be highlighted. One of the journalists from *Utusan Malaysia* explained:

“*Amana* and *rahmah*, for me, they [need to be emphasised] to educate and encourage us so that we know our responsibility to the environment” (EJ4).

Similarly, a respondent from *Berita Harian* also emphasised on the importance of being responsible:

“This earth is created by God for us to take care. We as humans need to be responsible to it. If we destroy the environment, we will face the consequence” (EJ11).

The journalists mentioned that *amana* is deeply connected with the concept of humans as *khalifah* on Earth.

“So as a human being, in Islam, you are considered as a *khalifah*...as a *khalifah* for the earth, you have to be *amana*” (EJ3).

“So if it is about sustainability... it is an *amana* that Allah gave as a responsibility to you to look after the environment. As a citizen of the earth, you have to look after [the environment] as you are the *khalifah*” (EJ6).

Within that context, the journalists opined that the concepts of *amana* and *khalifah* are linked with the personality of Nabi Muhammad s.a.w, The Prophet. Thus, upholding this value by committing to it encourages all of his followers to practice the same value.

“In Islam, we should follow Rasulullah as a role model. Rasulullah is our leader and He has the *amana* value” (EJ8).

“*Amana* is [included] to educate [reader] about the importance of taking care [the environment] together. We have many people in this society. It is a responsibility (*amana*) from God. We are taught by our prophet to take care of the earth” (EJ2).

Table 2. Sustainability guidance based on the Holy Quran in Islamic environmental news

Sustainability guidance	<i>Utusan Malaysia</i>	<i>Berita Harian</i>
<i>Amana</i> (trustworthiness)	23	28
<i>adl</i> (justice)	7	2
<i>Rahmah</i> (mercy)	8	6
<i>Taharah</i> (spiritual purity and physical cleanliness)	2	0
<i>Akhlak</i> (attitude)	3	0
<i>Mizan</i> (balance)	2	3
<i>Ilm Nafi</i> (usefulness of knowledge and science)	4	1
<i>Haq</i> (truthfulness and rights)	6	4
<i>Tawhid</i> (belief in God)	9	4
Total	64	48

DISCUSSION

It is widely believed that in a Muslim-majority country (i.e. Malaysia), the role and influence of Islam is ubiquitous in every aspect of human life (Akhter, Iqbal & Khalid, 2010). Islam regards environmental protection seriously with a call to preserve it as a blessing or grace from the Almighty God. In Islam, the holy book Quran is reckoned as the best and complete guidance for resolving all environmental problems, and the Prophet Muhammad as the pioneer of environmentalism (Manoiu, Düzgüneş, Azzeddine, & Manoiu, 2016). Therefore, it is not surprising to note that the influence of Islam is not only witnessed across Muslim countries, but also in Western secular regions. For instance, the Prince of Wales, in one of his speeches at Wilton Park on 13 December 1996, had cited the Islamic “sense of the sacred” as a crucial tool for human environmental responsibilities (Dien, 1997).

As a whole, the findings from the content analysis reveal that *tawhid* and *ummah* are the main Islamic ethics found in environmental articles in *Utusan Malaysia* and *Berita Harian*. The journalists interviewed from both newspapers felt that they need to build the *ummah* (community) in safeguarding the environment and generating *tawhid*. This is in line with the three founding ideas of the Islamic ecological ethics, namely *tawhid* (divine unity), *khalifah* (trusteeship), and *akhirah* (the hereafter) (Sanjotis, 2012).

This implies that Malaysian reporters demonstrate the consciousness that while there may not be much that can be taught to their readers, they are still accountable for providing basic environmental information. It is their belief that readers should understand rudimentary data to keep the environment and ecosystem balanced as this can significantly affect the harmony and well-being of the country, which is much aligned with the country's progress and prosperity. Knowledge and skills can be used to overcome environmental problems (Rozita, 2002). In this regard, the journalists are trying to provide as much knowledge as possible on the environment and provide guidance on how to care for the environment to all Malaysians.

While discussing the *ummah*, the journalists felt that protecting or preserving the environment is not the responsibility of a particular individual, but involves many parties, including the government and the industry. The correspondents of these newspapers adhere to the teachings of the *ummah*, which is explained in the Quran as a universal concept that must be practised by every journalist in the world. In Islam, *ummah* is always emphasised in protecting the environment; as without a safe environment, they would not be able to worship the Almighty God in peace (Alkali & Daud, 2014).

The implementation of green technology minimises energy consumption and the use of plastic, while promoting the use of stainless steel/bamboo straws, bringing one's own container, avoiding open burning that pollutes the air, and participating in green activities to preserve nature. This confirms that people can indeed carry out their responsibilities to care for God's creations. In this case, the journalists have a responsibility to disseminate the environment related information to readers. To inform and educate is the responsibility of journalists in both newspapers, while understanding and carrying out environmental practices is up to the readers. At least, Malaysian Muslim journalists have carried out their responsibilities as best as possible.

In the newspapers examined, *amana* is the most frequently used term for sustainability guidance based on the Quran. The Quran stipulates that Earth has been placed under human's stewardship for two reasons: 1) to provide sustenance for human beings, and 2) as a test of human morality as guardians of the Earth (Al-Quran, 2:60). According to Zabariah (2011), mankind has been entrusted (*amana*) with this planet, equipped with an array of specially-formed abilities to protect and nurture the planet. We have been given the right abilities and capacities for us to make appropriate decisions in governing Earth. Thus, humans have been given the privilege as a *khalifa* (leader) to take responsibility in protecting the nature from being destroyed and damaged (Mohd Azlan & Abdul Gulam, 2012).

Needless to say, *amana* is directly linked to the principle of *khalifah* (Zabariah, 2011). According to Sulaiman (2016), stewardship of the Earth is one of the responsibilities of a *khalifah*, as mentioned in the Quran: "and the Firmament has He raised high, and He has set up the Balance (of justice), in order that ye may not transgress (due) balance." (Quran 55: 7-8). The Quran has been revealed to man as a guidance to distinguish the good from the bad, or the moral from the immoral. It is man's duty to digest and understand the book of guidance and fulfil their viceregency. However, there are plenty of times when man had failed to act trustworthy, with regard to other humans, or the environment around him (Zabariah, 2011). Within the understanding of Islam, Allah has repeatedly reminded men to treat Earth accordingly and not do evil (Al-Quran, 7:56) as it will backfire on them. Allah may give them a "taste of their deeds" (Al-Quran, 30:41) that may come in the form of natural disasters (Azila, Alias, & Norimah, 2016).

The journalists interviewed were aware of the importance of Islamic ethics in writing about environmental issues in Malaysia. This is linked to the important role of *da'wah*, which refers to the spreading of messages related to Islam to others. This study posits another point of view that spreading Islamic messages is not necessarily conducted by professional Islamic preachers (*ustaz*), but can also be carried out by media journalists and members of the society on an individual basis. In precise, Muslims, regardless of their background and within their own capacity, actually carry the responsibility of spreading positive messages, such as environmental protection, to other people. However, since Malaysia is multi-ethnic, the writing could not be fully devoted to Islamic writing. They need to represent the information in a way that caters to the rest of the country, particularly non-Muslim readers, who are also part of the audience although a majority of the readers for both *Utusan Malaysia* and *Berita Harian* are Malay Muslims.

CONCLUSION

The findings of the study show that the main Islamic ethics and sustainability guidance in environmental articles in *Utusan Malaysia* and *Berita Harian* are *tawhid*, *ummah*, and *amana*. This new insight has not been reported in any past studies on environmental journalism. Islamic environmental ethics places a certain importance on community participation. In order to realise the environmental education of Islam, journalists in Malaysia need to educate themselves first in Islamic ethics, sustainability guidance, and environmental issues. This is crucial to avoid misinformation or error in reporting related to religion, as it may become a sensitive issue among the public. In fact, it would be helpful for the journalists to attend trainings related to Islamic studies, in order to be better prepared in writing Islamic messages in the future. In addition, they could also refer to Vision 2020 that illustrates a combination of Western principles of governance with Islamic environmental ethics.

As a whole, this study advocates a different viewpoint from the West, in which environmental journalism and reporting should no longer be viewed solely from the secular lens, but more on their connection with religions, such as that sought in Islam. This study reveals that environmental journalism practised by Muslim journalists in Muslim-majority countries, such as Malaysia, are influenced by their Islamic beliefs and teachings. Thus, Muslim journalists tend to incorporate Islamic messages into their environmental reporting as a tool to attract their fellow Muslims to read the articles.

As much as this study contributes to the body of knowledge, particularly in the area of environmental reporting and Islamic communication, certain limitations are duly noted. The study only assessed two local Malay newspapers. Hence, future studies should consider other local Malay newspapers, as well as other Muslim-majority countries, such as Indonesia, Brunei, and Pakistan. In addition, as prescribed by Yang and Leong (2017) on the importance of gaining civilian opinions on the reporting of religious issues, future researchers may want to consider studying the perspective of Muslim readers about Islamic environmental reporting in Malaysia. Since Malaysia is a multiracial country, it would be best for future researchers to consider assessing the influence of other faiths, such as Christianity, Buddhism, and Hinduism, in local media reporting. Additionally, it would be interesting if future research can analyse Friday religious sermon (*khutba*) texts to better comprehend the Islamic environmental messages embedded in them.

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Web interactivity and news credibility: Which is the stronger predictor to online news consumption in Malaysia?

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ABSTRACT

Online news is often associated with high interactivity but low credibility. The increase in online news consumption suggests that people turn to the Internet for news because of the attractiveness of digital media even though some content is less than credible. Does web interactivity outweigh news credibility? This study aims to uncover which factor has a greater effect on how people consume online news in Malaysia; a country known for its media control. Using purposive sampling to recruit Malaysian news audience, we conducted an online survey on 520 respondents and later used Partial Least Squares-Structural Equation Modelling (PLS-SEM) to analyse the data. The findings show that both interactivity and credibility were significant predictors to people's positive attitude towards online news and its consumption. The strength of the relationship linking credibility and news consumption was higher than the relationship between interactivity and news consumption. We also found that attitude towards online news was a significant mediator for both relationships; suggesting its influence on the increasing use of the Internet for news. Our data confirmed the importance of web interactivity and news credibility. However, news credibility is of greater importance than interactivity in predicting online news consumption among Malaysians. Finally, implications of the study are discussed in relation to the practice of media control and the threat of fake news dissemination on social media in Malaysia.

Keywords: **news consumption, interactivity, credibility, online news, Malaysia**

INTRODUCTION

The popularity of Internet has increased exponentially over the years as more and more people turn to it for various online activities including news consumption. Since 2005, reading news on the Internet has been recognised as a common practice or routine among the public (Hashim, Hasan, & Meloche, 2009). Contemporary news consumption has shown some interesting trends. Firstly, the Internet has become one of the major sources for news (Cassidy, 2007). Secondly, social networking sites (SNS) have become a popular platform for accessing and consuming news (Sülflow, Schäfer, & Winter, 2019) and these shape a new culture of accessing news via multiple platforms (Kim, Newth, & Christen, 2014) in today's digital society. Thirdly, the backbone to this development is the use of mobile technologies which have enabled easy access to news anywhere and anytime (You, Lee, Lee, & Kang, 2013). Studies also show that online news consumption has become a practical daily habit of people as they access news through constant news checking (or routine surveillance), incidental news exposure or/and directed consumption based on their own interest in a particular topic (Antunovic, Parsons, & Cooke, 2018); all of which are the consequences of easy access to news via mobile devices.

The changes in news consumption practices have become a threat to traditional media. The switch from traditional print to online news has also been projected in many studies (e.g. Bell, Owen, Brown, Hauka, & Rashidian, 2017; Boczkowski, Mitchelstein, & Matassi, 2017). Many scholars and media practitioners predicted that new media sources would replace traditional sources of news and information (Ahlers, 2006; Meyer, 2009). The "threat" could be further explained by looking at the decline of newspaper circulations as well as television news ratings (Ahlers, 2006). The emergence of the Internet has overtaken the role of the traditional media by boosting its capability to create a new market. Hence, it explains the decline of traditional media in the form of newspapers and television (Quandt, Löffelholz, Weaver, Hanitzsch, & Aitmeppen, 2006). Consequently, online news consumption has shown an increase over the years. In fact, Newman (2017) claimed that online newsreaders would rely on the Internet such as social networking sites instead of printed news to consume news.

Similar trends can be traced in Malaysia as Internet penetration and online news consumption increased while newspaper circulation decreased. Statistical data by Audit Bureau of Circulations (ABC) Malaysia in 2018 shows that the print news readership and circulation in Malaysia has declined steadily over the years. The circulation figures report covers the geographical distribution for West and East Malaysia. The total paid circulation figure of three language papers—Malay, English and Chinese has dropped from 2,103,604 (Quarter 2, 2017) to 2,078,316 (Quarter 1, 2018) (ABC, 2018). Realising the power of the Internet, most newspapers in Malaysia have made their presence felt online. Major newspapers in Malaysia such as *The Star*, *New Straits Times*, *Utusan Malaysia* and *Berita Harian* have their online editions (Alivi, Ghazali, Tamam, & Osman, 2018) and also mobile applications for users to have easy access to their news. In addition, the proliferation of alternative media in Malaysia marks the booming of online news sources. Many alternative media such as *MalaysiaKini*, *The Malaysian Insight*, *Free Malaysia Today* and *MalaysiaToday.com* are well-received and highly consumed by Malaysians. *MalaysiaKini*, for instance, was ranked as the top news source in Malaysia for the year of 2018 (Malaysiakini, 2018; Nain, 2018). Studies investigating current news readership in Malaysia also confirmed that most people preferred to access news online than offline (Alivi et al., 2018; Freeman, 2013; Wok, Tamam, & Bolong, 2011) and they consumed online news from multiple platforms especially from social media (Omar, Ismail, & Ng, 2018).

Researchers in communication and journalism fields have attempted to explain the reasons for online news adoption. On one hand, news research focused on the credibility of the content as a determining factor for news adoption. Credible message (in this context, credible news media) is an important determinant for news consumption. Studies (Johnson & Kaye, 2010, 2015, 2016; Tsfati, 2003, 2010; Tsfati & Cappella, 2003) generally agree that media credibility has strong influence on media reliance. News audience rely on media that they perceive to be credible. According to Lazer and colleagues (2018), credibility explains why certain media receive a larger audience than other media and in fact determines the survival of the press. Here is a body of literature that compares audience's perception of credibility for different types of media. The findings, however, are mixed and inconsistent. Some studies found traditional media to be more credible than online media (e.g. Chan, Lee, & Pan, 2006; Wok et al., 2011) while others found online media perceived as being more credible than the traditional ones (e.g. Mackay & Lowrey, 2011; Wilson, Leong, Nge, & Hong, 2011). Often, these studies show that the low credibility of online media is related to the lack of the gatekeeping process in its production (Westerman, Spence, & Van Der Heide, 2014) while low credibility of traditional media is related to the practice of media control (Nain & Wang, 2004; Omar et al., 2018). Studies that support the credibility of online media over traditional media claimed that the latter were controlled by either corporations or government with the authority to shape the news (Abbott & Givens, 2015). Nevertheless, studies that found support for the lack of credibility of online media suggest that the unfiltered online news brings about the spread of fake news in the digital world (Parcu, 2019). Due to the mixed findings of past research, credibility alone is insufficient to explain the increase in online news consumption.

On the other hand, many studies agree that online news media has many other attractive characteristics that determine its adoption. Amongst them are mostly free access to news sources (Deuze, 2001), convenience (Salwen, Garrison, & Driscoll, 2005), multimedia contents (Opgenhaffen, 2011), availability of breaking news and fast updates — or immediacy (Nguyen, 2010), easy navigation to locate news (Huang, 2009) and interactive features (Bucy & Tao, 2007). Of all these characteristics, Karlsson (2011) contended that immediacy and interactivity are key attributes of online news that differentiate it from traditional news sources. While other characteristics do play roles in explaining the increase in adoption, the switch from traditional print to online news sources is often associated with immediacy (e.g. Karlsson, 2011; Omar, 2007) and interactivity (e.g. Avidar, 2018; Yoo, 2011). However, it is also important to highlight that past research has also associated immediacy with lack of accuracy in news reporting (Karlsson, 2012; Karlsson & Strömbäck, 2010) because they claim that the practice of 24-hour reporting (i.e. immediacy) is achieved at the expense of news accuracy. We argue that immediacy can be considered as the reason for the lack of online media credibility as discussed earlier, while interactivity is somehow free from such claims. Interactivity, on the other hand, has been considered as the predictor to online news adoption in journalism studies (Nah, Yamamoto, Chung, & Zuercher, 2015). Therefore, the present study treats interactivity as the core characteristic of the medium, which we term as web interactivity, that is expected to predict online news consumption along with the influential role of the message factor, that is, news credibility.

Our goal is to determine the influence of web interactivity and news credibility on the attitude of Malaysians towards online news and its consumption. Specifically, our research objectives are:

- 1) To examine the effects of news credibility and web interactivity on attitude towards online news and online news consumption.
- 2) To investigate the role of attitude towards online news in predicting online news consumption; and its mediating role in influencing the relationship between news credibility and online news consumption and between website interactivity and online news consumption.
- 3) To determine the most influential factor, news credibility or web interactivity, in predicting online news consumption in the Malaysian context.

LITERATURE REVIEW

Online news consumption in Malaysia

Online news consumption in Malaysia is on the rise. Internet penetration in Malaysia shows substantial increase in recent years which can be linked to an increase in online news consumption. There are approximately 21, 090, 777 Internet users out of the total population of 30, 751, 602 in Malaysia. Furthermore, the total number of non-Internet users has decreased from 9, 693, 790 (2015) to 9, 660, 825 (1 July 2016) (Internet Live Stats, 2016). With a total increased percentage of 14.1%, the local statistical survey report shows that Internet users aged 15 and above has steadily risen from 2013 (57%) to 2015 (71.1%) (Department of Statistics Malaysia, 2016). Hence, it is anticipated that Internet users in Malaysia may reach 24.6 million by 2021 (The Statistics Portal., 2017). Moreover, the Multimedia and Communications Ministry (MCMC) reported that Malaysians spent an average of 12 hours a day accessing the Internet via multiple devices such as cell phones, tablets and computers for the year of 2015. Their report showed that Malaysians utilised tablets and computers the most with the total time spent about 5 hours and 36 minutes per day (Achariam, 2015).

High Internet consumption suggests high engagement with online activities including news consumption. The Department of Statistics Malaysia (2016) listed six online activities that Malaysians were highly engaged in, namely; participating in social networks (84.3%), getting information about goods and services (79.6%), downloading images, movies, videos or music, playing or downloading games (76.1%), sending or receiving e-mails (68.4%), reading online news or downloading online newspaper or magazines, electronic books (61.1%) and downloading software or applications (61.0%). Their data shows reading news online as among the top online activities in Malaysia. In fact, interactivity is perceived as the medium's factor that boosts online communication satisfaction (Salleh, 2012). The interactivity features of online newspapers lead to greater user gratification in Malaysia (Zulkafli, Omar, & Hashim, 2014).

Audience for traditional mainstream media in Malaysia, on the other hand, is shrinking. Malaysian youths are increasingly using online media for news (Omar, 2017) and have turned away from traditional mainstream media due to the practice of media control (Nain & Wang, 2004; Salman, Ibrahim, Abdullah, Mustaffa, & Mahbob, 2011). This is because the role of the mainstream media in Malaysia is to convey the government's plans (Wang, 2001) and as a tool for expressing official government viewpoints (Ahmad Ishak, 2009). Hence, the traditional mainstream media in Malaysia is often described as mostly owned by the government and controlled by media ownership and law. The plight of some major newspapers in Malaysia, particularly the closure of government-owned news corporation, Utusan Malaysia Sdn. Bhd. (Yunus, 2019) and the takeover of New Straits Times (NST) news plants by Karangkrak Sdn.

Bhd. are manifestations of the continuous declining circulation figures (Ramli, 2019). A closer examination of this phenomenon suggests a strong association between low media credibility and low circulation and consumption which eventually precedes the closure. Traditional mainstream media in Malaysia is associated with the lack of credibility that led to a decline in its consumption (Nain & Wang, 2004). The increase of online news consumption in the Malaysian context is also associated with the same cause (Omar et al., 2018). Malaysia offers a unique situation in which both medium attractiveness and message credibility are equally important in explaining news consumption in today's digital environment.

News credibility

The term “credibility” was first coined by Hovland, Janis, and Kelley (1953) back in 1950s and its studies are still widely discussed and developed until today. Credibility is defined as “the degree to which politically-interested web users judge information on the Internet to be believable, fair, accurate and in depth” (Johnson & Kaye, 1998, p. 325). Later research by Tseng and Fogg (1999, p. 39) perceived credibility as “believability” or a perceived quality, equipped with two key components, i.e. trustworthiness and expertise. By narrowing the definitions of credibility into the news story context, the study by Sundar (1999, p. 380) conceptualised credibility as “a global evaluation of the objectivity of the story”.

The credibility issue has been extended to various types of media such as newspapers, television or radio (Abdulla, Garrison, Salwen, Driscoll, & Casey, 2002; Melican & Dixon, 2008; Sundar, 1999) and between online news sources (Go, You, Jung, & Shim, 2016) between mainstream and traditional non-mainstream media (Omar & Ahrari, 2020). Studies found that credibility is crucial to preserve the quality of news (Graefe, Haim, Haarmann, & Brosius, 2018) as well as the survival of the press because news readers tend to value credible news (Choi & Kim, 2017) that later determine their reliance upon it.

Extensive research in the past has focused on news credibility both in traditional and online news. Yang and Patwardhan (2004) investigated Internet news consumption and their findings demonstrated that the perceived credibility of Internet news potentially boosts the consumption of current affair news on the Internet. Chan et al. (2006) who studied the effects of online news credibility on the web attitude among journalists in China found that online journalists rated low in credibility, particularly on online media websites compared to mainstream media websites. A later study by Fletcher and Park (2017) emphasised on the importance of credibility in determining news source preferences as well as online news participation behaviour. In another study, Sülflow et al. (2019) examined audience's selections on social media and found that online newsreaders tend to spend more time with online news sources that offer higher credibility of news than others. Meanwhile, an even more recent study found that a more credible media has the potential to displace a less credible one (Omar & Ahrari, 2020).

Hence, we hypothesise the following:

- H1** News credibility has positive effects on attitude towards online news.
- H2** News credibility has positive effects on online news consumption.

Web interactivity

Interactivity is defined as “an expression of the extent that in a given series of communication exchanges, any third (or later) transmission (or message) is related to the degree to which previous exchanges referred to even earlier transmissions” (Rafaeli, 1988, p. 111). Some define interactivity as a technological attribute that supports reciprocal communication or information exchange (Bucy & Tao, 2007) or users’ perception of the characteristic of a computer-mediated communication (Broekhuizen & Hoffmann, 2012).

Empirical studies labelled interactivity features as one of the significant factors in influencing attitude on web advertising (Campbell & Wright, 2008), Facebook advertising (Yaakop, Anuar, & Omar, 2013) as well as online news consumption (Chan & Leung, 2005; Omar, 2014). Early studies by Chung (2008) on the interactivity feature of online news found that it potentially boosts the consumption of online news publications. He highlighted that the interactivity of online news enables newsreaders to actively select or control their desired news types. A recent study by Larsson (2016) explained that most of the current news publications utilised social media platforms such as Facebook to disseminate news and hence increased further online news consumption due to its interactivity feature. Another study by Chan-Olmsted, Rim, and Zerba (2013) found that interactive features as a relatively advantageous attribute is positively associated with mobile news adoption among young adults. As an example, the virtual form of electronic newspaper brings a sensational experience and allows news subscribers to access news by flipping pages (Omar, 2014) via multiple devices.

Therefore, we propose the following hypotheses:

H3 Web interactivity has positive effects on attitude towards online news.

H4 Web interactivity has positive effects on online news consumption.

Attitude towards the online news

Attitude is used to represent “a person’s evaluation of the entity” (Fishbein & Ajzen, 1977, p. 889) or as “a predisposition to respond in a favourable or unfavourable manner” (Burton, Lichtenstein, Netemeyer, & Garretson, 1998, p. 298). In fact, extensive research (Bagozzi & Burnkrant, 1979; Fishbein & Ajzen, 1974, 1977) has been done to examine the relationship between attitude and behaviours. In fact, Yoo (2011) categorised attitude as one of the explicit behaviours among online newsreaders.

However, the early introduction of online news failed to cultivate positive attitudes among news consumers. As a consequence, online news consumption was low and several reasons could be attributed to this. Most of the newsreaders still relied heavily on print media and paying intent for online news was rather low (Chyi & Yang, 2009). In addition, newsreaders with least favourable attitudes towards online news rated online news as low credibility (Kiousis, 2001) compared to traditional news and yet this further challenged online news consumption. Kenney, Gorelik, and Mwangi (2000) also explained that the early introduction of online news consumption offered low levels of interactivity and this did not change much for the next 25 years.

On the contrary, Westlund (2010) conducted cross-cultural studies and concluded that the Japanese were more likely to develop positive attitudes than the Swedish in terms of mobile news adoption. Empirical work by Dahlgren, Shehata, and Strömbäck (2019) contended that newsreaders tend to consume news which is consistent with their attitudes, both in traditional

and new media. They also found that an individual's attitude could further strengthen his/her ideological leaning.

Hence, the following hypotheses were proposed.

- H5** Attitude has positive effects on online news consumption.
- H6** Attitude mediates the relationship between news credibility and online news consumption.
- H7** Attitude mediates the relationship between web interactivity and online news consumption.

CONCEPTUAL FRAMEWORK

The proposed conceptual framework is presented in the Figure 1. It illustrates the relationships between news credibility and web interactivity towards online news consumption. This present study also incorporated attitude as the mediator of the study.

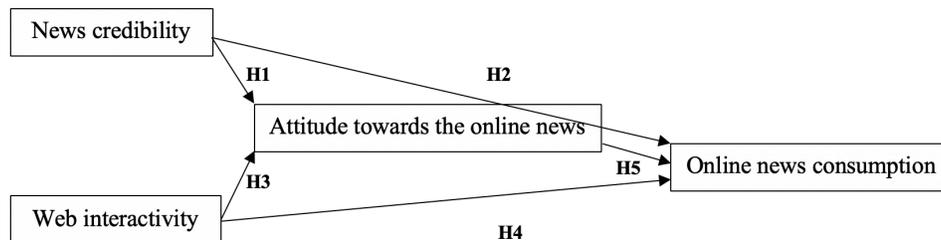


Figure 1. Conceptual framework of the study

METHODOLOGY

An online survey was chosen over other survey modes due to several reasons; it is cost-effective, interactive and allows fast data collection from Internet users who read news online. Flick (2015) remarked that the application of online survey is rising with nearly one-third of studies utilising online surveys to recruit prospective respondents. Using purposive sampling technique, a total of 520 respondents were recruited from the large pool of Malaysian Internet users. Wimmer and Dominick (2014) claimed that the utilisation of purposive sampling places emphasis on the specific characteristics or features of prospective respondents and removes those who failed to fulfil the stated requirements. For our online survey, we added two filter questions; Malaysians and online newsreaders. Those who did not meet these two criteria were disqualified as respondents of the study. Despite the disadvantages of non-probability sampling techniques, purposive sampling is suitable for the current study due to two reasons. Firstly, the sampling frame is unavailable to allow for a probability sampling technique to be used in the present study. Secondly, the targeted sample consists of Malaysian internet users who often read news online. Hence, this method suits the purpose of reaching this large online population.

The sample of this study were Malaysians who are online news readers and aged above 18. This research study recruited 310 females and 210 males. The majority of the respondents

were young Malaysians aged between 18 and 40 (70%), while only 30% of the respondents were above 40. The distribution of sample according to age matched closely that of the Malaysian population distribution. We also recruited respondents according to race in line with the overall population distribution of Malaysians. More than half of the total respondents were Malays (63.7%), followed by Chinese (26.0%), Indians (9.2%) and other races (1.2%). By matching the sample distribution and Malaysian population distribution, we attempted to increase the level of representativeness of the sample, although a non-probability sampling technique was used to recruit the respondents.

We ran three normality tests, (1) Shapiro-Wilk test, (2) Kolmogorov-Smirnov test and (3) Mardia's test of multivariate kurtosis to determine the distribution shape of the study data as suggested by various scholars (Ali, Rasoolimanesh, Sarstedt, Ringle, & Ryu, 2018; Field, 2013; Memon, Ting, Ramayah, Chuah, & Cheah, 2017; Sarstedt & Mooi, 2014). Normality tests using Shapiro-Wilk and Kolmogorov-Smirnov showed that the value of all constructs, i.e. credibility, interactivity, attitude and online news consumption were lower than 0.05; suggesting non-normal data distribution. Similarly, results of the Mardia's test of multivariate skewness and kurtosis showed p-value less than .05; indicating non-multivariate normal distribution as well. Based on the results of normality tests, we employed Partial Least Square - Structural Equation Modelling (PLS-SEM), a non-parametric analysis to test the hypotheses of the present study. Scholars (Hair, Risher, Sarstedt, & Ringle, 2019) recommend the use of PLS-SEM for non-normally distributed data as the test does not require normality assumptions.

FINDINGS

PLS results estimation with smart partial least squares

In the first phase of Partial Least Squares-Structural Equation Modelling (PLS-SEM), we performed reflective indicators for all the selected constructs, i.e. news credibility, web interactivity, attitude as well as online news consumption. In this study, reflective model was chosen to formulate and test the study framework. Hence, all reflective indicators, which refer to arrow scheme of the model are showcased in an "outward" manner (Chin, 1998). Reflective model is measured and assessed according to four components, namely, internal consistency (composite reliability), indicator reliability, convergent validity (average variance extracted) and discriminant validity (Hair Jr, Hult, Ringle, & Sarstedt, 2014).

In PLS, it is necessary to examine the composite reliability score; as it is similar to Cronbach's alpha value, as the traditional criterion in SPSS (Lowry & Gaskin, 2014). The scores of composite reliability range between 0 and 1, as the higher score indicates higher level of reliability. It is much similar with the interpretations of Cronbach's alpha (Hair Jr et al., 2014). The composite reliability scores should be higher than 0.700 as any score below 0.600 is considered as lacking internal consistency reliability (Hair Jr et al., 2014; Lowry & Gaskin, 2014). Table 1 showcases that all the constructs (i.e. news credibility, web interactivity, attitude and online news consumption) achieved a score of greater than 0.7.

In terms of indicator reliability, the second component, is concerned with examining the outer loadings and yet the standardised outer loadings should be 0.708 or higher, although 0.70 is acceptable (Hair Jr et al., 2014). However, Hulland (1999, as cited in Wong, 2013) claimed that a value of 0.4 and above is acceptable in exploratory research although it is preferable to obtain a

value of 0.7 or higher. The outer loadings of the indicators for the constructs attained scores of 0.6 and above.

Convergent validity, as the third component, refers to the “extent to which a measure correlates positively with alternative measures of the same construct” (Hair Jr et al., 2014, p. 102). Researchers need to ensure that the outer loadings of the indicators are high and the average variance extracted (AVE) exceeds 50%. For the AVE of the study, some of the indicators of the constructs were omitted as an effort to obtain an AVE value of more than 0.5. Thus, all the AVE values of the constructs were able to meet the 0.5 criterion.

Table 1. Measurement model of PLS

Variables	Items	Outer Loadings/Indicator reliability	AVE	Composite Reliability
News credibility	CRE1	.796	.545	.877
	CRE3	.813		
	CRE4	.758		
	CRE5	.726		
	CRE6	.665		
	CRE8	.659		
Web interactivity	INT2	.669	.508	.878
	INT3	.681		
	INT4	.719		
	INT6	.736		
	INT7	.694		
	INT8	.737		
	INT10	.747		
Attitude	ATT1	.860	.748	.959
	ATT2	.899		
	ATT3	.885		
	ATT4	.808		
	ATT5	.879		
	ATT6	.872		
	ATT7	.832		
	ATT8	.877		
Online news consumption	ONC1	.752	.655	.905
	ONC2	.825		
	ONC3	.795		
	ONC4	.828		
	ONC5	.843		

Note: CRE = news credibility, INT = web interactivity, ATT = attitude, ONC = online news consumption

The testing of the measurement model also concerns the issue of multicollinearity. To address this, discriminant analysis was conducted. Table 2 presents the results of discriminant validity for the five constructs (i.e. news credibility, web interactivity, attitude and online news consumption). There are two (2) types of discriminant validity: cross loadings and Fornell-Larcker criterion. In terms of cross loading, the outer loading of an indicator should be higher than the other constructs. For the Fornell-Larcker criterion, it is labelled as the “conservative” method and the square root of the AVE should be greater than its highest correlation with other

constructs (Hair Jr et al., 2014). Discriminant validity is crucial to be determined as it is the precondition to be tested before analysing the relationships between variables. The previous studies, however, are more likely to apply the Fornell-Larcker criterion but somehow it has now been replaced by HTMT (heterotrait-monotrait ratio of correlations) (Henseler, Ringle, & Sarstedt, 2015). Therefore, the application of HTMT is perceived as another substitute test to examine discriminant validity. The results show that all the variables met the requirement for discriminant validity as none of the relationship scored above .85.

Table 2. Discriminant validity using heterotrait-monotrait ratio (HTMT)

Variables	1	2	3	4
1. Attitude				
2. Web interactivity	.437 CI .900[0.321;0.547]			
3. News credibility	.424 CI .900[0.326;0.514]	.467 CI .900[0.353;0.573]		
4. Online news consumption	.430 CI .900[0.330;0.521]	.395 CI .900[0.298;0.480]	.429 CI .900[0.342;0.509]	

Structural model assessment: Direct effects

We tested five direct path relationships between variables using the PLS-SEM algorithm and bootstrapping as presented in Table 3. The results show that all relationships are significant. Both key constructs (i.e. news credibility and web interactivity) have significant effects on attitude towards online news and online news consumption. We compared the strength of the relationships and found that news credibility ($\beta = .286, p = .000$) has stronger effects on attitude towards online news than web interactivity ($\beta = .276, p = .000$). The difference, however, was small. The strength of the relationship between news credibility and online news consumption ($\beta = .224, p = .000$) was higher than the relationship between web interactivity and online news consumption ($\beta = .156, p = .003$). The findings suggest that news credibility is a stronger predictor to online news consumption than web interactivity. The path between attitude of online news and online news consumption was also significant ($\beta = .240, p = .000$); suggesting the importance of having positive feelings towards online news to ensure its consumption.

Table 3. PLS structural model results: Direct effects

Hypotheses	Std beta	Std error	t-value	p-value	BCI LL	BCI UL	f ²	VIF
H1 CRE→ATT	.286	.044	6.569	.000	.194	.363	.088	1.198
H2 CRE→ONC	.224	.045	5.000	.000	.136	.313	.050	1.304
H3 INT→ATT	.276	.054	5.100	.000	.175	.376	.081	1.198
H4 INT→ONC	.156	.052	2.988	.003	.048	.260	.024	1.296
H5 ATT→ONC	.240	.050	4.774	.000	.146	.345	.058	1.285

Structural model assessment: Mediation effects

We identified attitude towards online news as the mediator to the relationships between news credibility and online news consumption, and between web interactivity and online news consumption. Table 4 shows significant results for both indirect relationships. The findings suggest that news credibility influences attitude towards online news which in turn affects online news consumption ($\beta = .069, p = .000$). Similarly, the mediation effect of attitude towards online news on the relationship between web interactivity and online news consumption is also significant ($\beta = .066, p = .004$). The inclusion of attitude towards online news as mediator lessens the strength of direct relationships between the variables of the study. The results suggest a complimentary partial mediation (Zhao, Lynch Jr & Chen, 2010).

Table 4. Summary of mediation test effects

Indirect Hypotheses	Std beta	Std error	t-value	p-value	BCI LL	BCI UL
H6 CRE→ATT→ONC	.069	.018	3.757	.000	.037	.109
H7 INT→ATT→ONC	.066	.023	2.862	.004	.029	.119

* $p < .05$, ** $p < .01$, *** $p < .001$

DISCUSSIONS

Past news research has established several determinants of news adoption and this study identified two of the most important factors for investigation. Our aim was to examine the role of web interactivity and news credibility in determining online news consumption in a Malaysian context. Specifically, we were interested to discover which factor has greater effects on online news consumption. We found that both news credibility and web interactivity have significant effects on online news consumption, while the best predictor was news credibility. The findings have several implications.

Firstly, news credibility is perceived to be of greater importance than web interactivity in determining online news consumption in Malaysia. It implies that the quality of the message is considered more influential than the attractiveness of the medium to get people to read news online. Past research that support the influence of credibility on media use is abundant (e.g. Johnson & Kaye, 1998; Sundar, 1999; Thorson, Vraga, & Ekdale, 2010) but little is known about the extent that it can outdo other influencing factors. This study proved that news credibility was the most influential factor in determining online news consumption in Malaysia. To explain why credibility is perceived more important than web interactivity, we turn to the media landscape in Malaysia to provide possible explanations. Government control over traditional mainstream

media has been identified as one of the reasons why Malaysians go online to find unbiased news (Nain & Wang, 2004). Traditional mainstream media suffers lack of credibility due to the practice of media control (Azizuddin Mohd Sani, 2011). This factor contributes to the increase in online news consumption (Omar et al., 2018). The increasing use of online news in Malaysian context is driven largely by the lack of credibility assigned to traditional mainstream media. Hence, it is not surprising to find that news credibility has greater influence than web interactivity towards online news consumption in Malaysia.

Nevertheless, the significant effects of web interactivity on online news consumption suggest that online media should continue to improve its interactive features to engage people with the news. This second implication of the study suggests that the key attraction for users to use the Internet is its attractive features. With a wide range of applications, the Internet offers so many attractive and interactive content choices such as online games, social networking, virtual communities, video watching etc. All of which compete for users' attention and time. If online news abandons its interactivity, which is the most important feature that differentiates online news from traditional news, users may choose to engage in other activities other than news consumption. Past news research has also confirmed the importance of interactivity to encourage news adoption (e.g. Chan & Leung, 2005; Chan-Olmsted et al., 2013) and news engagement (e.g. Ksiazek, Peer, & Lessard, 2016; O'Brien, 2011). It is important to note that interactivity is a dynamic concept. As digital technology advances rapidly, interactive features on the Internet are developed and enhanced to keep up with changes. Hence, news providers in the industry must keep abreast with this development so that they can offer better experiences to news consumers from time to time. Failure to adopt to these rapid changes and advancements may lead to a decrease in consumption and substitution with other sources which users may find to be more attractive and interactive.

Another implication of the study can be drawn from the significant role of attitude towards online news which has direct and indirect effects on online news consumption. The findings show that both news credibility and web interactivity lead to a positive attitude towards online news which in turn leads to an increase in online news consumption. Therefore, the "feeling good" attitude towards online news serves as a motivator or stimulus which encourage Malaysians to read news online. This positive attitude, however, can be hampered by the destructive effects of fake news in today's news environment. In Malaysia, we have seen many incidences of misinformation such as USD1 billion donation given by Brunei rulers to the new government led by Pakatan Harapan, Singapore's lawsuit on Malaysia for the cancellation of the HSR project and Selangor's Crown Prince's conversion to Catholicism, to name a few. Recent studies suggest that news consumers were led to misleading information especially when they accessed news via social media (Pearson & Knobloch-Westerwick, 2018). Studies also show that the formation of attitude is closely related with trustworthiness or credibility of the information source (Faraon, Stenberg, & Kaipainen, 2014). Again, news credibility has gained attention in research in explaining the positive attitude towards online news. Hence, contemporary journalists and news consumers (who also can become news providers) are encouraged to take the proactive role as "watchdog" or "gatekeeper" in news production, sharing and dissemination (Aboukacem & Haas, 2018) because misinformation may lead to a negative attitude towards online news which in turn can inhibit news consumption.

Literature on online news consumption in Malaysia is scarce. This study adds to our understanding of the role of news credibility and web interactivity in predicting attitude towards online news and online news consumption among Malaysians. The focus of the study is on

message (news credibility) and medium (web interactivity) factors. However, this story falls short in capturing the human factor such as people's interest in news and motivation for seeking news. Future research should include these factors to allow for a more comprehensive understanding of predictors to online news consumption in Malaysia. As the trend in online news consumption suggests that people read news from multiple online news platforms (such as online newspapers, news portals, news aggregators, blogs, twitter and social networking sites), future studies may consider examining how Malaysians use these different types of platforms to access news and their evaluation of its affordance (interactivity and etc.) and message quality (news credibility) according to platforms. Future research is also encouraged to study fake news dissemination through online media, its effects and possible solutions to further enhance our understanding of online news consumption in Malaysia.

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Web interactivity and news credibility:

Which is the stronger predictor to online news consumption in Malaysia?

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The use of mobile technologies for learning in higher education: Students' readiness

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ABSTRACT

A rapid evolution of technologies and their proliferation in the education system has created a new paradigm of learning with universities embarking on the integration of mobile technologies in higher education. As a result, mobile learning has emerged as a new way of learning. Mobile learning utilises mobile technologies such as smartphones, laptops, tablets and the Internet, allowing students to learn anywhere and access learning resources anytime. To ensure the successful implementation of mobile learning in higher education, it is imperative to understand students' readiness for using mobile technologies to learn. This paper examines whether undergraduate students of a private university are ready to adapt to the mobility of learning through the use of mobile technologies. A quantitative research approach was adopted. Data was collected from a sample of 234 students of a private university using questionnaires. The descriptive statistics analysis shows that students were fairly comfortable (61.1%, $M=3.17$) with the use of mobile technologies for learning purposes (98.3%), specifically for accessing and downloading online journals (82.5%) and searching for information (82.1%). Most students somehow agreed that products and services that use technologies were much more convenient to use ($M=3.75$) and they were open to learning new and different technologies ($M=3.71$); however, students were only moderately ready for mobile learning if it is were to be implemented by their university ($M=3.32$). This study concludes that students are ready to use technology as they are fairly comfortable with the use of mobile technologies, yet they are only moderately ready to adopt M-Learning. However, despite demonstrating an interest towards mobile technologies used for learning, the students are still not quite ready to adopt M-Learning in higher education. The present study contributes to a growing body of empirical research about the mobile technologies used for learning in Malaysian higher education and recommends that the Ministry of Education assesses the prospect of applying mobile technologies for learning in higher education institutions.

Keywords: *mobile technologies, mobile learning, students' readiness, private university, Malaysia.*

INTRODUCTION

A rapid evolution in technologies has created a new paradigm of learning with universities embarking on integrating mobile technologies in higher education. The integration of mobile technologies, such as mobile phone, smartphone, tablet and laptop, in education has allowed students to communicate with peers as well as with their lecturers. Students also use mobile technologies to access educational materials on the Internet because they perceive the Internet as the fastest way to gain information (Joorabchi, Hj Hassan, & Osman, 2013). Mobile technologies have been instrumental to the way teaching and learning are conducted (Klassen, Eibrink-Lunzenauer, & Glogglar, 2013) and the increasing proliferation of technology in smartphones has caused a new paradigm of learning – mobile learning – to emerge. This new way of learning which utilises mobile technologies allows students to learn and access learning resources anywhere and anytime.

Quinn (2000) expounded that mobile learning (M-Learning) takes place when students use mobile devices for educational purposes, and Kengwe and Bhargava (2014) defined M-Learning “as a dynamic learning environment through the use of mobile technologies especially in the field of education” (p. 58). In addition, Ozdamli and Cavus (2011) described mobile technologies as instant, portable, interactive, collaborative and ubiquitous while M-Learning is a learning method that allows learners to access learning resources anytime and anywhere.

Mobile technology has provided a new way of integrating M-Learning in the academia. While many universities are testing out the possibility of mobile technology implementation (Briz-Ponce, Pereira, Carvalho, Juanes-Mendez, & Garcia-Penalvo, 2016), in the Malaysian context however, research has only been conducted amongst public universities thus far (see Alzaza, & Yaakub, 2011; Abuhassna, & Amin, 2014; Said, 2015; Ismail, Azizan, & Gunasegaran, 2016). One of the major factors that allowed M-Learning to be implemented in the Malaysian higher education is the usage of mobile devices among the younger generation. A survey conducted by Malaysian Communication and Multimedia Commission (MCMC) in 2017 reported that the main users of mobile technologies are from the 20–24 age group (18.4%); and they are also make up the majority of Internet users (21.4%) compared to any other age groups.

Despite the numerous advantages of integrating mobile technologies for learning in higher education, as explicated in prior literature, its successful implementation cannot materialise without the full comprehension of student perspectives, especially factors that affect their adoption of M-Learning (Masrek, 2015; Sarrab, Al Shibli, & Badursha, 2016; Zainol, Yahaya, Mohamat Yahaya, & Md Zain, 2017) and their readiness in using mobile technologies for learning (Figaro-Henry, & James, 2015; Ismail et al., 2016). Therefore, this paper, aims to (1) determine students' usage of mobile technologies for learning, (2) gauge students' readiness in adopting M-Learning, as well as (3) measure the relationship between students' motivation for using mobile technologies to learn and students' readiness for M-Learning. The two research questions and one hypothesis guiding this paper are: RQ1: How are mobile technologies used by students to learn?; RQ2: What is the readiness level of students for M-Learning?; and H1: Students' motivation for using mobile technologies to learn is positively correlated with students' readiness for M-Learning. The findings of this paper are useful to researchers, educators and readers who seek to understand the perceptions of university students towards adopting mobile technologies for learning. Additionally, university administrators can assess students' interests towards using mobile technologies for learning, thus allowing them to better identify factors required to successfully implement M-Learning. Mobile learning application developers can also understand better students' perspectives and help them to further enhance and fine-tune their applications.

LITERATURE REVIEW

Mobile technologies

Mobile technologies include all technological devices which are handheld, portable, and lightweight and equipped with Internet connection and accessibility from anywhere with a wireless or mobile network (Wiebrands, 2012; Kengwe, & Bhargava, 2014). The devices range from mobile phones, smartphones, tablets, iPads, to laptops and personal digital assistants (PDAs) (Hussin, Manap, Amir, & Krish, 2012). These mobile devices are becoming “the new form of the handheld computer that has capabilities to be used in the learning processes” (Prensky, 2005, as cited in Alzaza, & Yaakub, 2011, p. 95). Thus, “mobile technologies if employed effectively, can support social constructivist approaches to learning” which allow students to collaborate and communicate with peers within the class or around the world, as well as expand discussions and learning beyond the classroom (Cobcroft, Towers, Smith, & Axel, 2006, p. 25) and perform well in their studies (Adegbija, & Bola, 2015). However, it can be a distraction when these devices are used excessively for entertainment purposes (Montrieux, Vanderlinde, Schellens, & De Marez, 2015). According to Zhang (2015), “...although there are both pros and cons for the use of mobile technologies in education, the advantages far outweigh the disadvantages. Thus, mobile technologies play a significant role in the field of education with a new way of learning through M-Learning” (p. 506).

Some scholars highlighted that millennials are one of the first generations of being exposed to technology and the Internet since young (Djamasbi, Siegel, & Tullis, 2010) and millennial students own at least a handphone or other mobile devices because they are surrounded by technological gadgets which keep on changing rapidly (Rahamat, Shah, Din, & Abd Aziz, 2012; Wong, Lean, & Fernandex, 2011). Mobile technologies now offer a new generation of learning for people of all ages, especially millennial students, anywhere and anytime (Alzaza, & Yaakub, 2011). Due to their instantaneous, portable, interactive and collaborative nature (Ozdamli, & Cavus, 2011), the rapidly evolving mobile technologies have massively changed the way teaching is conducted in higher education. According to Abuhassna and Amin (2014), lecturer-student interactions have evolved due to the advancements of mobile technologies, which has enabled lecturers and students to interact remotely at any time and in any setting, instead of being confined to face-to-face communication in a traditional classroom setting.

Several studies have investigated students’ perceptions towards the use of mobile technologies in the context of Malaysian higher education. One study by Yeap, Ramayah and Soto-Acosta (2016), involving 900 students of a public university in Malaysia, found 92.3% of the respondents owned smartphones and 42.6% owned tablets.

“Students are more likely to adopt technology for learning when the use of that particular technology aligns with their learning approaches... using mobile devices for learning actually empowers the students to take control of their learning pace and help them in their academic development and productivity” (Yeap et al., 2016, p. 334).

Two other studies conducted by Said (2015) and Abuhassna and Amin (2014) also looked at the student population of a public university in Malaysia. In Said’s (2015) study, he found that all respondents (N=86) owned a laptop and 80.2% of them had access to smartphones, which revealed the extensive use of mobile devices by students in accessing a variety of learning services in the university. As for the comfort and confidence level of using mobile technologies, 40.7% of the respondents were very comfortable, 47.7% were fairly comfortable and 67.4% were confident in frequently using mobile technologies for learning

purposes (54.4%) due to significant advantages such as efficiency, easy to use, pleasing and comforting (Said, 2015). Similarly, Abuhassna and Amin's (2014, p. 76) study showed "a high level of comfort towards using mobile devices among the students of a public university (88%) (fairly to very comfortable)". The authors concluded that the respondents seem to be familiar with mobile technologies with a majority of them using email through laptops/notebooks (50%) and smartphones (32%) to communicate with their lecturers.

Mobile learning (M-Learning)

The evolution of mobile technologies and its proliferation in the education field have potentially created the next form of electronic learning (e-learning) which enables lecturers and students to conduct their learning anywhere and anytime (Alzaza, & Yaakub, 2011). This is known as mobile learning (M-Learning). M-Learning refers to the use of mobile and handheld devices such as PDAs, mobile phones, laptops, and tablets for teaching and learning (Nassuora, 2013). Such forms of learning allow users and/or students to learn anywhere as long as they have portable devices and wireless connection (Hoppe, Joiner, Milrad, & Sharples, 2003).

Scholars have given many definitions for M-Learning. Alexander (2004) expounded that M-Learning takes place using wireless technologies and emphasises on using personal mobile and portable devices which are held close to the body with access to Internet, for learning. Georgiev, Georgieva and Smrikarov (2004) stated that M-Learning is part of e-learning but affords the ability to learn everywhere, at any time without any permanent physical connection to cable networks through the use of mobile and portable devices. Naismith, Lonsdale, Vavoula, and Sharples (2004) described M-Learning as a rich, collaborative and conversational experience through the use of personal and portable technologies in which users can access educational materials whether in classrooms, homes or streets of a city, while Traxler (2007) opined that M-Learning is "essentially personal, contextual and situated" through the use of mobile, personal and wireless devices such as handheld computers and mobile telephones in the classroom and community to support student learning (p. 10).

There is a growing body of literature about the uses and impacts of using M-Learning to support teaching and learning. For example, Evans (2008) investigated the effectiveness of M-Learning in the form of podcasting with 196 undergraduate students of a UK university using an online survey. The findings showed that podcast is a more effective revision tool as it is efficient, effective, engaging and flexible because students can study when and where they want, as well as "fills an important needs gap by allowing learners to continue the learning activities when it might not normally be possible" (Evans, 2008, p. 495). Next, Kutluk, Donmez, Gulmez, and Terzioglu (2015) conducted a study with 247 accounting students of a university in Turkey to determine their perspectives about M-Learning. Using questionnaire surveys, their findings showed that students perceived M-Learning as easy and reliable, and they intended to continue adopting M-Learning because it enabled immediate access to information, helped them complete their homework more quickly, and anywhere (Kutluk et al., 2015). The authors concluded that M-Learning has a significant influence on student learning because M-Learning is "a combination of interactions between learners, their devices, and the social environment which requires new learning skills and the transformation of teachers' roles and identities... to provide high-quality education" (Kutluk et al., 2015, p. 65). Lastly, Al-Hunaiyyan, Alhajri and Al-Sharhan (2016) examined students' and instructors' perceptions towards the effectiveness of M-Learning to understand the challenges that affect its implementation. The findings were drawn from a survey conducted with 623 students and 132 instructors from various higher education institutions in Kuwait. Results revealed that both students and instructors perceived M-Learning positively as an attractive learning tool which allowed students the freedom to learn whenever and wherever they want as well as its mobility and potential of providing various ways of learning and following up on students' records and grades. However, the main

challenge that dodged its implementation was resistance to change because of the pervading belief that M-Learning increases instructors' work, due to the necessary additional preparations (Al-Hunaiyyan et al., 2016).

Students' readiness for mobile technologies and M-Learning

As discussed earlier, mobile technology is a technological advancement that has paved the way for a new paradigm of higher education; and M-Learning is increasingly adopted as an effective tool for student learning (Hussin et al., 2012; Ismail et al., 2016). It is a known fact that students are technology savvy because they have been exposed to advanced technologies such as mobile devices and Internet from a very young age (Djamasbi et al., 2010). However, while students do use mobile technologies more frequently, this does not necessarily mean that they are ready to utilise it for university learning (Ismail et al., 2016). In order to have a successful and effective implementation of M-Learning in the Malaysian higher education, it is essential to investigate students' readiness for mobile technologies as well as their readiness to adopt M-Learning.

Some scholars have long argued that it is imperative to investigate and understand students' behaviour towards the use of technology because "positive attitudes toward mobile technology lead to the behavioural intention to use m-learning" (Almutairy, Davies & Dimitriadi, 2015, p. 1506). Besides, another readiness issue that needs to be addressed is the awareness of students about the benefits of M-Learning (Ismail et al., 2016). The definition of readiness is the state or quality of being ready and willing to do something (Oxford Advanced Learner's Dictionary, n.d.). According to Schreurs, Ehler and Moreau (2008), readiness refers to a learner's ability to adapt to technological challenges, thus technology readiness indicates "people's propensity to embrace and use new technologies for accomplishing goals in home life and at work" (Parasuraman, 2000, cited in Almutairy et al., 2015, p. 1506). Another definition of readiness is "the state or quality of being ready; preparation; promptness; aptitude; willingness. Prepared for what one is about to do or experience; equipped or supplied with what is needed for some act or event; prepared for immediate movement or action" (Turnbull et al., 2010, cited in Rahamat et al., 2012, p. 79).

In the Malaysian context, although M-Learning is still in its infancy, the rapid growth of mobile technologies and its proliferation in the education environment, has intensified the immense potential of M-Learning as an effective learning tool (Hussin et al., 2012). The authors conducted a preliminary study on M-Learning readiness among students of two public universities in Malaysia. The findings from 91 survey responses revealed that the students "were highly familiar with computing and communicating activities using their mobile phone. However, half of the study sample expressed that they were not ready for M-Learning at that point in time but would be ready to adopt M-Learning after two years" (Hussin et al., 2012, p. 282). The authors concluded that "the respondents welcomed the idea of integrating M-Learning into future courses as they were already familiar with computing and communication activities that M-Learning may require. However, they were quite reserved when it came to financial issues" (Hussin et al., 2012, p. 282).

Rahamat et al. (2012) investigated the perception and readiness of secondary school students for using mobile technologies to learn. Based on questionnaire responses from 235 students of 6 secondary schools in Seremban (a capital in Negeri Sembilan state, Peninsular Malaysia), findings showed that the students were technologically, economically and competently prepared for the use of mobile technologies in learning. The students were: (1) technologically ready with regard to the devices they owned and the way they were being used; (2) economically ready with their willingness to use the learning package designed for them involving the use of their mobile devices; and 3) competently ready with regard to their knowledge and skills in using their mobile devices (Rahamat et al., 2012).

Lastly, Ismail et al. (2016) explored Malaysian university students' readiness for M-Learning by investigating the following two issues: (1) Are students in Malaysian universities ready for M-Learning and technology in education? and (2) What are the factors that influence their readiness for M-Learning? A questionnaire survey was carried out with 551 respondents from 11 public universities in Malaysia. The findings were manifold: (1) the students were only moderately ready for M-Learning because many of them were not quite familiar with such new learning approach, (2) there was an interest among them to learn more about M-Learning, (3) only a moderate level of awareness among them on the educational benefits of mobile technologies because they did not really understand the benefits that they could gain through M-Learning, and (4) cost was a concern among them if M-Learning were to be implemented in their university (Ismail et al., 2016).

In short, drawing from the literature review of students' readiness towards mobile technologies and M-Learning in the Malaysian context: (i) most studies on student readiness towards M-Learning were based on student populations in public universities; and (ii) the assessment of students' experiences, perspectives and readiness of using mobile technologies for learning in higher education remain unexplored. These two research gaps will be addressed in this paper, specifically looking at students' usage of mobile technologies for university learning and their readiness in adopting M-Learning.

Uses and gratifications theory

The uses and gratifications (U&G) theory by Katz, Blumler, and Gurevitch (1974) is "one of the most successful theoretical frameworks' which examines the questions of "how" and "why" individuals use media to satisfy their particular needs (Quan-Haase, & Young, 2010, p. 351). With the prevalent use of social media and mobile technologies, more scholars now agree that the U&G theory is "an appropriate theoretical framework for examining the uses of new media by individuals" (Dermentzi, Papagiannidis, Osorio Toro, & Yannopoulou, 2016, p. 322) because it helps to expound on the how and why "individuals actively seek out and use specific media to satisfy specific needs" (Dolan, Conduit, Fahy, & Goodman, 2015, p. 262). The theory also posits that "individuals are capable of assessing value judgments of media content and have the initiative to link needs and gratifications to a specific choice of medium" (Ifinedo, 2016, p. 194). Although this theory has been around for about 50 years, it is still being applied in contemporary media research investigating users' motivations for using computers and information technology, social media, as well as mobile technologies (Sarapin, & Morris, 2015).

The focus of this theory is on what people do with media because people are characterised as active, discerning, and motivated in their media use (Quan-Haase, & Young, 2010). Individuals are motivated to select certain media or technology to fulfil their needs and wants, and the choices they make about the media use would fulfil their need gratification (Sarapin, & Morris, 2015). Individuals "receive gratifications through the media, which satisfy their informational, social, and leisure needs" (Phua, Jin, & Kim, 2017, p. 115).

METHODOLOGY

This study employed an online questionnaire survey, which is a quantitative research method that can be used to collect a large amount of data with relative ease and at a reasonable cost (Wimmer & Dominick, 2014) as well as allows respondents to respond anonymously. However, this method requires consistent follow-up due to low response rate and a longer time to collect sufficient responses (Sukamolson, 2010).

The questionnaire survey was set up using Qualtrics.com, a subscription software for collecting and analysing data. The survey consisted of 15 questions in three sections, that is, Section A: Mobile technology usage; Section B: Students' readiness for mobile learning; and Section C: Demographic profile. Section A comprised of seven questions: the types of mobile devices used, students' level of comfort in using mobile devices, the usage of mobile devices for learning purposes, frequency of usage, purpose of usage, average time spent on mobile devices daily and motivation for using mobile devices. Section B contained two 5-point Likert scale questions with 22 items on students' readiness towards technology and M-Learning in higher education. Lastly, Section C collected demographic information using 6 questions: age range, gender, ethnicity, programme, year of study and field of study. The questions for Section A were adapted from Said (2015) while Ismail et al.'s study (2016) was used for Section B. The survey was made up of multiple choice questions, dichotomous questions and 5-point Likert scale statements which responses ranging from Strongly Disagree, Disagree, Neutral, Agree and Strongly Agree (refer to Appendix 2 for the questionnaire).

The study sample was students of a private university in the Klang Valley. The survey questionnaire link was distributed to the students through Facebook. Data collection took place from 23 April to 17 June 2018. Throughout the data collection period, three reminders were posted on Facebook. However, due to a low response rate through Qualtrics.com, the survey was then randomly administered to students in the compound of the university using smartphones and tablets. At the end of the data collection period, a total of 234 responses was garnered. The collected data were exported from Qualtrics.com to Statistical Packages for Social Sciences (SPSS) version 25 for screening and analysis. The Cronbach's alpha reliability test for the 22 Likert items of this questionnaire scored a value of 0.902, which is an acceptable value (ranging from 0.70 to 0.95) (Tavakol, & Dennick, 2011).

The respondents' demographic profile is shown in Table 4.1. A total of 126 male (53.8%) and 108 female respondents (46.2%) participated in the survey. Majority of the respondents were in the 20–30 age group (90.2%). There were 17 respondents below 20 years old (7.3%), 5 in the age range of 31–40 (2.1%) and only one in 41–50 age group (0.4%). In terms of ethnicity, majority of the respondents were Chinese (83.8%), followed by Malay (10.3%), Indian (5.1%), Bengali (0.4%) and Sinhalese (0.4%). Next, most of the respondents were undergraduate students pursuing their bachelor degree (N=194), followed by 31 pursuing their diploma, 4 undertaking foundation courses, 3 undertaking professional courses, and only 2 pursuing a master's degree. With regard to year of study, half of the respondents were in Year Three (50%), followed by 32.2% in Year Two, 15.8% in Year One, and 3% in Year Four. The field of study ranged from Arts (31.2%), Management (29.1%), Sciences (23%), Social Sciences (6.4%), Culinary (4.3%), Information Technology (3%), others (1.7%), to Engineering (1.3%).

Table 1. Respondents' demographic profile

Demographic		N (respondents)	Percentage (%)
Gender	Male	126	53.8
	Female	108	46.2
Age range	20–30	211	90.2
	Below 20 years	17	7.3
	31–40	5	2.1
	41–50	1	0.4
Ethnicity	Chinese	196	83.8
	Malay	24	10.3
	Indian	12	5.1
	Bengali	1	0.4
	Sinhalese	1	0.4
Programme	Degree (undergraduate)	194	82.9
	Diploma	31	13.2
	Foundation	4	1.7
	Professional	3	1.3
	Master	2	0.9
Year of study	Year 3	117	50
	Year 2	73	32.2
	Year 1	37	15.8
	Year 4	7	3.0
Field of study	Art	73	31.2
	Management	68	29.1
	Sciences	54	23.0
	Social Sciences	15	6.4
	Culinary	10	4.3
	Information Technology	7	3.0
	Others	4	1.7
	Engineering	3	1.3

FINDINGS

To answer RQ1, a descriptive analysis was carried out to derive the frequency, mean, standard deviation and percentage for the data collected on mobile technology usage. Table 2 shows the usage frequencies for different types of mobile devices. Firstly, smartphones and laptops were the two mobile devices most heavily used; 231 respondents used smartphones (98.7%) and 220 students used laptops (94.0%). This is followed by 113 respondents who used tablets (48.3%) and 76 who used MP3 players (32.5%). PDAs and E-book readers were the least used, with only 11 using PDA (4.7%) and 3 using E-book reader (3.3%).

Table 2. Types of mobile devices and their usage frequency

Mobile devices	N (respondents)	Percentage (%)
Smartphone	231	98.7
Laptop	220	94.0
iPad/Tablet	113	48.3
iTouch/MP3 player	76	32.5
Personal digital assistant (PDA)	11	4.7
E-book reader	3	1.3

The next question assessed whether mobile devices were used for learning purposes. Table 3 shows that the majority of the respondents used mobile devices for learning purposes (N=230, 98.3%) while only 4 did not (1.7%). Although almost all of the respondents used mobile technologies for learning purposes, the time spent for this purpose varied. As shown in Table 4, slightly more than half of the respondents only used mobile technologies for learning *sometimes*, which is equivalent to spending 1 to 3 hours per week (N=135, 57.7%). While, 82 respondents used mobile technologies for learning about 1 to 3 hours daily (35%) (*always*), only 13 *seldom* used mobile technologies for learning (5.6%).

Table 3. Purpose of using mobile technologies

Items	N (respondents)	Percentage (%)
Sometimes (1–3 hours a week)	135	57.7
Always (1–3 hours a day)	82	35.0
Seldom (1–3 hours a month)	13	5.6
Never	4	1.7

Table 4. Time spent on mobile technologies for learning

Items	N (respondents)	Percentage (%)
Yes, for learning purposes	230	98.3
No, not for learning purposes	4	1.7

With regard to how the mobile technologies were used for learning purposes, Table 5 shows that 193 respondents used them to access online journals (82.5%), 192 to search for information (82.1%), 177 to write assignments (75.6%), 175 to access learning management system (74.8%) and for sharing knowledge with other students (N=167, 71.4%). Not many used mobile devices to participate in online educational discussion forums (N=72, 30.8%), or to communicate and network through social network sites (N=103, 44%). This finding shows that mobile technologies were mainly used by the respondents for purposes of academic activities.

Table 5. Purpose of mobile technology usage

Items	N (respondents)	Percentage (%)
Accessing and downloading online journals	193	82.5
Searching for information	192	82.1
Writing assignments	177	75.6
Accessing learning management system (Blackboard, Moodle)	175	74.8
Sharing knowledge with other students	167	71.4
Accessing related sites and online sources	155	66.2
Discussing about assignments	149	63.7
Communicating through email	139	59.4
Taking notes	137	58.5
Downloading reading materials	129	55.1
Networking and communicating through social networks	103	44.0
Participating in online educational discussion forums	72	30.8

To measure the average time spent using mobile technologies on a daily basis for six selected activities, a 5-point Likert scale was used where the responses included 1: None, 2: less than 1 hour, 3: 1–3 hours, 4: 4–6 hours and 5: more than 6 hours (refer to the questionnaire in Appendix 2). Table 6 shows that respondents spent on average 1–3 hours daily for all the six

activities: browsing the Internet (M=3.79), messaging (M=3.56), engaging in conversation (M=3.43), playing games (M=3.38), learning or educational purposes (M=3.34) and the least, listening to music with a mean score of 3.18.

Table 6. Average time spent daily using mobile technologies for selected activities

Items	Mean	Std Dev
Internet (Web/Mail)	3.79	0.813
Messaging	3.56	0.883
Conversation	3.43	0.911
Games	3.38	1.144
Learning/Educational	3.34	0.914
Music	3.18	1.056

The last question in Section A measured the respondents' level of agreement on statements regarding motivations for using mobile devices using a 5-point Likert scale. The responses included 1 representing *Strongly Disagree*, 2 representing *Disagree*, 3 representing *Neutral*, 4 representing *Agree*, 5 representing *Strongly Agree* and N/A representing *Not Applicable* (refer to Appendix 2).

Further, the respondents somewhat agreed (mean score of 3.39 to 4.06) on the 29 statements about motivations for using mobile devices (Table 7 in Appendix 1), The motivations included using mobile devices to communicate with distant friends (M=4.06); something to do to occupy their time (M=4.06); to keep in touch with their friends and family members (M=3.98); it is entertaining (M=3.97); when they have nothing better to do (M=3.96); when they are bored (M=3.96); it allows them to unwind (M=3.94); it is a pleasant rest (M=3.94); to provide information (M=3.92); it is enjoyable (M=3.91); and it relaxes them (3.90). The respondents somewhat agreed that the motivation was to play around on mobile devices (M=3.86), when there is no one else to talk or be with (M=3.85), to present information about their special interest (M=3.82), it makes them feel less lonely (M=3.79), it is a habit that they do (M=3.79), they do not have to be alone (M=3.75), and to share information that may be of use or interest to others (M=3.71). In summary, the motivations for using mobile devices reflect a mix of functional (i.e. for communication, share information) and hedonistic (i.e. occupy time, entertaining, pleasant rest, playing, avoid loneliness) purposes.

In answering RQ2, three questions (one question in Section A and two questions in Section B) were analysed and findings are shown in Tables 8, 9 and 10. Firstly, respondents were asked to provide their perceived level of comfort in using mobile technologies for learning purposes. As shown in Table 8, 61.1% of the respondents claimed that they were fairly comfortable, 27.8% of them were very comfortable and 11.1% were a little comfortable. The mean value of respondents' level of comfort is M=3.17. This result suggests that students of this private university are considered technology savvy as none have off them indicated that they were not comfortable in using mobile technologies.

Table 8. Respondents' level of comfort when using mobile technologies

Items	N (respondents)	Percentage (%)
Fairly comfortable	143	61.1
Very comfortable	65	27.8
A little comfortable	26	11.1

Next, respondents were asked to state their level of agreement on statements about their readiness for technology (Question 8, Section B, see Appendix 2). Table 9 shows that the respondents agreed to a certain degree on all 12 statements about their readiness for using technology with a mean score of 3.26 to 3.80. The respondents preferred mobile phone programmes that allow them to tailor things to fit their needs (M=3.80). They also favoured the idea of using the most advanced learning technologies available (M=3.76), preferred products and services that use technologies (M=3.75), were open to the idea of learning new and different technologies (M=3.71), as well as agreed that technology gives people more control over their daily lives (M=3.70). However, it is interesting to note that not many agreed that technology was designed to make life easier and usually has disappointing results (M=3.26) and they were not the first to acquire new technologies among their circle of friends (M=3.28).

Table 9. Respondents' level of agreement on readiness for technology

Statements	Mean	Std Dev
You like mobile phone programmes that allow you to tailor things to fit your own needs.	3.80	0.702
You prefer to use the most advanced learning technology available.	3.76	0.701
Products and services that use the technologies are much more convenient to use.	3.75	0.728
You are always open to learning about new and different technologies.	3.71	0.809
Technology gives people more control over their daily lives.	3.70	0.768
You like the idea of using mobile phone for the purposes of learning because you are not limited to regular working hours.	3.57	0.721
Society should not depend heavily on technology to solve its problems.	3.53	0.860
You keep up with the latest technological developments in your areas of interest.	3.44	0.878
In general, you are among the first in your circle of friends to acquire new technology when it appears.	3.41	0.905
You enjoy the challenge of figuring out high-tech gadgets.	3.33	0.912
In general, you are among the first in your circle of friends to acquire new technology when it appears.	3.28	0.974
You find that technology designed to make life easier usually has disappointing results.	3.26	0.977

Lastly, the respondents expressed their level of agreement on statements that gauged their readiness for M-Learning in higher education as shown in Table 10. The results show that the respondents were keen to find out more about M-Learning (M=3.75) and they thought M-Learning was good for them (M=3.72). Besides, they also would like their lecturer to integrate M-Learning into their courses (M=3.72), and into the classes in addition to the face-to-face meetings (M=3.58). However, some preferred the conventional learning rather than M-Learning (M=3.51) and they were afraid that they will spend more money on mobile phone bills because of M-Learning (M=3.50). Other results show that some students were unsure of what M-Learning is about (M=3.42) and they were moderately ready for M-Learning if it were to be implemented by their university (M=3.32). Finally, some respondents were unsure whether they would be willing to spend extra money for M-Learning (M=3.19) and whether M-Learning will make their life difficult (M=3.00).

Table 10. Respondents' readiness for M-Learning in higher education

Statements	Mean	Std. Dev.
I want to know more about mobile learning.	3.75	0.770
I think mobile learning is good for me.	3.72	0.696
I would like my lecturer to integrate mobile learning in my course.	3.72	0.795
I would like my lecturer to integrate mobile learning in my class in addition to face-to-face meeting in the class	3.58	0.738
I prefer conventional learning than mobile learning.	3.51	0.748
I am afraid I will spend more money on my handphone bill because of mobile learning.	3.50	0.771
I know what mobile learning is all about.	3.41	0.969
I am not ready for mobile learning if the university implements it now.	3.32	0.919
I don't mind paying extra money for mobile learning.	3.19	1.035
Mobile learning will make my life difficult.	3.00	0.974

In testing the hypothesis, the Pearson correlation test result (Table 11) shows that there is a weak but significant positive relationship between students' motivation for using mobile technologies for learning and students' readiness for M-Learning ($r=.36$, $p<.01$).

Table 11. Respondents' readiness for M-Learning in higher education

Correlations		Readiness_New	Motivation_New
Readiness_New	Pearson Correlation	1	.355**
	Sig. (2-tailed)		.000
	N	234	234
Motivation_New	Pearson Correlation	.355**	1
	Sig. (2-tailed)	.000	
	N	234	234

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

DISCUSSION AND CONCLUSION

This paper investigated students' usage of mobile technologies for learning and their readiness for technology and M-Learning in a private university. Firstly, findings show that smartphone and laptop are the two top mobile devices most heavily used by the students for learning. This finding is consistent with Djamasbi et al. (2010), Alzaza and Yaakub (2011), Rahamat et al. (2012) and Said (2015) who highlighted that students are surrounded by technological gadgets and have been exposed to technology and Internet since young. Thus, mobile technology is common among students to write assignments (Said, 2015) and access learning resources anywhere, anytime (Alzaza, & Yaakub, 2011). However, in contrast to Said's (2015) study whose findings revealed that students tended to use mobile technologies to network and communicate through social networks, the students in this study mainly used mobile technologies for learning purposes as they spent at least one to three hours per week on mobile devices to access online journals, search for information, write assignments and access to the university's learning management system.

Secondly, with regard to students' readiness for technology and M-Learning, findings show that the majority of students are comfortable with using mobile devices for learning, and they are keen to know more about M-Learning. This finding concurs with Said's (2015) study, in which the students are comfortable using mobile devices for learning although there are some who are unsure about whether they are ready for the integration of M-Learning into

university courses. Findings from this present study reveal that students prefer to use the most advanced technologies that can be tailored to meet their own needs, and this corroborates with Ismail et al.'s findings (2016) which revealed that students welcomed new types of learning technologies. Additionally, both studies concur that students are eager to find out more about M-Learning because they perceive that M-Learning will be beneficial to them but at the same time, are concerned about the entailing extra costs.

In conclusion, this study shows that students of a private university in the Klang Valley Malaysia are ready to move towards technology as they are fairly and very comfortable with the use of mobile technologies. Furthermore, they have access to personal mobile devices for learning. However, the students are only moderately ready to adopt M-Learning although they are open to the idea of learning new technologies and perceive M-Learning to be simple and beneficial.

Drawing from this conclusion, two implications are evident. Firstly, educators could provide diverse learning experiences to attract students' attention for mobile technologies' usage in higher education, and secondly, university administrators and policy makers from the Ministry of Education should assess the prospect of applying mobile technologies in higher education institutions. Ultimately, the present study contributes to a growing body of empirical research about mobile technology usage for learning in the Malaysian higher education.

As the study is based on a single university, the findings are not able to represent the overall student population of private universities. Another limitation is the use of a single methodology approach – quantitative research – thus the lack of in-depth insights about respondents' perceptions. It is recommended that future studies should expand the sample to include a larger sample of students and/or lecturers and a more even distribution from across Malaysian universities. In addition, employing a combination of both qualitative and quantitative research methods can be expected to produce richer and more comprehensive insights. These suggestions could enable further the generalisation of the findings to the overall population of students and/or lecturers in Malaysian higher education institutions.

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Appendix 1**Table 7.** Respondents' level of agreement on motivations for using mobile devices

Statements	Mean	Std Dev
1. I use mobile device to communicate with distant friends.	4.06	0.770
2. I use mobile device because it gives me something to do to occupy my time.	4.06	0.773
3. I use mobile device to keep in touch with friends and family.	3.98	0.769
4. I use mobile device because it's entertaining.	3.97	0.661
5. I use mobile device when I have nothing better to do.	3.96	0.799
6. I use mobile device because it passes the time away, particularly when I'm bored.	3.96	0.751
7. I use mobile device because it allows me to unwind.	3.94	0.767
8. I use mobile device because it is a pleasant rest.	3.94	0.767
9. I use mobile device to provide information.	3.92	0.757
10. I use mobile device because it's enjoyable.	3.91	0.770
11. I use mobile device because it relaxes me.	3.90	0.755
12. I use mobile device because I just like to play around on mobile devices.	3.86	0.850
13. I use mobile device when there's no one else to talk or be with.	3.85	0.921
14. I use mobile device to present information about a special interest of mine.	3.82	0.869
15. I use mobile device because it makes me feel less lonely.	3.79	0.871
16. I use mobile device because it is a habit, just something I do.	3.79	0.745
17. I use mobile device so I won't have to be alone.	3.75	0.854
18. I use mobile device to share information that may be of use or interest to others.	3.71	0.833
19. I use mobile device to post my resume and/or other work online.	3.57	0.901
20. I use mobile device to help me network with professional contacts.	3.57	0.887
21. I use mobile device so I can get away from what I'm doing.	3.56	0.962
22. I use mobile device because it is helpful for my professional future.	3.56	0.873
23. I use mobile device to provide personal information about myself.	3.54	0.927
24. I use mobile device so I can forget about school, work, or other things.	3.50	1.024
25. I use mobile device because it is the thing to do.	3.50	0.950
26. I use mobile device to tell others a little bit about myself.	3.47	0.959
27. I use mobile device because everyone is doing it.	3.43	1.013
28. I use mobile device so I can get away from the rest of my family or others.	3.39	1.149
29. I use mobile device because it is cool.	3.39	1.035

Appendix 2

Section A:

1. What are the types of mobile devices that you use? (You can tick more than one)
 - Laptop computer / Notebook
 - Smartphone (iOS, Android)
 - iPad / Tablet (Android)
 - iTouch / MP3 player / iPod touch
 - Personal digital assistant (PDA)
 - E-book reader
 - Others: _____
2. How comfortable are you in using mobile devices?
 - Not comfortable
 - A little comfortable
 - Fairly comfortable
 - Very comfortable
3. Do you use mobile devices for learning and/or for educational purposes?
 - Yes
 - No
4. What is the frequency of using mobile devices for learning purposes?
 - Always (1–3 hours a day)
 - Sometimes (1–3 hours a week)
 - Seldom (1–3 hours a month)
 - Never
5. How do you use mobile devices (mobile technologies) for learning (M-learning)?
(You can tick more than one)
 - Accessing and downloading online journals
 - Sharing knowledge with other students
 - Communicating through email
 - Accessing related sites and online sources
 - Accessing learning management system (Blackboard, Moodle)
 - Downloading reading materials
 - Taking notes
 - Writing assignments
 - Networking and communicating through social networks
 - Participating in online educational discussion forums
 - Discussing about assignments
 - Searching for information
 - Others: _____
6. What is the average time spent on mobile devices on a daily basis for the following activities?
 1. None
 2. Less than 1 hour
 3. 1 – 3 hours
 4. 4 –6 hours
 5. More than 6 hours

Activities	1	2	3	4	5
Conversation					
Messaging					
Internet (Web/Mail)					
Games					
Music					
Learning / Educational					

7. Using the 5-point Likert scale of 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree and N/A=not applicable, what is your level of agreement for the following statements on the motivations for using mobile device?

Statements	1	2	3	4	5	N
I use mobile device because it's enjoyable.						
I use mobile device because it's entertaining.						
I use mobile device because it relaxes me.						
I use mobile device because it allows me to unwind.						
I use mobile device because it is a pleasant rest.						
I use mobile device to provide information.						
I use mobile device to present information about a special interest of mine.						
I use mobile device to share information that may be of use or interest to others.						
I use mobile device to provide personal information about myself.						
I use mobile device to tell others a little bit about myself.						
I use mobile device so I can forget about school, work, or other things.						
I use mobile device so I can get away from the rest of my family or others.						
I use mobile device so I can get away from what I'm doing.						
I use mobile device because everyone is doing it.						
I use mobile device because it is the thing to do.						
I use mobile device because it is cool.						
I use mobile device so I won't have to be alone.						
I use mobile device when there's no one else to talk or be with.						
I use mobile device because it makes me feel less lonely.						
I use mobile device because it is helpful for my professional future.						
I use mobile device to post my resume and/or other work online.						
I use mobile device to help me network with professional contacts.						
I use mobile device to keep in touch with friends and family.						
I use mobile device to communicate with distant friends.						
I use mobile device because I just like to play around on mobile devices.						
I use mobile device because it is a habit, just something I do.						
I use mobile device when I have nothing better to do.						
I use mobile device because it passes the time away, particularly when I'm bored.						
I use mobile device because it gives me something to do to occupy my time.						

Section B:

8. Using the 5-point Likert scale of 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree, what is your level of agreement for the following statements on students' readiness for technology?

Statements	1	2	3	4	5
Technology gives people more control over their daily lives.					
Products and services that use the technologies are much more convenient to use.					
You like the idea of using mobile phone for the purposes of learning because you are not limited to regular working hours.					
You prefer to use the most advanced learning technology available.					
You like mobile phone programmes that allow you to tailor things to fit your own needs.					
Society should not depend heavily on technology to solve its problems.					
You find that technology designed to make life easier usually has disappointing results.					
In general, you are among the first in your circle of friends to acquire new technology when it appears.					
You can usually figure out new high-tech products and services without help from others.					
You keep up with the latest technological developments in your areas of interest.					
You enjoy the challenge of figuring out high-tech gadgets.					
You are always open to learning about new and different technologies.					

9. Using the 5-point Likert scale of 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree, what is your level of agreement for the following statements on students' readiness for mobile learning in higher education?

Statements	1	2	3	4	5
I know what mobile learning is all about.					
I want to know more about mobile learning.					
I prefer conventional learning than mobile learning.					
I think mobile learning is good for me.					
I don't mind paying extra money for mobile learning.					
Mobile learning will make my life difficult.					
I am not ready for mobile learning if the university implements it now.					
I would like my lecturer to integrate mobile learning in my class in addition to face-to-face meeting in the class.					
I am afraid I will spend more money on my handphone bill because of mobile learning.					
I would like my lecturer to integrate mobile learning in my course.					

Section C:

10. Age range:

- Below 20 years
- 20 – 30
- 31 – 40
- 41 – 50
- Above 51 years

11. Gender:

- Male
- Female

12. Ethnicity:

- Malay
- Chinese
- Indian
- Others: _____

13. Programme:

- Professional
- PhD
- Master
- Degree (undergraduate)
- Diploma
- Certificate
- Others: _____

14. Year of study:

- Year 1
- Year 2
- Year 3
- Year 4

15. Field of study:

- Sciences
- Social sciences
- Art
- Management
- Engineering
- Others: _____

Thank you for your participation!

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The effects of social media use and political communication networks on the Filipino youth's political participation

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ABSTRACT

The role of the youth in societies is crucial for development, yet research has shown their declining engagement in formal forms of political participation such as voting. Through social media platforms, the youth can acquire social resources, such as political information, social services, or access to political officials and institutions, and as the most active online users, they can make use of these social resources to engage better in the society. However, the link between social media use and political participation needs further examination. Guided by the social network theory, this study examines the effects of social media use and the mediating effect of political communication networks on the political participation of the Filipino youth. Survey data was collected from 400 randomly selected respondents (15–24 years old) in Metro Manila and an ego network survey research design was implemented to identify and describe the youth's political communication networks. Structural equation modelling was used to test the theorised relationships among the variables. Results reveal the respondents' extensive use of social media and their low level of political participation. Meanwhile, the ego network analysis indicates that the youth do not engage in conversations related to political issues. Based on the statistical tests, the youth's political communication networks mediated the influence of social media use on their political participation. This implies that although the Filipino youth are in a good position to access and make use of social resources, their low political participation was partly due to their lack of communication with others. Courses of action and policies are recommended to maximise social media in engaging the youth in politics and promote the formation of political communication networks.

Keywords: *social media, political communication networks, political participation, social network analysis, structural equation modelling*

INTRODUCTION

The youth plays a crucial role in shaping society. As future leaders and enablers of change, their involvement in various domains of social life should be encouraged to stimulate and advance national development (Communication Foundation for ASIA [CFA], 2012).

Globally, the youth comprises a fifth of the world's population (United Nations Development Programme, 2013), which makes them a potent force to enact change in societies. In today's media landscape, this potential is greatly magnified, with untethered access to information and unbounded venues for creativity and skill development because of the internet. One of the strongest cases demonstrating the youth's power in political matters is the 2011 youth-led uprisings in the Arab nations. Researchers in South East Asia have also identified the intersections among the youth, social media, and political participation, citing effective social media use during electoral seasons in Malaysia, Singapore, and Philippines, and the creativity of social media for political mobilizations in Myanmar, Thailand, and Vietnam as critical examples (Vadrevu & Lim, 2012).

In its broadest sense, political participation refers to individual activities that aim to influence state decision-making (Norris, 2000). These activities include non-electoral matters such as online campaigning, reading and writing political content, and signing petitions regarding political issues. However, global research on youth political participation has shown distressing levels of political apathy and disengagement in politics among them, as indicated by low voter turnout in this sector (Inter-parliamentary Union, 2014). The power of the youth to enact change through social media is evident; however, while the youth have been observed to participate in informal political activities, their formal participation needs to be boosted as this has direct implications in the society (United Nations Development Programme, 2013). In the Philippines, based on the 2016 Commission on Elections (COMELEC) data, only one in every two eligible Filipinos have registered to vote (Commission on Elections, 2016). Echoing the global scenario, the presence of Philippine youth in formal political venues, such as the electoral system, still needs to be strengthened.

This could be done through the examination of various drivers of participation. The ways by which individuals learn political norms and behaviour, as well as the ways through which these norms are transmitted, or what Sicut (1976) refers to as political socialization, must be examined, as they determine the youth's interest and engagement in the country's political life.

This study focuses on interpersonal relationships as one of the venues in which the youth is politically socialised. In collectivist societies, the influence of interpersonal relationships manifests not just in the way the youth maintain close ties with their families and friends, but also with the political decisions they make as individuals. Interpersonal communication, particularly that which discusses political information, has been shown to shape the political landscape of nations such as the Philippines (Asuncion-Lande & Lande, 1992). Lazarsfeld, Berelson, and Gaudet (1948) best articulated the role and influence of interpersonal relationships by saying that "people who live together under similar external conditions are likely to develop similar needs and interests. They tend to see the world through the same coloured glasses; they tend to apply to common experiences common interpretation."

In an increasingly mediated world, the development of interpersonal relationships has evolved. The Philippines, considered as the world's "Social Media Capital" (We Are Social, 2017), can be considered as a rich context in examining interpersonal relationships and its influence in the age of social media. In fact, the country currently leads globally in terms of social media engagement. A 2017 study found that Filipinos spend more than four hours every day in social media (We Are Social, 2017), and part of that time is spent engaging politically. Through online petitions, Twitter threads, Facebook comment sections, and video blogs,

Filipinos have access to numerous outlets for airing their thoughts and mobilising communities. Social media have further enabled Filipinos to connect with strangers and influencers in the online sphere and exchange ideas for social and political change. Studies have provided evidence on the link between social media use and political participation, and social media use has been found to be a strong predictor of political participation (Dimitrova, Shehata, Strömbäck, & Nord, 2011). Social media use is also observed to be associated with political participation, although the link's transformative impact is yet to be uncovered by scholars (Boulianne, 2015). There is also evidence supporting that social media enables individuals to pursue volunteerism-related activities through the features offered by Facebook (Shekaliu, Mustafa, Adnan, & Guajardo, 2018).

The youth can benefit largely from social media as a source of information and as a venue in forming relationships, especially since they are most engaged online. Against this backdrop, this study sought to answer: how does social media use influence the formation of the Filipino youth's political communication networks and their political participation?

LITERATURE REVIEW

Social media use and influence on political participation

Content found and consumed through social media may be driving individuals to participate politically. Whether by consuming content of others, or interacting with others online, users can access a rich supply of topics or agendas that can be discussed offline (Li & Chan, 2016). Sharing political information online has been found to increase political participation, attributed to the role of online sharing in boosting one's civic efficacy, or the belief in one's capacity to enact change in the society (Halpern, Valenzuela, & Katz, 2017).

Hence, aside from consumption of content, social processes performed on content provide a clearer link between social media content and participation. Consistent to literature by de Vreese (2007), forming social networks through online content sharing and discussion fosters better political participation, not the content per se. Through the linkages formed online, individuals can engage and socialise politically, discuss political information, form individual opinions about political matters, and take action. Research also revealed that individuals conducting friendship-driven online activities have statistically higher online political participation, while interest-driven activities lead to statistically higher offline political participation. Both activities are seen to take place in social media platforms (Kahne & Bowyer, 2018). In the Philippines, a study has revealed that social networking sites were used by the youth as spaces for discussion with politicians, as well as venues for expression of political opinion through social media posts and blogs, gathering public support through online network building, and mobilising them through social media (David, 2013). Social media has supplemented offline forms of political participation, providing more venues for the Filipino youth to be involved in political matters (Sebastian, 2014). Evidently, these findings support the link between social media use and political participation, and it was hypothesised that:

H1: There is a positive relationship between social media use and political participation.

Social media use and social capital

Social capital, such as information, refers to the resources that come with interacting and connecting with others. Social capital is found in social networks, or the linkages formed among individuals (Putnam, 2017), and such networks contain value that can be harnessed by individuals for gains or benefits (Putnam, 2001).

In the age of social media, building social networks has accelerated. Instantaneous connections have been made possible, consequently speeding up the acquisition of social capital (Bauernschuster, Falck, & Woesmann, 2011). Such connections enabled through social media has made accessing and mobilising numerous sources of social capital possible (Quan-Haase & Wellman, 2002), and research suggests that the internet can increase individuals' level of connectedness with people existing within their networks, as well their involvement in different organizations (Wellman, 1988; Wellman, Quan-Haase, Witte, & Hampton, 2001).

Lin (1999) notes that access and mobilisation of social capital found in social networks is contingent on inequalities in one's position in the society, and this can include different levels of media use. Research has shown that an increase in social media use significantly influences the likelihood of acquiring bridging social capital (Liu, Ainsworth, & Baumeister, 2016). Moreover, through specific information search on Twitter, cross-ideological exposure is more likely, increasing the diversity of one's network (Park & Kaye, 2017). These findings are consistent with the argument that social media use has opened more venues for social capital acquisition. But La Due Lake & Huckfeldt (1998) qualifies that to engage in politics, politically relevant social capital must be acquired by individuals through their networks, enabling individuals to be interested in political issues (McClurg, 2003).

Given the abovementioned results, it was hypothesised that:

H2: There is a significant relationship between social media use and social network characteristics.

The role of communication networks and political participation

When individuals transmit information related to political matters, they constitute a political communication network. In such discussions, politically relevant social capital can be accessed and utilised (La Due Lake & Huckfeldt, 1998) to help them make decisions about political matters, such as whom to vote for and what issues to support. Three measures have consistent positive relationships with political participation, namely, network size/extent, discussion frequency, and network diversity. Findings have revealed that larger networks that communicate frequently are related to higher participation in politics (Eveland & Hively, 2009; Eveland, Hutchens, & Morey, 2013; La Due Lake & Huckfeldt, 1998). Another study, however, found that network size does not significantly mediate the effects of social media on political participation (Lu, Lee, & Kim, 2018). The contradicting results may be due to the presence of control variables in the study. Given the numerous support on the role of network size on participation, these findings must be re-tested. Thus, it was hypothesised that:

H3: There is a significant positive relationship between network extent and political participation.

H4: There is a significant positive relationship between network communication frequency and political participation.

Siegel (2009) offered a nuanced explanation regarding the effect of network size on participation. When all things were held constant, network size was found to promote participation. But other network properties, such as network closeness or tie strength, as well as the distribution of opinions and knowledge in networks might inhibit participation (Siegel, 2009). Thus, it is important to examine other network characteristics which may influence political participation of individuals.

Research on the role of network ties and political engagement reveal a complex relationship between tie strength and political participation. Studies have revealed that tie strength, examined in terms of intimacy of relationship, does not influence political action. In politics, the conventional argument about tie strength and behaviour does not hold, which is expressed as a direct, positive relationship in non-political studies (Lim, 2008). Hence, it was hypothesised that

H5: There is no significant relationship between network closeness and political participation.

There is dearth in literature examining the role of network expertise and political participation. A study has revealed that political participation was predicted by network expertise (La Due Lake & Huckfeldt, 1998). However, it can also be argued that having an expert network can contribute to political disengagement. The bystander effect, which posits that responsibility to act is diffused among members of a group, can subdue participation in politics. Individuals may not feel the need to participate in political issues because they think there are other more qualified/expert actors, so their participation would not be needed (Desoto, 2010). Although more research must be carried on the link of network expertise and political engagement, theoretical arguments and empirical evidence indicated that:

H6: There is a significant relationship between network expertise and political participation.

Finally, diversity was observed to have a negative relationship with participation. This is also consistent with findings on a study examining network diversity effects on political engagement in social media sites (Xu, Stefanone, & Rui, 2013). Their findings revealed that a diverse network was negatively related to self-censoring online. Although diversity increases political interest, participants with a diverse network tend to avoid posting political content on their social media pages. Another study, however, has found that diversity mediated the positive relationship between social media use and political participation (Lu et al., 2018). This study also revealed mediation effects by network characteristics. Thus, it was hypothesised that:

H7: There is a significant relationship between opinion diversity and political participation.

H8: There is a significant relationship between relationship diversity and political participation.

H9: Network characteristics mediated the relationship between social media use and political participation.

STUDY FRAMEWORK

The study utilised the social network perspective to examine the role of social media and interpersonal communication networks on the political participation of the youth. The social network theory posits that relationships among individuals can determine behaviours and the configuration of social networks can have behavioural outcomes (Borgatti, Brass, & Halgin, 2014). The properties of networks and its varying levels among individuals create a more nuanced explication of social phenomena. Hence, it is also important to describe and analyse these properties.

Through social media, users can get in touch with others and expand their political communication networks. At the same time, social media sites provide alternative venues for participation. Thus, it was theorised that social media use influenced both the characteristics of the youth's political communication network and their political participation.

Meanwhile, political communication networks and its characteristics were theorised to mediate the influence of social media use on political participation. These network characteristics, as based on the literature, are network size, network expertise, opinion diversity, relationship diversity, network closeness, and network communication.

The relationships among the main study variables are illustrated below (Figure 1).

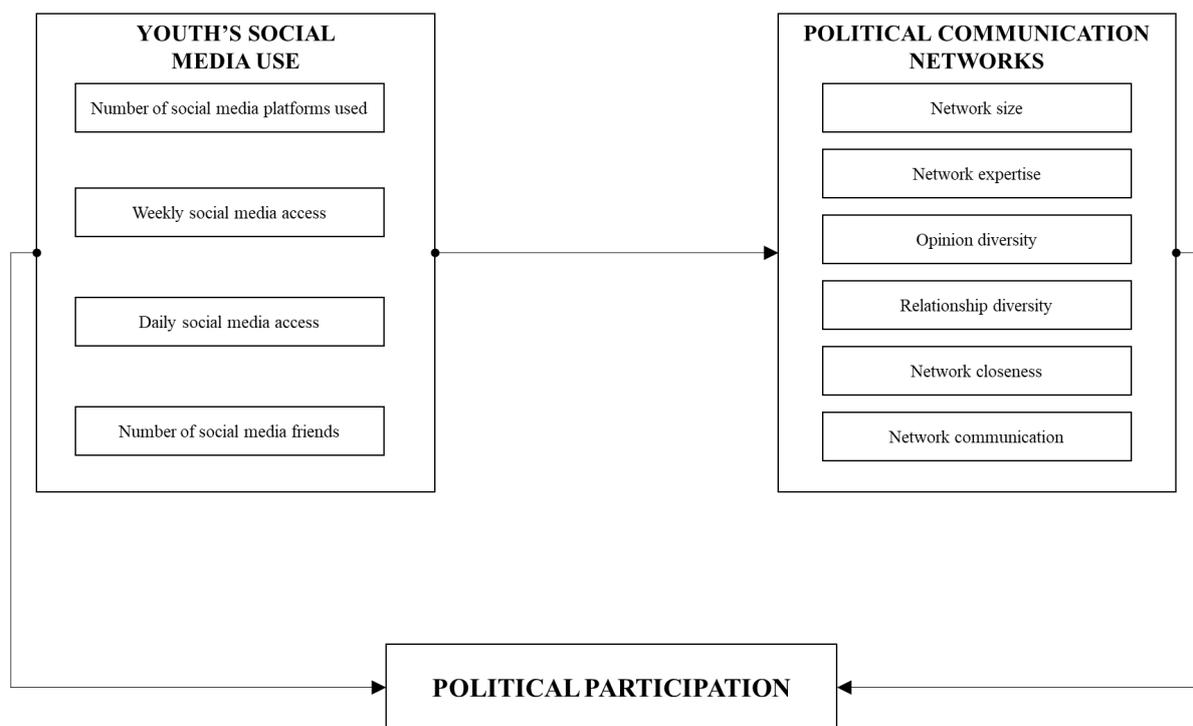


Figure 1. Study framework

MATERIALS AND METHODS

A survey-based field study was employed to delineate the relationships among the variables of interest. This design allows researchers to integrate social network items in standard surveys (McCallister & Fischer, 1978). The social network survey was administered to 400 respondents residing in Metro Manila, Philippines aged 15 to 24 years old, or the United Nations' youth definition. This age bracket also captured the child and core youth populations, as categorised by the Philippines' National Youth Commission.

VARIABLES AND MEASURES

Social media characteristics

To describe the respondents' social media behaviour, the research asked about the social media platforms used, most visited social media platform, and average weekly and daily social media use.

As shown in Table 1, the top three platforms used by the respondents were Facebook (97.9%), Twitter (60.7%), and Instagram (50.9%). Meanwhile, LinkedIn (3.6%) and Foursquare (0.8) had the least number of users.

Table 1. Social media platforms used by the Filipino youth (N=387)

Social Media Platform	%	n
Facebook	97.9	379
Twitter	60.7	235
Instagram	50.9	190
Google+	39.5	153
Snapchat	29.5	114
Tumblr	12.7	49
Pinterest	9.3	36
Others	6.7	14
LinkedIn	3.6	26
Foursquare	0.8	3

Respondents cited Facebook (92.5%, n=387) as their most visited social media platform. Overall, respondents had a median following of 1000 (n=385). As shown in the study, the average respondents were connected to at least 1000 online users with whom they could engage through conversations.

Most of the respondents had one to three social media accounts. These sites were most likely to be Facebook, Twitter, and Instagram or the top three social media platforms accessed by the respondents. Only 1 out of 387 valid respondents used all the 10 social media platforms mentioned in the study.

Around 4 in every 5 respondents accessed social media platforms every day (79.1%), and they allotted an average of 6 hours per day using social media platforms ($x = 6.03$, n=387). This finding implies the strong integration of social media in the lives of the respondents, spending at least a quarter of their day socializing in platforms available online.

Network characteristics

Various network measures were employed in the study. To generate the political communication networks of the respondent, a social network survey was administered as part of the data gathering. Respondents were asked the following question: "During the last six months, did you talk to or message anyone regarding political issues?" The results show that only half of the respondents (52.2%, n=202) discussed politics six months prior to the data gathering.

Network characteristics were asked to the respondents who responded "yes" to the question. To reiterate, network extent, network expertise, opinion diversity, relationship diversity, network closeness, and network communication were examined. These results are summarised in Table 2.

Network extent was calculated by counting the total number of political discussants identified by the respondent. Most of the respondents with a political communication network (PCN) engaged with an average two political discussants ($x=2$) six months prior to data collection (n=202).

To compute for network expertise, respondents were asked to rate the level of knowledge of each political discussant identified. Responses were recoded into two, categorizing less knowledgeable discussants as those who are perceived as possessing knowledge "much less than," "less than," and "about the same as" the ego. On the other hand, knowledgeable discussants were identified as those who know about political issues "more than" and "much more than" the respondents. The proportion of discussants perceived as more knowledgeable than the respondent was computed to normalise the values of network expertise since the number of discussants vary. The average network expertise score of respondents with a PCN is 0.49, which means that, overall, the level of political knowledge of the respondents' discussants could be considered as average—they either only talked to people whom they perceived to have the same knowledge as theirs, or they had equal numbers of knowledgeable and non-knowledgeable discussants in their PCN.

Opinion diversity was measured by asking the respondents regarding their perceived difference in opinion with their discussants on a scale of 0 (not different) to 4 (extremely different). Scores per discussant identified were summed, and the total score was divided by the highest possible score her/his network may attain to normalise values. The average score of respondents with a PCN amounted to 0.33, indicating that respondent talked about politics to people with whom they shared a similar opinion.

Relationship diversity was calculated using Blau's H and Agresti's IQV, or Index of Qualitative Variation. H and IQV are used in social network research specifically to measure diversity of nominal data, such as relationship type. Blau's H computes the r different relations and P_i proportions per type of relationship with the total number of discussants (Crossley, et al., 2015). Meanwhile, Agresti's IQV was used to normalise the data from 0 to 1, with 1 indicating a relationally diverse network. Average relationship diversity scores only reached 0.18, indicating homogeneity in the composition of the respondents' networks. Further analysis indicates that respondents would have their family members (45%) and schoolmates (36%) as political discussants.

Network closeness was computed by asking the respondents their degree of closeness with each of the discussant from 0 (not close at all) to 4 (extremely close). Scores for each discussant were summed, and the total score was divided by the highest possible score her/his network may attain, multiplied by the total number of discussants to normalise the scores. Among respondents with a PCN, network closeness is at 0.72. Given that respondents discussed politics with people belonging in their immediate circles, such as their family members and their schoolmates, it follows that their political communication networks were tightly knit.

Finally, network communication was calculated by obtaining the average number of days respondents communicated with their network on a weekly basis. The findings show that the respondents discussed politics an average of 4.6 days a week.

Table 2. Summary statistics of respondents' network characteristics

Variable	n	M	SD	Min.	Max.
Network Extent	202	2.51	1.77	1.00	10.00
Network Expertise	202	0.49	0.41	0.00	1.00
Opinion Diversity	199	0.33	0.24	0.00	1.00
Relationship Diversity	202	0.18	0.27	0.00	1.00
Network Closeness	200	0.72	0.23	0.00	1.00
Network Communication	200	0.47	2.19	0.00	7.00

Political participation

The respondents' political participation was measured in two ways. First, they were asked whether they voted during the immediately preceding elections in the Philippines, and the findings show that around six in ten respondents (63%) did not vote during the 2016 Philippine presidential elections.

To further probe the level of political participation of the respondents, their participation in non-voting activities were also examined. The scale was based on American National Election Survey questionnaires, and modifications were done to accommodate forms of political participation beyond the electoral season.

SAMPLING

Multi-stage random sampling was employed in the study, which was conducted from 1 March to 1 April 2017. Forty (40) barangays were randomly selected in Metro Manila, Philippines to be part of the study. Survey interviewers were hired to aid in the collection of the data.

The interviewers were asked to visit the barangay hall and get the list of streets, from which they would randomly select one. Each house within the street was assigned with a number from 1 to n beginning from the left-side end nearest to the barangay hall. To get the first household, the interviewer drew a random number ranging from 1 to n and inquired if a youth member of the household would want to participate in the study, and administered the survey once permitted. If more than one member of the household qualified for the survey, the interviewer employed the nearest birthday method to choose the respondent. Subsequent households were chosen by using a sampling interval of 2. Every second household to the right of the previous respondent's household was selected. For households that did not have eligible or willing participants, the interviewer proceeded to the household immediately to the right of the original household.

DATA ANALYSIS

To test the hypotheses, partial correlation tests, hierarchical multiple linear regressions, and structural equation modelling were performed. Partial correlation tests allows studies to explicate relationships between two variables, while controlling for other variables that could explain the relationship. In the case of this study, sociodemographic characteristics, namely, age, socio-economic status, and educational attainment, were included as control variables.

Meanwhile, hierarchical multiple linear regressions identified the variables that remained significantly related to political participation, the study's key outcome variable, after the addition of other variables in the models.

Results of the partial correlations tests, as well as the hierarchical multiple linear regressions were used as bases in specifying the variables that would yield the best fit in the structural equation model (SEM). Only variable pairs that were significantly correlated and variables that surfaced as significant predictors were included in the model to ensure good model fit. Retaining only significant relationships also made the model parsimonious.

Since political communication networks were seen both as an outcome of social media use and a predictor of political participation, SEM was deemed to be the most appropriate analytical tool to examine the relationships among the key study variables. Researchers who intend to analyse interrelated dependent relationships among multiple variables may find this approach beneficial, since it simultaneously tests variables as an outcome and a predictor of other variables as specified in a structural model (Hair, Black, Babin, & Anderson, 2012). This structural model was based on the study's theoretical framework.

Standard SEM goodness-of-fit measures were employed in the research, namely, Root mean square error of approximation (RMSEA), Comparative Fit Index (CFI), and Tucker-Lewis Index (TLI). For RMSEA, a value of less than 0.10 indicates an acceptable model. For both CFI and TLI, a value closer to 1 indicates a good fit.

Data transformations, as mentioned above, as well as the partial correlation tests and hierarchical multiple linear regression tests were done in SPSS. SPSS AMOS 23 was used to perform the SEM test.

The complete case approach was employed in the multivariate analysis. This means that cases with incomplete data were excluded in the multivariate tests.

RESULTS

Table 3 shows the mean scores and standard deviations of the political participation scale administered to the respondents. The results show that overall, the mean score of the respondents' participation in various political activities is 1.27, indicating low participation.

Respondents were mostly engaged in *political information acquisition*—or political activities that enabled participants to know more about political issues. The highest rated activity was watching television news, listening to the radio, reading newspapers about politics ($x=2.48$, $sd=1.03$), followed by reading about politics online ($x=1.94$, $sd=1.25$), and discussing issues regarding politics ($x=1.87$, $sd=1.06$). These activities were considered as passive, as they did not really provide any direct engagement with political officials or institutions.

Activities related to *political stance display* follow. These are activities that enable the youth to show their position about political issues, by showing support through buttons and bands, posting political content in one's blog, and showing political support through one's social media platforms. These activities were considered as semi-active, as it enables the youth to voice their concern in political issues, without direct engagement to political officials or institutions.

Activities related to *direct political action* were the least rated activities in the scale. Direct political action refers to activities in which the youth voice their stance and offer suggestions directly to political officials and institutions. This set of activities include participation in partisan activities such as political dinners and donations, contacting politicians, and lobbying and attending demonstrations, which scored the lowest out of all the activities listed in the scale ($\bar{x}=0.46$, $sd=0.94$). This set of activities are considered as active, given their direct engagement with political officials and institutions.

Table 3. Mean scores and standard deviations of the youth's political participation characteristics

Political Participation Indicator	M	SD
Information acquisition		
Watch television news, listen to radio, or read newspapers about politics	2.48	1.03
Read about politics online	1.94	1.25
Discuss issues regarding politics	1.87	1.06
Follow online political influencers as well as political figures	1.63	1.25
Discuss political issues through social media chatrooms, forums, tweets, comment threads, etc	1.51	1.27
Stance display		
Show support through buttons, bands, or through persuasion for a political candidate	1.25	1.16
Post political content in your blog	1.22	1.20
Show online political support through your display photo, Facebook/twitter status, etc	1.20	1.23
Sign offline or online petitions	0.89	1.24
Join any online groups that stand for political or social issues	0.87	1.18
Direct political action		
Participate in partisan political activities such as political dinners, donating to parties, etc.	0.71	1.09
Contact public officials online	0.53	0.99
Lobby or attend protest or demonstrations	0.46	0.94
Overall mean	1.27	

The partial correlation matrix of the interest variables is shown in Table 4. Age, socioeconomic status, and educational attainment were used as controls in the test. As shown in the table, *number of social media platforms*, *daily social media access*, *network extent*, *network expertise*, *opinion diversity*, *relationship diversity*, *network closeness*, and *network communication* were correlated with almost all of the variables in the matrix, and most of them were correlated to study's main dependent variable, *political participation*. At the correlational level, the study's *H1*, *H3*, *H4*, *H6*, *H7*, and *H8* were supported. Meanwhile, *H2* was partially supported.

Table 4. Partial correlation matrix of interest variables controlling for age, socio-economic status, and educational attainment

	Number of social media platforms used	Weekly social media access	Daily social media access	Social media friends	Network extent	Network expertise	Opinion diversity	Rel. diversity	Network closeness	Network comm.	Political participation
Number of social media platforms used	1.00										
Weekly social media access	.11*	1.00									
Daily social media access	.24***	.17***	1.00								
Social media friends	.24***	.09	.21***	1.00							
N. extent	.23***	-.04	.26***	.12*	1.00						
N. expertise	.09	-.02	-.03	.00	.35***	1.00					
Op. diversity	.20***	.06	.25***	.08	.57***	.42***	1.00				
Rel. diversity	.08	.03	.17***	.05	.55***	.19***	.39***	1.00			
N. closeness	.14**	.05	.15**	.02	.67***	.61***	.55***	.42***	1.00		
N. communication	.16**	.08	.18***	.06	.62***	.50***	.53***	.44***	.85***	1.00	
Pol. Par.	.12*	.10	.35***	.06	.28***	.00	.29***	.15**	.18***	.20***	1.00

Note. ***p < .001. ** p < .01. * p < .05

To further test the relationships among the variables, hierarchical multiple linear regressions were performed, and the results are summarised in Table 5. Three models were developed. The first model contained all the interest variables in the study. The second model tested social media variables and their relationship to political participation. The third model tested network variables and their relationship to political participation. All models controlled for age, educational attainment, and monthly household attainment.

Age and *educational attainment* were significant for models 1 and 2, but not with the presence of network variables. Meanwhile, *daily social media use* was a significant predictor of *political participation* in both models, supporting *H1* of the study. *Network extent* and *network expertise* were significant predictors of *political participations* in models 1 and 3, supporting *H3* and *H6*, respectively. *Opinion diversity* significantly predicted *political participation* in model 1 only, lending partial support to *H7*. Finally, *network closeness* did not turn out to be a predictor in any of the models, which lend support to *H5* of the study.

Table 5. Results of hierarchical regression analysis for social media and network predictors of political participation

Variables	MODEL 1			MODEL 2			MODEL 3		
	B	SE B	Beta	B	SE B	Beta	B	SE B	Beta
Control variables									
Age	.04	.02	.13*	.04	.02	.13*	.04	.03	.11
Educational Attainment	.09	.03	.17**	.09	.03	.17**	.09	.05	.16
Monthly Household Income	.03	.03	.05	.03	.03	.04	.08	.05	.13
Social media variables									
No. of social media platforms used	.00	.02	.00	.02	.02	.05			
Weekly social media access	.03	.03	.05	.02	.03	.04			
Daily social media access	.04	.01	.25***	.05	.01	.33***			
Social media friends	.00	.00	-.03	.00	.00	-.03			
Network variables									
Network extent	.08	.03	.16*				.08	.04	.16*
Network expertise	-.27	.13	-.12*				-.45	.14	-.22**
Opinion diversity	.59	.21	.17**				.48	.25	.14
Relationship diversity	-.20	.22	-.05				-.13	.24	-.01
Network closeness	.00	.21	.00				-.41	.30	-.01
Network communication	.01	.03	.03				.00	.03	.06
R2		.30			.25			.14	
F		11.56			16.41			9.55	
Sig		.00			.00			.00	

Note. ***p < .001. ** p < .01. * p < .05

Following the results of the partial correlations and regression tests, social media use, network extent, network expertise, and opinion diversity were included in the path model, as shown in Figure 2. Table 6 presents the direct and mediated effects of network variables on political knowledge. The path diagram exhibited good fit (RMSEA = .00, CFI = 1.00, and TLI = 1.03, $\chi^2[1] = .233$). Six causal paths leading to the three network variables were specified, and the results indicate that *network extent* was significantly determined by *no. of social media platforms accessed* ($\beta = .20$, $p < .001$) and *daily social media use* ($\beta = .08$, $p < .001$). Meanwhile, *network expertise* was significantly determined by *no. of social media platforms accessed* ($\beta = .03$, $p < .05$). Finally, *opinion diversity* was significantly determined by *no. of social media platforms accessed* ($\beta = .02$, $p < .01$) and *daily social media use* ($\beta = .01$, $p < .001$). Thus, these results lend further support to *H2* of the study.

Meanwhile, *political participation* was significantly determined by *network extent* ($\beta = .06, p < .05$), *network expertise* ($\beta = -.25, p < .05$), *opinion diversity* ($\beta = .65, p < .001$), and *daily social media use* ($\beta = .05, p < .001$). These findings support *H1, H3, H6, and H7*.

Additional tests indicate that network characteristics mediated relationships between social media use and political participation. A total of 2000 bootstrap samples were analysed at 90% confidence intervals. The results show that *network extent* partially mediated the effects of *number of social media platforms accessed* ($\beta = .012, CI = [.002, .029]$) on *political participation*. Testing for the mediation effect of *network extent* ($\beta = .005, CI = [.000, .013]$) on *number of social media platforms accessed* and *political participation* is significant. However, the confidence intervals included zero, which indicate non-significant mediation (Preacher & Hayes, 2004). Meanwhile, *network expertise* ($\beta = -.007, CI = [-.020, -.001]$) also significantly mediated *number of social media platforms accessed* and *political participation*. Finally, *opinion diversity* significantly mediated *daily social media use* and *political participation* ($\beta = .007, CI = [.001, .018]$). These results lend partial support to *H9* of the study.

Table 6. Direct and indirect effects of social media use and political communication networks on political participation

Paths	Estimate	Confidence Interval	
		Lower	Upper
No. of social media platforms accessed			
No. of social media platforms accessed -> Network extent	0.199***	0.080	0.320
No. of social media platforms accessed -> Network extent -> Political participation	0.012*	0.002	0.029
No. of social media platforms accessed -> Network expertise	0.028*	0.033	0.238
No. of social media platforms accessed -> Network expertise -> Political participation	-0.007*	-0.020	-0.001
No. of social media platforms accessed -> Opinion diversity	0.021**	0.038	0.273
No. of social media platforms accessed -> Opinion diversity -> Political participation	0.014	0.002	0.035
Daily social media use			
Daily social media use -> Network extent	0.078***	0.114	0.358
Daily social media use -> Network extent -> Political participation	0.005*	0.000	0.013
Daily social media use -> Network expertise	-0.003	-0.010	0.003
Daily social media use -> Network expertise -> Political participation	0.001	-0.001	0.004
Daily social media use -> Opinion diversity	0.010***	0.089	0.366
Daily social media use -> Opinion diversity -> Political participation	0.007**	0.001	0.018
Daily social media use -> Political participation	0.048***	0.190	0.439
Network characteristics			
Network extent -> Political participation	0.062*	-0.006	0.268
Network expertise -> Political participation	-0.245*	-0.217	-0.006
Opinion diversity -> Political participation	0.650**	0.024	0.358

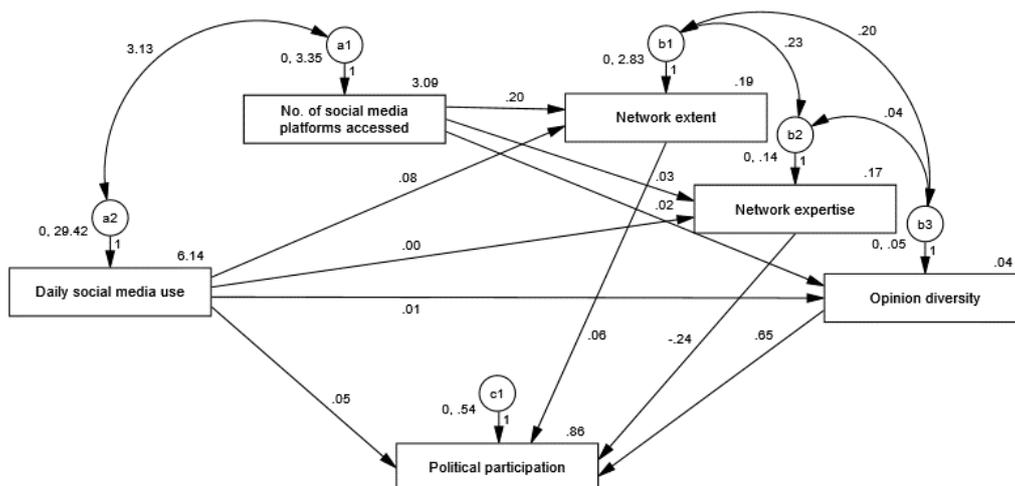


Figure 2. Path diagram of the direct effects of social media use, political communication networks, and political participation

Table 7 summarises the relationships that were confirmed be significant in the study. Social media characteristics were significantly related to political participation, and some network characteristics. Meanwhile, network extent, expertise, and opinion diversity were significantly related to both social media use and political participation. These network characteristics also significantly mediated the relationship between social media use and political participation.

Table 7. Summary of hypotheses results

Hypothesis	Correlation	Regression	SEM
H1 There is a positive relationship between social media use and political participation.	Supported	Supported	Supported
H2 There is a significant relationship between social media use and network characteristics.	Partially supported	Partially supported	Partially Supported
H3 There is a significant positive relationship between network extent and political participation.	Supported	Supported	Supported
H4 There is a significant positive relationship between network communication frequency and political participation.	Supported	Rejected	Rejected
H5 There is no significant relationship between network closeness and political participation.	Rejected	Supported	Supported
H6 There is a significant relationship between network expertise and political participation.	Supported	Supported	Supported
H7 There is a significant relationship between opinion diversity and political participation.	Supported	Supported	Supported
H8 There is a significant relationship between relationship diversity and political participation.	Supported	Rejected	Rejected
H9 Network characteristics mediate the relationship between social media use and political participation.	N/A	N/A	Partially supported

DISCUSSION

This study was premised on the notion that social media use makes various social resources available for the youth. As the largest social media users in the world, the youth can take advantage of the social capital found online and harness it for their political participation. Guided by the social network theory as the study's theoretical anchor, it was theorised that political communication networks mediated the effects of social media use on political participation. In other words, through political discussion, the youth can harness the potential of information found and connections made online to voice their concerns about political matters.

As shown in the descriptive statistics on the social media use of the respondents, the findings reveal the strong integration of social media in the lives of the respondents. Theoretically, this high level of social media use could increase their political participation, as supported by literature (Halpern et al., 2017; Kahne & Bowyer, 2018) and as theorised in the study. Although the study showed a direct relationship between these two variables, the respondents' level of political participation is not congruent with their social media use. Social media has become truly part of the respondents' daily lives, yet political participation among them remains low.

Hence, it can be said that extensive social media use is not enough to spur the youth's political participation. This is where the importance of political communication networks come in. As shown in the literature, the socialisation that takes place online is more important than mere exposure to and consumption of social media content (de Vreese, 2007). The networks the youth forms are crucial to examine, because networks mediate the resources found in social media. Through the political conversations they make, they are able to access social capital (Liu et al, 2016) and use it for their participation in politics (Wellman, Quan-Haase, Witte, & Hampton, 2001). In this study, it was theorised that extensive social media use enables the youth to build political communication networks, and the findings supported such relationship. Social media use was linked to the formation of an extensive, expert, and diverse network.

Meanwhile, it was theorised that political communication networks influence the political participation of the respondents, and the findings of this research lent support to this theoretical argument. The findings also support the results of previous studies on the role of political communication networks on political engagement (Eveland & Hively, 2009; Eveland et al., 2013; La Due Lake & Huckfeldt, 1998; Lim, 2008; Lu et al., 2018; Siegel, 2009; Xu et al., 2013). The extent and diversity of networks was linked to political participation, and the relationship of closeness to political participation was not direct, as conventionally hypothesised in other social network studies. The study, however, reveals that the relationship between network expertise and political participation is inverse: respondents who talked about politics more with people they considered as "experts" had a lower level of political participation. This contradicted research by La Due Lake & Huckfeldt (1998), and the finding may be a function of the way respondents were asked to assess the political expertise of their discussants. It can be surmised that respondents exhibited diffusion of responsibility, particularly in political participation, when they thought members of their political networks were more expert than them (Desoto, 2010). Hence, they disengaged in political issues knowing that other people within their groups could participate in their stead. Conversely, they would take matters into their hands and participate in politics when they think that they are more knowledgeable compared to their peers. This phenomenon, however, needs more empirical evidence.

When looking at the network profile of the respondents, the findings reveal a problematic picture — they did not engage in political conversations with large, diverse, and highly expert discussants. As shown in the study, only half of the respondents talked to others

when it comes to political matters. Meanwhile, respondents engaged in political conversations had limited discussants, who possessed similar political opinions. The amount of political knowledge they received from the discussants might not be rich, given the average level of network expertise found in their networks.

Thus, while the respondents might have had high levels of social media use, their political participation was low due to the lack of engagement with others regarding issues of political relevance. As shown in the study, the mediating role of network characteristics on social media use and political participation was present, which meant that respondents needed to maximise the social resources found through online communication by engaging in political conversations. The mediating function of political communication networks as revealed in the study also supports literature by Lu et al. (2018), and provides further evidence on the importance of engaging political discussions in the age of social media to improve one's political participation. By discussing political information with a large and diverse pool of discussants, which the youth could access through social media, they can gain information and opportunities which can increase their political participation.

As the youth matures in a democratic society, it is important that they are socialized well by institutions such as the family and the academe. As shown in the study, age predicts political participation. Hence, their low participation in politics may also be attributed to the fact that they are in a stage wherein they are still learning about politics. A longitudinal study can confirm these results and examine how the youth matures politically throughout their lifetime. Moreover, the youth also need the educational support to know more about political issues, which allow them to engage better in the society. Schools also have a role to play in making sure that the youth get as much political information they need to make an informed political choice.

Policymakers can spur the development of communication networks and political participation of the youth through in-depth consultations regarding projects that directly affect them. The youth's involvement can be increased through dialogues related to youth-related policies and programs, which can also enable the youth to connect with their peers and create larger communication networks.

Moreover, policymakers can make use of social media to engage the youth better, through online consultations and discussions, and social media listening. Knowing that the youth can engage with politicians directly online encourages them to participate better in political matters. This is especially true for nations that have high social media penetration rates, such as the Philippines and other nations in Southeast Asia.

Youth development programmes related to political participation must also be expanded beyond the electoral season. Regular political orientation programmes and seminars, as well as strengthened political information campaigns may be put in place to let the youth know of other channels for participation. The government can also create campaigns targeted at the youth, harnessing the online and social media as channels to encourage participation in political activities, leading to more formal and direct forms of participation such as voting.

Acknowledgements: This study is based on the author's master's thesis on the role of political communication networks on the political engagement of the Filipino youth.

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Digital engagement in pronunciation learning: Effects on learning performance and language anxiety

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ABSTRACT

This study aims to investigate the effects of epronounce™ on learners with different levels of language anxiety in learning pronunciation. epronounce™ was designed and developed in three presentation modes: Text+Sound+Phonetic Symbols (TSP), Text+Sound+Phonetic Symbols+Mouth Movements (TSPM), and Text+Sound+Phonetic Symbols+Face Gestures (TSPF) to digitally engage learners for improved learning outcomes. The respondents of this study, 329 Primary Five students, were sorted according to their language anxiety levels based on their Foreign Language Class Anxiety Scale (FLCAS) scores. The participants were randomly assigned to the presentation modes, and the intervention was performed for five weeks. The Pronunciation Competence Test was used as a pretest and a posttest to evaluate the pronunciation performance. Analyses of covariance (ANCOVA) and pairwise comparisons were conducted to examine the main effects and the interaction effects. The findings showed that there was no significant difference in the achievement scores attained by learners with different levels of language anxiety in the three presentation modes. Learners with medium language anxiety attained the highest achievement scores. Overall, the TSPF mode yielded the highest achievement scores compared to the other two modes. The findings of this study suggest that online learning environments in epronounce™ creates a non-threatening, positive and engaging atmosphere in engaging learners to participate actively in the learning activities regardless of their language anxiety levels. Seemingly, digital engagement is able to bring the low and high language anxiety students to medium language anxiety level for optimal learning under optimal learning condition as explained in the curvilinear relationship between anxiety and performance. Furthermore, the social partnership between the learners and the on-screen narrator in TSPF mode was established, as stipulated by the social agency theory. This digital engagement improves the learners' schema activation, level of cognitive processing, quality of learning, and ultimately increases the probability of positive knowledge transfer.

Keywords: ***digital engagement, presentation modes, pronunciation, language anxiety***

INTRODUCTION

Digital engagement has increasingly been positioned as a defining attribute of high-quality learning and teaching in online learning environments. Learners who are engaged digitally participate actively in learning, spend more time on tasks and show more interest and motivation on the focus area. Past studies demonstrated there is a strong correlation between engagement and achievement. When the learners are engaged digitally, they have higher tendency to be behaviourally, emotionally and cognitively involved in learning activities. Consequently, compared to less engaged learners, engaged learners show more effort, experience more positive emotions and pay more attention in their learning (De Villiers & Werner, 2018; Strydom & Mentz, 2010). Therefore, the design and development of interface presentation is particularly relevant as it involves various presentation modes of representing information through text, audio, video, animation and any other media to effectively engage learners. The information is represented in multiple formats via multiple sensory modalities, and then stored, transmitted and processed digitally.

The interface presentation permits the demonstration of complicated processes in an interactive manner to ensure that instructional materials can be interconnected in a more natural and intuitive way. The audio and/or video production enhances learners' interaction with the digital instructional materials through less bridging effort between the learners and the information being processed and it provides autonomy in the learning process. The pedagogical agent in the animated human-like character or in the form of real human character provides instruction through verbal and non-verbal modes of communication which creates simulated connections between the digital instruction materials and the learners (Velu & Kaur, 2018).

Past literature has documented the importance of interface presentation modes in the presentation of digital instruction, reinforcement and assessment, particularly in pronunciation learning related to this study. For instance, the various aspects of pronunciation, such as vowels, pronunciation quality of individual words and general segments, have been considerably improved with the use of multimedia applications (Adeniyi, Olowoyeye, & Onuoha, 2016; Gilakjani, 2012; Mich, Neri & Giuliani, 2006; Mahdi, 2019; Mahdi, & Khateeb, 2019; Por & Fong, 2013; Tanner & Landon, 2009). The interface presentation of speech sounds coordinated with written text, phonetic symbols and other visuals, such as still graphics, animations or full-motion video has in fact stimulated the auditory, visual, and kinaesthetic channels of the learners. These inputs increase learners' interest and motivation, and help establish connections between the abstract and the concrete (Boyd & Murphrey, 2002; Wald, 2008). In learning and teaching pronunciation particularly, the interface presentation makes the invisible sound become visible, and concrete graphics appear in front of the learners. The learners learn to pronounce the sound not only by mere listening, imitating and repeating, but also seeing the phonetic symbols and the movements of the articulatory organs that demonstrate to learners how closely their own pronunciation approximates model utterances (Boyd & Murphrey, 2002). This frequent practice through "listening discrimination and focused repetition exercises, automatic visual support" enhances learners' pronunciation performance and also trains them to be active, independent and critical during information processing procedures (Levis, 2007, p. 184).

Pronunciation is an essential component in comprehensible communication. It is particularly important when learning a non-native language because mispronunciation may cause misunderstanding and embarrassment. In a traditional classroom with a high teacher-learner ratio, learners often face anxieties when they have to learn pronunciation of non-native languages and

have to pronounce the words publicly in class. Their performance can be very threatening to their self-image. It is associated with personal and interpersonal aspects including self-esteem and social impression. Learners with low pronunciation abilities may feel intimidated to practise the sounds orally in public; shy or introverted learners are usually reluctant to speak out in class. Therefore, language anxiety has adverse effects on non-native language learning process in particular. By giving learners a chance to learn individually, online learning leads to a reduction of foreign language classroom anxiety and thus, it indirectly favours learning. Learning takes place in a stress-free environment in which learners are exposed to considerable and meaningful input and are stimulated to actively practise oral skills. By engaging learners in a non-threatening learning environment, self-confidence is also built through improvement of their pronunciation. Empirical studies (Aydin, 2018; Gilakjani, 2012; Hashemyolia, Mohd Ayub, & Moharrer, 2015; Stepp-Greany, 2002) affirmed that learners gained confidence in their abilities through using technology in their learning process without having to suffer embarrassment in front of others.

Literature review shows that there is limited study on examining the correlation of interface presentation modes with language anxiety levels on learners' pronunciation performance. Therefore, the purpose of this study is to investigate the effects of epronounceTM with three modes of interface presentation on learners with different levels of language anxiety in the learning of pronunciation.

BACKGROUND WORK

epronounceTM in this study is an interactive multimedia pronunciation learning management system, specially designed for young learners from non-native English speaking background to improve their pronunciation using phonetic symbols. epronounceTM is a dynamic website with database management system and web applications. It goes beyond the conventional approaches by innovatively digitising the universally agreed system of phonetic symbols. The digitised phonetic symbols of epronounceTM with clickable sounds for each phonetic symbol, syllable and word accompanied with mouth movements or face gestures make a profound impact on the curriculum of learning and teaching pronunciation. The learning modules of epronounceTM are developed based on Mastery Learning Approach. The modules begin with laying the foundation on the basic sounds of phonemes, followed by combined sounds in words, and then proceed to minimal pairs for comparison and contrast.

The three modes of interface presentation designed and developed for evaluation are as follows:

(i) Text + Sound + Phonetic Symbols (TSP) (as illustrated in Figure 1);

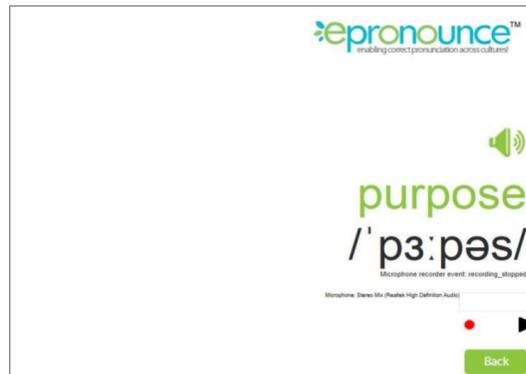


Figure 1. Text + Sound + Phonetic Symbols (TSP)

(ii) Text + Sound + Phonetic Symbols + Mouth Movements (TSPM) (as illustrated in Figure 2);

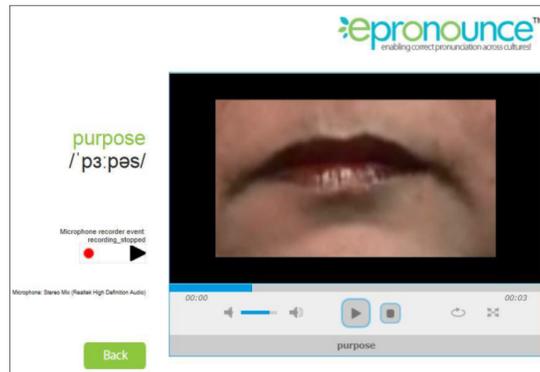


Figure 2. Text + Sound + Phonetic Symbols + Mouth Movements (TSPM)

(iii) Text + Sound + Phonetic Symbols + Face Gestures (TSPF) (as illustrated in Figure 3);

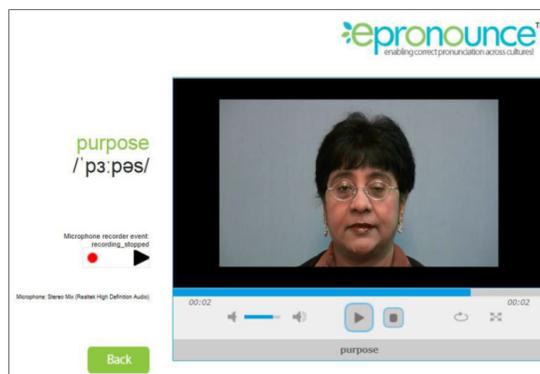


Figure 3. Text + Sound + Phonetic Symbols + Face Gestures (TSPF)

Text and sound features of epronounce™

Learning to pronounce a word and to speak a new language depends primarily on hearing. By hearing the sound, the learners imitate and reproduce it. One or two vague hearings of the pronunciation of a word is insufficient to ensure good performance. Repetitive aural-oral drill is needed to build up a store of sound-memory which forms a library for the learners to acquire the sound system (Mukalel, 2007). With the text and sound features of epronounce™, the learners look at the word and simultaneously listen closely to the model pronunciation repeatedly, and then pronounce out the word. In this practice, epronounce™ supports ear recognition trainings and oral drillings which enable learners to hear and remember, recall and reproduce. The research of Iba (2008) demonstrated that the production of the participants who listened and repeated after the model pronunciation achieved higher scores than the production before listening. This approach is surprisingly simple as it does not demand a special knowledge of linguistics.

Listening to acquire the pronunciation of a new language involves a larger number of new skills, especially recognition skills. In order to listen to the new sounds accurately, the learners must respond to a whole new sound structure. In fact, native language transfer is often observed to influence negatively the acquisition of the sounds of the second/foreign language (Celce-Murcia, Brinton, & Goodwin, 1996). Hence, the hearing of the learners is not adequately reliable as they are strongly influenced by the “phonological matrix of their native languages” (Schütz, 2008, p. 116) and they may unknowingly imitate these inaccuracies.

In understanding the needs and addressing the issues, epronounce™ in this study has incorporated the digitised phonetic symbols enabling learners to become active, independent and critical without mere reliance on ear.

Digitised phonetic symbols of epronounce™

The International Phonetic Association (IPA) was established in 1886 in Paris, in response to the inconsistencies of English orthography. The chief principle of the IPA in providing one unique symbol for one discrete sound and the consistent use of that symbol for all languages (The International Phonetic Association, 2003) is meant to be easier for learners of non-native English speaking background to understand because there is no overlapping of sound. This is particularly useful for the learners to perceive sounds correctly. All the word pronunciations in epronounce™ are transcribed with phonetic symbols. Phonetic transcription is a system for writing the pronunciation of words using phonetic symbols in sequence to represent the speech sound of a word (The International Phonetic Association, 2003).

Capitalising on the promises of phonetic symbols, the interface design of epronounce™ is wholly featured with the IPA symbols; something which lacks in some other pronunciation software. To further enhance epronounce™, presentation modes with mouth movements and face gestures are also designed and developed to visually and verbally guide learners through the pronunciation learning process in supplementing the digitised phonetic symbols.

Mouth movements and face gestures of epronounce™

With the total dependence on sound imitation through hearing, it does not suffice to form new speech habits for non-native language learners. “The function of the ear is to perceive the finished sound product” (Reichmann, 1967, p. 398). Therefore, for young learners, they are incapable of just using their ears to analyse the motions of speech organs involved in producing the sounds for accurate imitation when learning the new language. The observation and imitation of lip, jaw and tongue movements are to be included to support the aural-oral approach.

According to the social agency theory, multimedia-based learning can be designed to foster virtual relationships between computers and learners by using visual social cues, or namely human agent (Atkinson, Mayer, & Merrill, 2005; Schroeder, Adesope, & Gilbert, 2013). The visual social cues of the human agent, such as facial expressions, gestures, and gaze, will engage learners in human-computer interaction as substitutes for authentic human-to-human interactions. Social cues thus result in learners being more motivated and investing more effort to understand the spoken words. The social agency theory stipulates that the life-like characteristics of a human agent prompt the social engagement of the learners, thus allowing the learners to form a simulated human bond with the agent (Atkinson et al., 2005). Once this social partnership is established, learners will try to understand and deeply process the pronunciations produced by the friendly on-screen narrator which will improve the learners’ schema activation, levels of cognitive processing, quality of learning, and ultimately, increase the probability of positive knowledge transfer (Atkinson et al., 2005). Findings of Atkinson (2002) and Li (2008) indicated that the participants who were exposed to the narrator in combination with narrated instructions achieved higher scores than the control participants who were not exposed to the narrator. In view of the potential benefits of employing full-face human narrators, this study incorporates full-face gestures in one of the presentation modes of epronounce™ to visually and verbally guide learners through the pronunciation learning process, and to investigate its effectiveness.

In sum, auditory-visual feature implies practical applications in language learning. However, relatively less work has been done to find out which presentation mode, either mouth movements or face gestures, will yield better pronunciation competence among young learners. Hence, this study attempts to determine the effects of using the three presentation modes (TSP, TSPM, TSPF) in the learning of pronunciation.

THEORETICAL FRAMEWORK

Responding to the needs of learners from non-native English speaking background, epronounce™ in this study was designed and developed based on an established theoretical framework. The results of this study provide an evident basis for instructional designers to design and develop presentation modes that best fit learners’ individual needs as this study focused on the relationship between different presentation modes and different levels of language anxiety of learners to optimise the achievement of pronunciation learning.

The underlying theories are:

- (i) Second Language Acquisition Theory (Krashen, 1981)
- (ii) Cognitive Theory of Multimedia Learning (Mayer, 2001)

Second Language Acquisition Theory (Krashen, 1981)

Stephen Krashen (1981) transformed language teaching and learning by developing the Second Language Acquisition theory, and he further developed the natural approach to language teaching together with Tracey Terrell (Krashen & Terrell, 1983). The design and development of epronounce™ incorporates the framework of Krashen's theory of second language acquisition by utilising phonetic symbols to monitor and correct pronunciation errors, and exposes pronunciation with phonetic symbols to the young learners at their early stage of growth in consistent with the natural order principle. In accordance with Krashen's formulation of $i + 1$ level, epronounce™ introduces pronunciation with phonetic symbols which is one step further beyond their current knowledge of phonics. To ensure the affective filter is low, epronounce™ offers a non-threatening learning environment for the learners to increase their comprehension and retention, minimise their language anxiety as well as maximise their self-confidence.

Cognitive Theory of Multimedia Learning (Mayer, 2001)

The Cognitive Theory of Multimedia Learning (Mayer & Moreno, 2002) is formulated according to how human mind works in processing multimedia information to produce meaningful learning. epronounce™ in this study provides various types of verbal and visual inputs which take advantage of both visual and verbal working memories without overloading one or the other (Mayer, 2001). Referring to the cognitive processes of the theory, the on-screen text, phonetic symbols, mouth movements/face gestures in epronounce™ are initially processed in the visual channel because they are brought in through the eyes, and the sounds of the word pronunciation are initially processed in the verbal channel as they are brought in through the ears. Learners will then cognitively select relevant text and graphics presented in epronounce™ and hold the corresponding verbal and visual representations in working memory. The connections will be built to organise the text and graphics in coherent mental representations. Finally, both verbal and visual mental models integrate with the learners' prior knowledge of phonics from long-term memory to construct new knowledge to acquire correct pronunciation. It is noteworthy to understand that these processes are not necessarily linear because one or several of the processes may happen simultaneously and they will occur iteratively until new knowledge is constructed (Mayer & Moreno, 2002).

Individual differences and pronunciation learning

Individual differences among learners play a noticeable role in learning as it will affect how any individual learns. These differences deserve great attention, particularly in online learning environments because technology allows for the development of adaptive systems that support the learner's differences, which in turn enhance learning.

Horwitz, Horwitz and Cope (1986) perceived language anxiety as “a distinct complex of self-perceptions, beliefs, feelings, and behaviours related to classroom language learning arising from the uniqueness of the language learning process” (p. 128). Steinberg and Horwitz (1986) revealed in their research that foreign language anxiety inhibits a learner's ability to elaborate on thoughts and thus hindering practice of the target language.

To identify the reasons behind language anxiety, Horwitz et al. (1986) noted that “anxious language learners complain difficulties in discriminating the sounds and structures of a target language message” (p. 126). They were also anxious as to whether they could pronounce correctly, speak fluently, and produce language grammatically correctly in public. Learners also spoke of “freezing up” when being put on the spot (Horwitz et al., 1986). In fact, the nature of pronunciation

learning is a source of language anxiety. Finding a more efficient and less anxiety-producing means to learn pronunciation may, in turn, improve learners' confidence when they practise pronunciation or speak in class. Creating a secure learning atmosphere and providing opportunities for the learners to make choices about their learning pace are feasible alternatives to reducing language anxiety. This is aligned with one of the purposes of designing and developing epronounce™ in this study. The study examines the use of epronounce™ as a tool in the reduction of language anxiety to particularly address the needs of high language anxiety learners, while also examining its viability as a tool for pronunciation improvement by determining whether there is any significant difference in achievement scores among learners with different levels of language anxiety in using TSP, TSPM, and TSPF modes.

Research hypotheses

The following research hypotheses were formulated in this study to determine whether there is any significant difference in achievement scores among learners with different levels of language anxiety in using TSP, TSPM, and TSPF modes.

Research studies show that technology has directly and indirectly affected the learners' language anxiety in the process of learning non-native languages. The study conducted by Kim (2009) reported that learners experienced high anxiety after the technology intervention; while more studies demonstrated that the learners' language anxiety has been reduced with the intervention of technology (Aydin, 2018; Gilakjani, 2012; Hashemyoli et al., 2015; Scida & Jones, 2016). Hence, it was hypothesised that:

H1 By using epronounce™, the learners with different levels of language anxiety will attain significantly different achievement scores in the three presentation modes.

There is a good foundation to suggest that the relationship between anxiety and performance follows a curvilinear relationship (Keeley, Zayac, & Correia, 2008; Vanderhoof, 2017; Vitasari et al., 2011). The stimulus of anxiety is often essential for performance. Anxiety, to a point, can increase performance; conversely, when the anxiety level is high exceeding one's ability to cope, this overload contributes to diminished performance and inefficiency. The well-known Yerkes-Dodson law (first described in Yerkes & Dodson, 1908) stipulates an inverted U-shaped relationship between arousal and performance in learning situations. At both extremes of low and high levels of arousal, performance is poor. Therefore, in this study, it was expected that language anxiety follows a curvilinear relationship with performance on pronunciation learning, as formulated in the research hypothesis H2.

*H2 Learners with medium language anxiety (ML) will attain higher achievement scores (AS) than learners with low language anxiety (LL) in the three presentation modes.
ASML > ASLL*

According to the social agency theory, interface presentation can be designed to foster virtual relationships between computers and learners by using visual social cues, or namely, human agent (Moreno, Mayer, Spires, & Lester, 2001; Mayer, Sobko, & Mautone, 2003). The visual social cues of the human agent, such as facial expressions, gestures, and gaze, will engage learners

in human-computer interaction as substitutes for authentic human-to-human interactions. Social cues engage learners to be more motivated and be willing to invest more effort to understand the spoken words. Therefore, the following hypothesis was proposed:

H3 Learners with high language anxiety (HL) using the Text + Sound + Phonetic Symbols + Face Gestures (TSPF) mode will attain higher achievement scores (AS) than learners with high language anxiety (HL) using the Text + Sound + Phonetic Symbols + Mouth Movements (TSPM) mode.
 $ASHL-TSPF > ASHL-TSPM$

METHOD

To investigate the effects of TSP, TSPM and TSPF on learners with different levels of language anxiety, this study employed quasi-experimental factorial design. It was designed to investigate the effects of the independent variable on the dependent variable at each level of the moderator variables. The factors of the design in this study were the three presentation modes (TSP, TSPM, TSPF) and one moderator variable (language anxiety levels).

RESEARCH DESIGN

Quasi-experimental design is commonly employed in social sciences as it measures social variables such as people. The inherent changing factors in people and many other variables in the setting are beyond control. Quasi-experimental design involves selecting groups, upon which a variable is tested, without random assignment (Gay, Mills, & Airasian, 2009). In view of the practical situation of being less possible to select individual participants randomly and the changing factors in human subjects, this study adopted quasi-experimental design as illustrated in Figure 4 below.

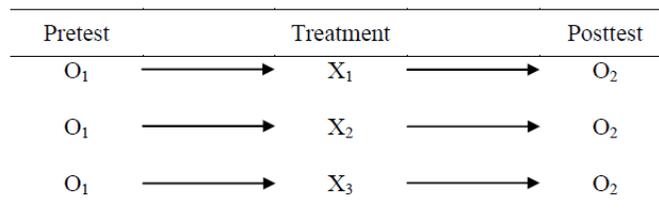


Figure 4. Research design

- O₁ - Pretest on Pronunciation
- O₂ - Posttest on Pronunciation
- X₁ - TSP mode (Text + Sound + Phonetic Symbols)
- X₂ - TSPM mode (Text + Sound + Phonetic Symbols + Mouth Movements)
- X₃ - TSPF mode (Text + Sound + Phonetic Symbols + Face Gestures)

To further investigate the effects of TSP, TSPM and TSPF on learners with different levels of language anxiety, this study employed quasi-experimental factorial design which refers to an experimental design that involves two or more independent or grouping variables to study the effects of the variables individually and in interaction with each other (Gay et al., 2009). It is designed to investigate the effects of the independent variable on the dependent variable at each level of the moderator variables. The factors of the design in this study were the three presentation modes (TSP, TSPM, TSPF) and one moderator variable (language anxiety levels). The factorial design of the study is schematically depicted in Figure 5.

Language Anxiety	Low			
	Medium			
	High			
		TSP	TSPM	TSPF

Presentation Modes

Figure 5. Presentation Modes × Language Anxiety

– A 3 × 3 Quasi-Experimental Factorial Design

Participants

The study was conducted on 373 Primary Five students (aged 11) but 44 students from the overall number did not manage to complete the experiment and tests required in the study. Therefore, the final total sample size calculated for analysis purposes in the study was 329. All the samples were taken from their normal intact classes, and there were a total of eleven classes involved in the study. They were randomly assigned to one of the three modes of epronounce™ (TSP, TSPM and TSPF) for five weeks of intervention.

The samples were sorted according to their language anxiety levels based on their Foreign Language Class Anxiety Scale (FLCAS) scores. Samples with FLCAS scores 1 standard deviation ($SD=0.72$) below the sample mean ($=2.77$) were categorised as low language anxiety, while samples with FLCAS scores in between 1 standard deviation ($SD=0.72$) above or equal to the sample mean ($=2.77$) and 1 standard deviation below or equal to the sample mean were categorised as medium language anxiety. For samples with FLCAS scores 1 standard deviation ($SD=0.72$) above the sample mean ($=2.77$), they were categorised as high language anxiety.

Instruments

In this study, there were two instruments used in collecting data. The instruments were:

- (i) Pronunciation Competence Test (Pretest and Posttest), and
- (ii) Foreign Language Classroom Anxiety Scale (FLCAS).

Pronunciation Competence Test (Pretest and Posttest)

For the purpose of this study, the Pronunciation Competence Test (Appendix I) was used as pretest and posttest to evaluate the improvement of participants' pronunciation performance. The posttest achievement scores were used to gauge participants' understanding and application of phonetic symbols while evaluating the effectiveness of using the three presentation modes of epronounceTM: TSP, TSPM, TSPF in the learning of pronunciation. The pretest scores were used as covariate to confirm that the participants were at the same starting point to control pre-existing differences between the groups.

In the test, participants were tested to see whether they were able to remember and recognise the sounds in association with phonetic symbols, to understand the sound formations, and to apply the knowledge and comprehension to new words for correct pronunciation. There were 30 English words in the pretest and posttest, and the phonetic transcriptions were placed beneath the words. Items for both pretest and posttest were the same in terms of content to maintain consistency but the sequence was randomised to reduce item memory practice. To assess the learners' performance in the Pronunciation Competence Test, the recording of individual participant's pronunciation was segmented using Praat acoustic analysis software. To quantify the pronunciation scoring objectively, each of the consonant phonemes of the 30 words was placed according to the position of Syllable Initial Word Initial (SIWI), Syllable Initial Within Word (SIWW), Syllable Final Within Word (SFWW), and Syllable Final Word Final (SFWF). For vowel and diphthong phonemes, each of them was classified into closed syllable or open syllable.

Foreign Language Classroom Anxiety Scale (FLCAS)

This study employed the Foreign Language Classroom Anxiety Scale (FLCAS) (Appendix II) to assess the participants' language anxiety degree in affecting their performance in using epronounceTM for English pronunciation learning. This instrument was used particularly to determine whether there was any significant difference in achievement scores among learners with different levels of language anxiety in using TSP, TSPM, and TSPF modes.

The FLCAS was developed by Horwitz et al. (1986) to measure learners' level of anxiety in learning a foreign language, or non-native language in this study. The FLCAS was the first and validated instrument designed for the purpose of identifying and measuring foreign language anxiety as a unique situational anxiety, distinct from trait and state anxieties. Current empirical studies continue using this instrument to measure non-native language anxiety considering it has been recognised as a reliable tool to examine non-native language anxiety in classrooms. In fact, many countries have adopted and adapted the FLCAS to analyse learners' language anxiety about non-native language learning in classroom situations (Toyama & Yamazaki, 2018).

The FLCAS contains 33 positively and negatively worded items. It uses a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Responses indicating "strongly disagree" received one point, and those indicating "strongly agree" received five points. Thus the possible range of scores for the FLCAS was 33 to 165. In the case of negatively worded items (such as no. 2, 5, 8, 11, 14, 18, 22, 28, and 32), the values were reversed. The language anxiety score was gained by summing the ratings of the thirty-three items. A high score reflects a high

level of language anxiety; whereas a low score indicates a low level of language anxiety. In this study, participants with FLCAS scores 1 standard deviation ($SD=0.72$) below the sample mean ($=2.77$) were categorised as low language anxiety, while participants with FLCAS scores in between 1 standard deviation ($SD=0.72$) above or equal to the sample mean ($=2.77$) and 1 standard deviation below or equal to the sample mean were categorised as medium language anxiety. For participants with FLCAS scores 1 standard deviation ($SD=0.72$) above the sample mean ($=2.77$), they were categorised as high language anxiety.

Statistical analysis

ANCOVA was conducted to test the hypotheses in this study to determine if there were statistically significant differences in the adjusted mean scores of the dependent variable (achievement scores of posttest) among the three presentation modes with different levels of language anxiety. The pretest scores were used as covariate. Prior to this, assumptions of ANCOVA were checked to ensure that there was no violation of the assumptions of linearity, homogeneity of variance, and homogeneity of regression slopes. When the one-way ANCOVA yielded statistically significant results and there were more than two levels for the independent variable, follow-up post-hoc pair wise comparisons were conducted to evaluate pair-wise differences among the adjusted means. A two-way ANCOVA was carried out to determine if any interaction existed between the presentation modes and learners' and language anxiety levels.

RESULTS AND DISCUSSION

The major research question addressed in this study concerned whether there is any significant difference in achievement scores among learners with different levels of language anxiety in using TSP, TSPM, and TSPF modes. The two-way ANCOVA was conducted to examine the effects of language anxiety levels on the achievement scores of posttest according to presentation modes using pretest as covariate.

Effects of language anxiety levels with presentation modes on pronunciation learning

In this study, it was hypothesised that learners with different levels of language anxiety attained significantly different achievement scores in the three presentation modes of epronounceTM. The results of this study however did not support the hypothesis. There were interaction effects between language anxiety levels and presentation modes of epronounceTM but the interaction effects were not statistically significant as presented in Table 1. The performance of the learners is seemingly at par with each other regardless of the anxiety levels which is similar to the results found by Beauvois (1997, 1998), Huang and Hwang (2013), Poza (2011) and Terantino (2014).

Table 1. Two-way ANCOVA for posttest scores by presentation mode and language anxiety level with pretest as covariate*Dependent Variable: Posttest*

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power ^b
Corrected Model	16731.667 ^a	9	1859.074	31.944	.000	.474	1.000
Intercept	13228.556	1	13228.556	227.301	.000	.416	1.000
Pretest	13010.026	1	13010.026	223.546	.000	.412	1.000
FLCAS	7715.003	2	3857.502	66.282	.000	.294	1.000
Mode	461.973	2	230.987	3.969	.020	.024	.710
FLCAS * Mode	293.571	4	73.393	1.261	.285	.016	.394
Error	18565.312	319	58.198				
Total	1392755.000	329					
Corrected Total	35296.979	328					

a. *R Squared* = .474 (*Adjusted R Squared* = .459)

b. Computed using *alpha* = .05

Online learning environments in epronounceTM create a non-threatening, positive and engaging atmosphere in engaging learners to participate actively in the learning activities regardless of their language anxiety levels. This is consistent with the Affective Filter principle of Krashen's Second Language Acquisition Theory (Krashen, 2005). Krashen claimed that the best language acquisition takes place in an environment where anxiety level is low and defensiveness is absent, or in other words, where the affective filter is low. A low filter is associated with relaxation, confidence to take risks and a conducive learning environment which has been created by epronounceTM in this study. Learning with epronounceTM, the learners are more willing to practise their pronunciation because the mistakes made would not cause them to feel embarrassed in front of others. This situation motivates the learners to practise more and improve gradually. Findings of this study suggest that epronounceTM functions as a practice platform for pronunciation learning not only in terms of pronunciation competence but also with regard to learners' affective state in which learners are seemingly more confident and engaged during the learning sessions with epronounceTM. The epronounceTM has also shown promise in bringing learners to medium language anxiety level for optimal learning by providing them learner-centred learning approach.

Effects of language anxiety levels on pronunciation learning with epronounceTM

In this study, it was expected that language anxiety followed a curvilinear relationship with performance on pronunciation learning, as formulated in the research hypothesis. The findings shown in Table 2 report that learners with medium language anxiety attained the highest achievement scores, followed by low language anxiety learners and then high language anxiety learners.

Table 2. Estimated marginal means by language anxiety level

Dependent Variable: Posttest

Language Anxiety Level	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Low	60.333 ^a	1.060	58.247	62.418
Medium	67.500 ^a	.518	66.480	68.520
High	52.802 ^a	1.202	50.438	55.167

a. Covariates appearing in the model are evaluated at the following values: Pretest = 44.48.

The curvilinear relationship between anxiety and performance as illustrated in the Yerkes-Dodson law (Yerkes & Dodson, 1908) clearly explains the findings. The law dictates that mental arousal or anxiety is essential for performance improvement. Learners perform at their best when the anxiety level reaches the optimum level. Performance decreases when the anxiety level is high, exceeding one's ability to cope. This type of overloading leads to diminished performance and inefficiency. At both extremes of low and high levels of anxiety, performance is unsatisfactory. Therefore, there is an optimal mid-range level of anxiety as reflected in this study.

In pronunciation learning, for example, learners with low language anxiety level will feel bored or lethargic easily and perform badly. As language anxiety level increases, performance also increases reaching the optimum level but only to a point. Learners with high language anxiety level will become too nervous, and hence their performance will also be detrimentally interfered. In addition, high language anxiety learners who overemphasise their achievement will never be satisfied with what they have accomplished and they become easily frustrated (Gregersen & Horwitz, 2002). Thus, the findings are in line with the hypothesis that learners with medium language anxiety attain the highest achievement scores.

Effects of presentation modes on pronunciation learning with epronounce™

The research hypothesis proposed that learners with high language anxiety using the Text + Sound + Phonetic Symbols + Face Gestures (TSPF) mode attained higher achievement scores than learners with high language anxiety using the Text + Sound + Phonetic Symbols + Mouth Movements (TSPM) mode. The findings in this study supported the hypothesis, and in fact, learners with low, medium and high language anxiety levels also attained higher achievement scores in TSPF mode compared to the other two modes, TSP and TSPM as demonstrated in Table 3.

Table 3. Estimated marginal means by language anxiety level and presentation mode*Dependent Variable: Posttest*

Language Anxiety Level	Presentation Mode	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Low	TSP	58.832 ^a	1.805	55.280	62.384
	TSPM	60.712 ^a	1.923	56.928	64.496
	TSPF	61.454 ^a	1.688	58.134	64.775
Medium	TSP	64.820 ^a	.881	63.087	66.554
	TSPM	66.672 ^a	.852	64.996	68.348
	TSPF	71.007 ^a	.930	69.177	72.837
High	TSP	53.528 ^a	2.345	48.914	58.142
	TSPM	50.522 ^a	2.049	46.491	54.552
	TSPF	54.358 ^a	1.680	51.052	57.663

a. Covariates appearing in the model are evaluated at the following values: Pretest = 44.48.

Face gestures are a form of kinesics used to non-verbally transmit linguistic information (Knapp & Hall, 2006). The face gestures of the narrator draw learners' attention to the specific aspect which guides learners to focus on the non-verbal signals that are closely tied to correct pronunciation. Understanding or interpreting non-verbal signals is especially important for non-native English speakers whose language skill is relatively limited. The face gestures influence the perception of individual sounds. The changes in a narrator's facial muscles in conjunction with changes in the vocal tract may contribute to linguistic information. The face gestures may offer the learners using TSPF mode opportunities to receive comprehensible input and to make modifications in their output. The presence of social cues has a positive overall effect on learners' recall of information. Gestures facilitate the comprehension of a spoken word and convey actions not present in speech which enhance the narrator's articulation (Lazaraton, 2004).

Furthermore, the TSPF mode that yields the highest achievement scores may result from the social agency theory. The social agency theory linked to the Cognitive Theory of Multimedia Learning suggest people apply social rules to media, which in turn positively influences learning (Mayer et al, 2003). By using social cues such as face gestures, the narrator is able to attract the learners' attention and thus help them to combine verbal and non-verbal information which also corresponds to Baddeley's Model of Working Memory (Baddeley, 2000). The visual social cues of the narrator, such as facial expressions, gestures, and gaze, engage learners in human-computer interaction as substitutes for authentic human-to-human interaction. It is virtually like having a teacher in front of the learners pronouncing the word, which humanises the learning process and enables meaningful learning to take place. Full human face gestures can bring a sense of personalisation to learning because the learners are able to interact socially with the narrator. Full face gestures of narrator thus result in learners being more motivated and investing more effort to understand the spoken words. The social agency theory stipulates that through digital engagement, the characteristics of a narrator prompt the social engagement of the learners, thus allowing the learners to form a simulated human bond with the narrator (Atkinson et al, 2005). The eye gaze, eyebrow positions, and face gestures that compose affective non-verbal communication help widen the communication bandwidth by invoking emotional cues. The full face gestures in TSPF mode thereby may convey enthusiasm for the word pronunciation and foster similar level of

enthusiasm in the learners. The narrator with rich facial gestures may simply make learning more fun as the learners enjoy interacting with the narrator which in turn leads to a more positive perception of the overall learning experience and learners opting to spend more time in the learning environment. Once this social partnership is established, learners attempt to understand and deeply process the pronunciation produced by the friendly on-screen narrator which improves the learners' schema activation, level of cognitive processing, quality of learning, and ultimately increase the probability of positive knowledge transfer (Atkinson et al., 2005; Mayer et al., 2003).

CONCLUSION

The results of this study indicate that epronounce™ has the potential to bring the learners to medium language anxiety level by engaging them digitally and hence optimising pronunciation learning. This is in line with the Affective Filter principle of Krashen's Second Language Acquisition Theory. Krashen claimed that the best language acquisition takes place in an environment where the affective filter is low. A low filter is associated with relaxation, confidence to take risks and a pleasant learning environment, as created by epronounce™ in this study.

Based on the findings, the TSPF mode incorporating the full face of a narrator with motivational and affective social cues yields the highest performance. There is evidence suggesting that changes in a narrator's facial muscles in conjunction with changes in the vocal tract may provide linguistic information. Without any gesture expressions presented, the learners are hindered from interacting with the narrator which lower the learners' levels of enthusiasm and motivation. The presence of full face gestures in an interactive learning environment has a strong positive effect on learners' perception of their learning experience, hence enabling them to be digitally engaged with the narrator.

Recommendations: It is recommended that this study be replicated to validate the findings. Further research could be conducted to examine how epronounce™ brings the low and high language anxiety learners to the optimal level. The elements of these three presentation modes can be explicitly investigated to ascertain the significant factors contributing to the findings. Qualitative method is proposed to be employed in future studies to triangulate the results. It is further recommended that ongoing studies be conducted to monitor the performance of other cohorts of learners in using epronounce™.

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Appendix I. Pronunciation Competence Test

1.	choral /'kɔ:rəl/	8.	mauve /məʊv/
2.	aegis /'i:dʒɪs/	9.	ferret /'ferɪt/
3.	isle /aɪl/	10.	cache /kæʃ/
4.	butcher /'bʊtʃə(r)/	11.	hyssop /'hɪsəp/
5.	quay /ki:z/	12.	woe /wəʊ/
6.	wrath /rɒθ/	13.	rouge /ru:ʒ/
7.	ingot /'ɪŋgət/	14.	awl /ɔ:l/
		15.	nausea /'nɔ:ziə/

- | | | | |
|-----|-----------------------|-----|--------------------------|
| 16. | barge
/bɑ:dʒ/ | 24. | ewe
/ju:/ |
| 17. | vie
/vaɪ/ | 25. | chauffeur
/'ʃəʊfə(r)/ |
| 18. | gauge
/geɪdʒ/ | 26. | mull
/mʌl/ |
| 19. | chore
/tʃɔ:(r)/ | 27. | colleague
/'kɒli:ɡ/ |
| 20. | burg
/bɜ:g/ | 28. | rout
/raʊt/ |
| 21. | typhoid
/'taɪfɔɪd/ | 29. | chide
/tʃaɪd/ |
| 22. | boor
/buə(r)/ | 30. | heir
/eə(r)/ |
| 23. | thy
/ðaɪ/ | | |

Appendix II. Foreign Language Classroom Anxiety Scale (FLCAS)

Name: Age:

Language Spoken At Home:

This inventory is being used for research purpose only and no other person, except the researcher, will know what your responses are. Please circle the appropriate number that best matches your feelings about each statement. Please use the coding system below.

Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
1	2	3	4	5

1.	I never feel quite sure of myself when I am speaking in my English class.	1	2	3	4	5
2.	I do not worry about making mistakes in my English class.	1	2	3	4	5
3.	I tremble when I know that I am going to be called on in English class.	1	2	3	4	5
4.	It frightens me when I do not understand what the teacher is saying in the English class.	1	2	3	4	5
5.	It would not bother me at all to take more English lessons.	1	2	3	4	5
6.	During English class, I find myself thinking about things that have nothing to do with the lesson.	1	2	3	4	5
7.	I keep thinking that the other students are better at languages than I am.	1	2	3	4	5
8.	I am usually at ease during tests in my English class.	1	2	3	4	5
9.	I start to panic when I have to speak without preparation in English class.	1	2	3	4	5
10.	I worry about the consequences of failing my English.	1	2	3	4	5
11.	I do not understand why some people get so upset over English classes.	1	2	3	4	5
12.	In English class, I can get so nervous I forget things I know.	1	2	3	4	5
13.	It embarrasses me to volunteer answers in my English class.	1	2	3	4	5
14.	I would not be nervous speaking English with native speakers.	1	2	3	4	5

	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
	1	2	3	4	5
15.	I get upset when I do not understand what the teacher is correcting.				5
16.	Even if I am well prepared for English class, I feel anxious about it.				5
17.	I often feel like not going to my English class.				5
18.	I feel confident when I speak in my English class.				5
19.	I am afraid that my English teacher is ready to correct every mistake I make.				5
20.	I can feel my heart pounding when I am going to be called on in my English class.				5
21.	The more I study for the English test, the more confused I get.				5
22.	I do not feel pressure to prepare very well for English class.				5
23.	I always feel that the other students speak English better than I do.				5
24.	I feel very self-conscious about speaking English in front of other students.				5
25.	English lessons moves so quickly I worry about getting left behind.				5
26.	I feel more tense and nervous in my English class than in my other class.				5
27.	I get nervous and confused when I am speaking in my English class.				5
28.	When I am on my way to English class, I feel very sure and relaxed.				5
29.	I get nervous when I do not understand every word the English teacher says.				5
30.	I feel overwhelmed by the number of rules you have to learn to speak English.				5
31.	I am afraid that the other students will laugh at me when I speak English.				5
32.	I would probably feel comfortable when I am with native speakers.				5
33.	I get nervous when my English teacher asks questions which I have not prepared for in advance.				5

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Differences in visual-textual platforms, technical-strategic communication & professionalism vs encroachment between Malaysian & American PR practitioners' social media practices

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ABSTRACT

Social media platforms and their affordances are found by researchers to affect the public relations (PR) industry and its practitioners' tasks. Wright and Hinson's (2015, 2016, 2017) longitudinal studies showed digital media including online social network sites drastically changing the way PR is practised in the United States. This current localised research adapted and modified Wright and Hinson's quantitative survey instrument to compare Malaysian and American PR professionals' social media practices. This exploratory study provides comparative insights into the two countries' PR practitioners' preference for visual versus textual-based platforms, technical versus strategic perspectives of social media, and professional PR versus encroachment by marketing. The Internet-based survey (N=95; reliability $\alpha=0.782$) found differences between Malaysian and American PR practitioners in terms of average time spent on social-media based tasks (above—below 50% majority, respectively); types of social-media platforms preferred for PR work— notably Pinterest and Snapchat (Malaysian) versus Twitter and LinkedIn (American); and the department in charge of social media communication— digital/social media and marketing in Malaysia versus communication/PR in the US.

Keywords: **social media, public relations, Malaysia, comparative study, survey**

INTRODUCTION

Due to the advances of technological innovations, public relations (PR) practitioners have embraced social and other emerging media technologies in their practices. The increasing use of social networking sites, microblogging, podcasts, VODcasting, vlogs and video-sharing services, for example, has changed and shaped the practice of public relations by creating opportunities for communication between organisations and its publics. Prior research showed that social and emerging media technologies have dramatically changed how public relations is practised (Wright & Hinson, 2015, 2016, 2017). In particular, the pervasive use of social media platforms such as Facebook, Twitter, and Instagram has enabled public relations practitioners to create more avenues of interaction with their stakeholders. Equally notable, since the “one size fits all” style cannot fulfil varied audiences’ interests, needs and concerns, public relations practitioners are compelled to design and spread messages according to different cultures, backgrounds and social media platforms.

Wright and Hinson (2017) also revealed that social media platforms such as Facebook and Twitter are frequently used in public relations practice in the United States of America especially for external communication; however, the percentage of time spent using social and other digital media for work is levelling off. In Malaysia, there was an estimated 24.5 million Internet users in 2016 (76.9% of the population), and of those who visited social networking sites, 97.3% of them owned a Facebook account followed by Instagram (56.1%) (MCMC, 2017).

Although more studies are investigating the use of social and emerging media in public relations practices, the patterns of social media usage in Malaysia are still not well-understood. Therefore this exploratory research seeks to examine the differences in the usage of social media for public relations practices between American PR practitioners and Malaysian PR practitioners in terms of time spent, platform preferences as well as the departments primarily responsible. The study also intends to determine the assessments conducted and explore possible reasons for these differences between both countries.

LITERATURE REVIEW

Social media technologies, also known as Web 2.0, are new electronic and web-based communication channels such as blogs, podcasts, wikis, chat rooms, discussion forums, RSS feeds, websites, as well as social networking sites such as MySpace, Second Life and other dialogue-creating media (Moyer, 2011). Kaplan and Haenlein (2012) described social media as internet data 2.0 that allows people to exchange user-generated contents while enabling public relations practitioners to access vast channels through which they could collect data and information, monitor public opinions and consumer voices as well as engage directly with audiences. Social media is also a broad term used to describe any number of technological systems related to collaboration and community (Tess, 2013). Additionally, Macnamara, Lwin, Adi and Zerfass (2016) articulated social media as shared media because they allow followers, subscribers and friends to post, comment and share on Facebook, Twitter, Weibo and others. Due to their ability to connect with others, social media have become essential to public relations as a tool for communicating with strategic publics because they enable real-time, two-way communication (Lewis & Nichols, 2016).

Literature shows that public relations practitioners and organisations increasingly use social media for various purposes. Social media are considered cost-effective tools for timely targeted dialogue with a wide range of stakeholders (DiStaso, McCorkindale & Wright, 2011). Further, organisations also use social media for their communication with employees, clients and customers to create dynamic, synchronised, and multidirectional dialogue (Reitz, 2012). In this regard, Taylor and Kent (2014) stated that social media are the new tools for public relations practitioners, enabling a variety of new communication channels, strategies and tactics to reach external audiences. They elaborated that as public relations firms utilise social media to inform and publicise as well as attract media and consumers' attention, practitioners nowadays no longer have to depend solely on traditional media platforms.

In this digital age, technological developments have and continue to profoundly affect the practices of different industries, and the public relations field bears no exception. Corduan (2017) noted that in examining the best option to interact with consumers, studies have shown that creating personalised and dialogic communication with them is very much preferred. The social and emerging media provide interactive and proactive platforms that could build relationships between organisations and stakeholders via dialogues that are considerably in-depth, personal and conversational. This corroborates with Macnamara, Zerfass, Lwin and Adi's (2018) who argued that the excellence theory is the most practical as it upholds two-way communication and symmetry while maintaining relationships between the corporation, its stakeholders and their internal and external environments. Further, according to Wolf and Archer (2018), the sustained effort to build relationships with various stakeholders of the organisation is the main practice of public relations and most contemporary research is based on the assumption that social media are tools for building relationships. Therefore the emergence of these social media platforms has enabled immediate and direct communication with various publics and vice-versa through to-and-fro feedback that culminates in mutual evaluations.

According to Lee and Low (2013), Malaysian PR practitioners agreed that social media provide them prompt interactions and direct two-way communications to engage with organisational publics. Additionally, Farzana, Nor Ismawati and Sulaiman (2015) stated that social media are used to gather updates, feedbacks and opinions from organisational customers in order to fulfil their needs. According to Gabriel and Koh (2016), Malaysia's PR practitioners use social media as tools to reach the public directly and constantly to identify their basic needs, desires and current trends, in order to create mutually beneficial relationships. Zeti Azreen (2019) also acknowledged that Malaysian organisations perceive that social media are able to create two-way communication between the organisation and its stakeholders, through which all parties can share and discuss opinions via effective and inexpensive ways. She added that corporations are able to establish direct communication with stakeholders easily in the digital age via their websites, digital apps and social media platforms.

In the context of Singapore, Sriramesh, Sanchez and Soriano (2013) found that an increasing number of organisations enhanced their external interactions by engaging in e-surveys and e-polls to gather feedback from a myriad of stakeholders. As for Thailand, Puksawadde, Rerkkang and Jirasophon (2015) contended that a majority of PR practitioners utilise social media to exchange news and information with consumers whilst collecting data about their opinions, attitudes and behaviours. They elaborated that PR practitioners from the private sector utilise social media as platforms to disseminate news releases for campaigns and announcements of special events. Sataporn, Achmad, Almarez and Anwar (2017) reported that in Thailand, Indonesia and the Philippines, social media are platforms that ease government departments' two-way

communication with citizens as they enable the former to spread policy information to the public while the latter could leave comments and feedback about governmental initiatives. According to Sutherland (2017), in Vietnam, with the rapid utilisation of social media, incorporating them in campaigns has become necessary to reach online users who are increasingly becoming less inclined towards traditional mass media channels.

Macnamara et al. (2016) found that social media usage is almost on par with traditional media, with 75% of their sample PR practitioners agreeing that social media are more important while 76.5% still think that traditional media are more vital. They reported that social media have higher ranking of importance in the Philippines, Taiwan, Thailand, Malaysia, Vietnam and China, while countries like Japan, India and Hong Kong prefer traditional media. In Gabriel and Koh's (2016) research, 18 out of 22 interviewees agreed that social media are efficient interactional tools, having used social media to spread information about their organisation and release updates, notices, related product and service information. Macnamara et al. (2018) revealed that the usage of social media by PR practitioners was highest for "delivering messages" (66.7%). However, only 39.0% used it for "initiating web-based dialogues with stakeholders". Zeti Azreen's (2019) study reported that most PR practitioners (91%) believe and claim that social media are effective tools for interacting with stakeholders.

According to Macnamara et al. (2018), this contemporaneous model of new media is entering the commercialised communication landscape due to the emergence of social media and the shrinking of traditional media and advertising. Further, Wolf and Archer (2018) highlighted that the general consensus is that new communication platforms and tools offer new opportunities for communicators. Due to the rapid innovation of technology, communicators can produce content internally without outsourcing to external experts. Sutherland (2017) posited that people are reluctant to use mainstream media channels for communication due to high costs and decreasing audiences; one interviewee in the study shared that many brands are diverting budgets originally allocated for traditional marketing to social media activities. In the same way, PR practitioners' use of social media as their key channels for communication mirrors big changes in the relationship dynamics as the focus shifts away from traditional media.

However, there are markets that still prefer traditional media even though social media are ideal platforms for communication due to particular audience segments who can only be reached by traditional media. Moreover, even though there might be a decline in traditional advertising and shift to social media, the innovative functions provided by social media might not be fully maximised. Wolf and Archer (2018) mentioned that digital media tend to be linked with entertainment which is a less formal type of engagement, and added that they are particularly associated with the younger audience. According to Gabriel and Koh (2016), the effectiveness of social media depends on the type of information being transmitted, for example, serious content such as news is more suitable for the mainstream media. Thus they opined that new media cannot be an independent media by itself but should instead be, utilised together with mainstream media. This denotes that social media are beneficial in providing rapid informativeness while traditional media provide the required trustworthiness. Therefore, although some researchers think that traditional media's importance might be usurped by new media, there still exist an interdependent relationship between these two forms.

Sataporn et al. (2017) described social media as user-generated-content platforms as they afford not just interactions but self-creations between users and other users. However, Sutherland (2017) cautioned that the two-way conversational feature of social media is somewhat problematic due to the inability of predicting the online behaviours of the publics and stakeholders. These

uncertainties will increase the likelihood of reputation damage through negative comments or customer complaints. Based on Corduan's work (2017), brands and personalities need to be careful of these comments and respond promptly because of consequential negative cycles. According to Tang and Chan (2016), social media have no filter in the content of messages shared or published on sites and platforms. Therefore, to adapt to new media, PR practitioners need to grasp and overcome the challenges they will face in the anonymous space of the Internet. Digital and social media empower stakeholders such as employees, bloggers, customers and communities to produce content for public consumption, including detrimental information and negative news about specific organisations, their products and people.

Noteworthy too is Macnamara et al.'s (2016) claims that some organisations and individuals used anonymous accounts to comment on their own posts to boost their organisation's products or services. These tactics known as "ghost commenting" or "ghost blogging" can lead to lack of transparency and involves promotion presented in a deceptive way that could influence the accuracy and effectiveness of online evaluations for clients, the market and the general public. According to Wolf and Archer (2018), regardless of the level of online engagement with targeted publics, online monitoring and social listening are vital to public relations professionals. Zeti Azreen (2019) echoed this by adding that social media monitoring should be made mandatory as organisations have to respond immediately to any negative comments, accusations or complaints. Such is the importance of social media monitoring to PR practitioners as it helps them identify contents, visuals and personalities who could increase engagement rates, as well as zero in on issues that can potentially create negative perceptions about their organisations. Therefore it is helpful for PR practitioners to be prepared for responses and online negotiations. PR practitioners should know how to handle online speculations and allegations to protect their company's image.

Thus taking into consideration the free-for-all nature of social media that affords vast and rapid dissemination of user-generated content, opportunities for the possible onslaught of consumer complaints, negative comments and damaging accusations are rife. Kalthom et al. (2014) pointed out that social media have become powerful tools for crisis communicators as they can convey messages spontaneously. Thus the availability and immediacy of social media is also changing the way PR practitioners manage crises as they use the platforms to uphold their organisation's reputation and counter indiscriminate allegations or reporting before official responses are formulated and announced. Indeed, Lahav (2014) argued that social media can be a tool for crisis management whereby organisations can upload videos and post immediate responses instead of conducting press conferences, as the former is much more convenient and fast in countering any negative feedback and reporters' queries. Tang and Chan (2016) also agreed that social media allow PR practitioners to formulate instant responses to serious issues or criticisms that threaten an organisation's reputation.

Macnamara et al. (2018) highlighted the importance of social media to an organisation in communication because this phenomenon has created a new position called social-media influencers (SMIs). SMIs are seen as opinion leaders in social media because their followers tend to emulate SMIs—the products/services they use, their behaviours, lifestyle and worldviews. Most PR practitioners in Asia-Pacific are convinced that SMIs play an increasingly important role in the communication process, publicity and promotion of goods, services and brands. Thus, as Lahav (2014) pointed out, public relations practitioners recruit SMIs and develop a give-and-take relationship with popular influencers and bloggers, because they seemingly play the same role as reporters. Identifying the right SMI who could engage with a particular target group and inviting them to branding events or sending them products to review and endorse is way more effective

than using reporters to influence the target audience. Sutherland (2017) noted that in the Vietnamese PR industry, while positive media coverage in traditional media is still sought after by paying journalists, SMIs are now part of the mix too. According to Wolf and Acher (2018), due to the rapid rise of individual influencers or at times, a collaborative grouping of like-minded ones, the business of promoting, marketing and selling continues to undergo tremendous transformation and the dynamics of influencer engagement pose significant challenges for even the most experienced public relations professionals today.

RESEARCH OBJECTIVES

The two research objectives (RO) guiding this exploratory study are:

RO1: *To examine differences in the usage of social media between Malaysian and American public relations practitioners, in terms of their time spent and platform preferences, the departments primarily responsible, and whether research and measurement are conducted.*

RO2: *To suggest possible reasons for these differences between Malaysian and American public relations practitioners' usage of social media technologies in their respective public relations industry practices.*

RESEARCH METHODOLOGY

A quantitative research approach was utilised for this exploratory study, where an online-based survey through Qualtrics.com was used to query Malaysian PR practitioners about their time spent working via social media networks and their platform preferences, the department in their organisation primarily responsible for social media communication, and whether assessments or measurement were conducted on the effectiveness of their social media PR.

The sample consisted of those employed in public relations agencies (external public relations) and also within corporations and organisations (internal public relations) in Malaysia. These practitioners were selected via random sampling among members of the Public Relations and Communications Association (PRCA) Malaysia who received email invitations to participate in the survey. The survey link from Qualtrics.com was distributed to respondents via email as well as through postings on Facebook and LinkedIn.

A total of 95 public relations practitioners in Malaysia completed the survey. Respondents' data was transferred from Qualtrics.com to IBM Statistical Package for the Social Sciences (SPSS) Version 25 and analysed. Descriptive statistical analysis was undertaken to obtain the frequency counts, percentages and mean values. Although the number of respondents is not enough to generalise for the PR practitioners' population in Malaysia, the findings provide useful insights and aid in understanding the pattern of their social media usage.

RESULTS

Demographics

Table 1. Respondents' demographic profiles

	Respondents (N=95) <i>* few did not answer</i>	Percentage (%)
Inhouse PR practitioner	67	70.5
External PR practitioner	27	28.4
Male	69	72.6
Female	23	24.2
Younger than 30	59	62.1
30–39 years old	21	22.1
40–49 years old	10	10.5
50–59 years old	2	2.1
Malay	9	9.5
Chinese	72	75.8
Indian	6	6.5
Others	6	6.5

Table 1 shows that majority of the Malaysian public relations practitioners who responded to this study's survey questionnaire worked in internal public relations (n=67, 70.5%), while the remaining 27 respondents (28.4%) worked in public relations agencies. Next, in terms of gender, 72.6% were male (n=69) and 24.2% were female (n=23). In terms of ethnic groups, 75.8% of the respondents were Chinese, followed by Malay (9.5%), Indian (6.5%) and others (6.5%). Majority of those surveyed were younger than 30 years old (n=59, 62.1%). Note that the respondents' working experience in public relations ranged from two months to 30 years, with an average of 5.45 years.

Average time spent

Table 2. Average time spent for PR practices on social media

Average time spent on Social Media	American PR practitioners (%)	Malaysian PR practitioners (%)
None	2	1
1–10% of time	20	12
11–25%	38	20
26–50%	26	37
51–75%	10	25
More than 75%	4	5

(Note: American respondents' data are from Wright & Hinson, 2017)

Results in Table 2 compare the average time spent in social media between Malaysian and American PR practitioners. A majority (37%) of Malaysian respondents spent 26% to 50% of their time on average with social and emerging media for public relations purposes, while 30% spent more than 50%, and 33% spent a quarter or less of their time on these tasks. For Americans, based on Wright and Hinson's (2017) findings, a vast majority (60%) spent 25% or less of their time on social and emerging media, while 26% spent 26% to 50% and 14% spent more than 50%.

Frequency of platform usage

Table 3. Frequency of social media platform usage

Social Media Platform	American PR practitioners (Mean)	Malaysian PR practitioners (Mean)
Facebook	4.36	4.52
Instagram	3.39	4.27
LinkedIn	3.60	4.26
Snapchat	2.25	4.22
Pinterest	2.17	4.21
Flickr	2.05	4.09
Tumblr	1.70	4.09
YouTube	3.25	3.95

Google+	2.30	3.95
Twitter	4.29	3.84

(Note: American respondents' data are from Wright & Hinson, 2017)

Respondents were asked the frequency of using 10 social and emerging media technologies as part of their public relations work using a 5-point Likert scale. Among Malaysian PR practitioners, Facebook, Instagram, LinkedIn, Snapchat, and Pinterest were the top-five most used media for public relations practices with respective mean scores of 4.52, 4.27, 4.26, 4.22 and 4.21. The other media that were frequently used which received mean scores above 4.00 were Flickr and Tumblr (both M=4.09).

The results above contrasted with those found by Wright and Hinson (2017) among PR practitioners in the United States. The top-two most used platforms were Facebook (M=4.36) and Twitter (M=4.29), followed by LinkedIn, Instagram and YouTube with respective mean scores of 3.60, 3.39 and 3.25.

Department primarily responsible

Table 4. Department primarily responsible for monitoring and managing social media communication

Department/ Organisational Function	American PR practitioners (%)	Malaysian PR practitioners (%)
Digital or Social Media	12	31
Communication or PR	63	27
Marketing	15	23
Technology (IT)	0	4
Others	7	7
Do not know	1	3
Has not been assigned	1	4

(Note: American respondents' data are from Wright & Hinson, 2017)

Next, the respondents were asked about the department or organisational function which was primarily responsible for monitoring and managing social and digital media communication in their organisation.

The majority of Malaysian respondents (31%) claimed that Digital/Social Media personnel were primarily responsible for monitoring and managing social and digital media communication, followed by Communications/PR (27%) and Marketing (23%). In contrast, based on Wright and Hinson's (2017) data, their American counterparts overwhelmingly agreed (63%) that social and

digital media communication was primarily monitored and managed by Communication/PR staff, followed by Marketing (15%), and Digital/Social Media (12%).

Research and measurement

Table 5. Measurement of communication effectiveness via social media

	American PR practitioners (%)	Malaysian PR practitioners (%)
Yes	48	38
No	37	36
Uncertain/Do not know	15	26

(Note: American respondents' data are from Wright & Hinson, 2017)

The number of Malaysian respondents (38%) who agreed that the effectiveness of communication via social and emerging media was measured was almost similar with those who did not agree (36%). However, 26% admitted that they were uncertain. On the contrary, 48% of American respondents believed measurement was done as opposed to 37% who did not, while 15% were uncertain.

DISCUSSIONS

Public relations practitioners from different countries have different perceptions towards the utilisation of social media in their practices. Some see and use new media as mere informational tools for data gathering and mining, while others view and utilise them as communication tools for organisational publicity and product/service promotion. In this regard, prior research has shown that social media have been adopted as formal channels of communication in the Malaysian public relations industry.

With increasing number of people embracing technological and Internet-enabled tools for communication, audiences who adopt them for personal and work-related consumption and content have also increased in tandem. Mass communication with customers, clients and journalists are now conducted online via mobile text, electronic mails, video calls, websites, digital apps and social media platforms. Therefore, public relations practitioners have come to recognise social media as desirable channels of mass communication and consumption. Not surprisingly, the rise of social media has led to less reliance on traditional media, such as television, newspapers, and radio. Organisations can now easily manage direct communication with their stakeholders through their own websites and other social media platforms or applications.

Next, the results are discussed in relation to the study's two research objectives. The average time spent by public relations practitioners indicated that 63% of respondents in Malaysia spent 26% to 75% or more of their time on average, with social and emerging media for public relations purposes. Comparatively, based on Wright and Hinson's (2017) findings, a vast majority

of 60% among American respondents spent 25% or less of their time on social and emerging media.

This could be a reflection of the newness of social media-based public relations in Malaysia as compared with the more matured social media milieu in the United States, seeing that emergent media had quite a head start in America compared to Malaysia. This current study's findings mirror those of prior Malaysian new-media public relations research such as by Lee and Low (2013), Gabriel and Koh (2016), Zeti Azreen (2019), while contradict that of Fitch (2009), in which entailed Malaysian public relations practitioners being hesitant to use new media because experienced practitioners were seemingly fearful of the changing environment and they expressed concerns about the loss of interpersonal contact.

Macnamara et al. (2016) found that there are more public relations practitioners in the Asia-Pacific region who felt that social media are significant in strategic communications, with 92.2% rating social media platforms such as blogs, Facebook, Twitter, YouTube, Sina Weibo as contributing strategically, while 86.5% favoured websites, intranet and e-mails. In Sataporn et al.'s work (2017) on public relations practitioners in Thailand, Indonesia and the Philippines, the authors reported that social media are mainly used to disseminate information and collect feedback and opinions, as exemplified in Iligan where authorities post important information on their website and collect feedback and opinions through their Facebook account. According to Sutherland (2017), Facebook is commonly used by Vietnamese PR practitioners for communication as strong audience engagement via social media has shifted preference from mainstream media to social media channels. In the same way, Sriramesh et al. (2013) stated that in Singapore, it is common practice for corporations to host videos of their publicity events or upcoming promotions on their websites, and for PR practitioners to use their Twitter and Facebook accounts to help customers access information on various activities and materials.

While in Malaysia, Lee and Low (2013) noted the explosion in social media especially social networking sites such as Facebook with increased connectivity and interactivity, has compelled many Malaysian public relations practitioners to recognise the need to embrace these new media for effective communication with internal and external audiences. In addition to keeping in touch with their target audience through various ways such as contests or giveaways, the posting of news, photos and videos, helps to create long-term interactive relationships. Based on Gabriel and Koh's (2016) findings, PR practitioners use social networking sites such as Facebook and LinkedIn to communicate most often (100%), followed by microblogging sites Twitter and Tumblr (68.2%). In the same way, Zeti Azreen (2019) revealed that Facebook and Whatsapp are the most frequently used by Malaysian PR practitioners, compared to LinkedIn, adding that the interactive functions of social media are utilised to establish win-win relationships by offering stakeholders suitable contents that meet their needs.

With regard to the social media platforms most used, two top social media platforms as voted by Malaysian respondents were missing from the list of the American PR practitioners. On the other hand, Twitter and YouTube which were amongst the most used by American PR practitioners were absent from the list of Malaysian's main platforms. This finding raises the query of whether Malaysian public relations practitioners and their targeted audience alike, much prefer visual-based media platforms (Facebook, Instagram, Snapchat, Pinterest) as opposed to those that are comparatively more text-based as preferred by Americans (Twitter, LinkedIn). Future studies could look into the influence of cultural differences in preference for pictures that "speak a thousand words" versus words that may be mightier in detail and sharper in descriptions.

This finding, however, is in contrast to Corduan (2017) who highlighted that Asian PR practitioners tend to post more on social networks and communicate frequently with their publics via the Internet. Asian practitioners usually write longer posts on social network sites in which they tend to describe and elaborate; thus a more stable interpersonal relationship could be built with the public as these practitioners use a friendlier and more convincing tone in communicating on social networks.

It would be interesting to explore the reasons why the majority of the Malaysian respondents placed social media communication under the charge of a department that handles digital technology, rather than one that is primarily formed for communication tasks, as chosen by their American counterparts. While the former are experts in innovative platforms that disseminate information and evaluate data, the latter specialise in communication and are directly involved in the essentials of publicity and promotion work relevant to the role of public relations practitioners. Another interesting observation is some Malaysian PR social media functions being placed under marketing departments. This raises concerns on the overall encroachment of expertise, one by the technical domain of digital media and the other by marketing specialists over that of public relations experts.

While a significant majority of American PR practitioners reported that the effectiveness of communication is measured, there was no clear-cut perception of such amongst the Malaysian sample. The percentage of those who believed measurements do take place is almost the same with those who did not. This does not possibly bode well for the local public relations scene and industry as research is vital in accurately determining public relations goals, as well as the effectiveness of work done. Therefore, concerns raised by researchers on the lack of measurement of public relations practices including work utilising social media platforms are indeed relevant.

Previously, DiStaso et al. (2011) contended that organisations should conduct trainings on PR tools as well as the assessment of their effectiveness because social media measurement remains a field that continues to yield more questions than answers. In Leong, Krishnan and Lee's (2012) study, PR practitioners in Malaysia acknowledged the importance of evaluation research, yet the lack of budget and support from the top management have hampered this endeavour time and time again. Therefore, strategic and professional public relations face an uphill barrier in their growth and development if scientific empirical-based measurement and research are not made the norm of Malaysian public relations practices.

With the above understanding of the prominent roles played by new and social media in Malaysian PR practices and their significant impacts on the daily tasks of PR practitioners, the next step in research would be to conduct a qualitative study to gather and gauge the insights and experiences of Malaysian practitioners on whether visually inclined social media platforms suit the needs of their target audience and potential market. Additionally, practitioners could offer in-depth responses on the challenges faced in their day-to-day work in terms of both grasping the practical communication and mastering the digital-technical know-how required of those in the field of social-media PR. In addition, further intrinsic study could unravel the thoughts and perceptions among Malaysian PR practitioners on how they could reduce expertise encroachment and hence uphold their professionalism in the face of the often commercialised and community-centric platforms of social media.

CONCLUSION

Subsequent research should take care to gather a fairly dispersed sample of respondents, unlike the current sample which was overwhelmingly male, Chinese, younger than 30 years and with only a few years of working experience.

PR practitioners often commend social media for enabling them to frequently share information about products/services, activities and campaigns affording them the advantages of direct communication and closer relationships with publics. Without a doubt, social media help PR practitioners spread information about their clients and organisation as well as communicate regularly with the public. According to a myriad of authors, as discussed earlier, the emergence of new media especially social media can help organisations engage directly with the public. The platforms facilitate an open environment that allows for one-to-one, one-to-many, or many-to-many communication, hence revolutionising the practice of public relations. New and social media have actually eroded people's preference for traditional media because traditional media are slower operationally compared to new media, especially when the timeliness of news is of vital concern both informatively and commercially.

In other words, social media have changed the way corporations, governmental institutions, non-profit and non-governmental organisations engage with their target audiences due to the latter now preferring dialogic types of communication. This brings about immense challenges for all sorts of organisations, as the public, consumers, citizens and clients now prefer to be listened to, to be engaged in participatory interactions, to give responses, rather than be merely talked at. In addition, two-way communication, whether between companies and customers or authorities and citizenry, can be enhanced and improved through social media, which afford interactive features and are assumed to be ideal channels for constructive dialogue. Traditional PR practitioners could feel challenged as audiences' preferences are altered by the growth of social and other media that are emerging. While the true potential of social media should be optimised and considered as standard practices by public relations practitioners, it is essential and timely for practitioners to polish their online know-how and social-media skills, not just in their functional applications but also in the measurement and evaluation of their strategic effectiveness.

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Media reporting on heritage conservation: A study on The Star and New Straits Times online newspapers

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ABSTRACT

The UNESCO World Heritage status is intended to protect and conserve natural and cultural heritage. With this accredited status, the conservation of heritage values is also assured. While Malaysia is blessed with the abundance of heritage buildings, awareness towards their conservation is rather low. This paper aims to examine the reporting of heritage conservation issues in The Star and New Straits Times online newspapers. This study used framing as the theoretical framework and content analysis as the research method to examine the role of these newspapers in constructing the heritage conservation identity and their effect in pushing the conservation agenda forward. Newspaper articles from 2008 to 2018 were analysed and results showed that over the 10 years' period, only 99 articles covered this issue. This indicates that the issue is not of importance to the media. Nevertheless, it is important for the media to place emphasis on the awareness of conserving heritage sites and further encourage public participation in conservation and preservation efforts.

Keywords: ***heritage conservation, framing theory, content analysis, UNESCO World Heritage, conservation news reporting***

INTRODUCTION

Tourism is one of the foremost vital industries in Malaysia. The heritage tourism in Malaysia gained significant attention internationally and locally after Malacca and Georgetown were accorded UNESCO World Heritage Site (WHS) status in July 2008 (Abu Hassan, Jailani & Abdul Rahim, 2014; Chia, 2016). With this esteemed recognition, the number of tourist arrivals has also increased in recent years. Malaysia has also ventured into heritage tourism, a growing sector in the tourism industry and holds significant potential to promote Malaysia in international markets (Butler, Khoo-Lattimore, & Mura, 2014). With the growing number of tourists yearly, this sector can create revenue, employment opportunities and improve living standards. However, it can also contribute towards some negative effects such as vandalism, overcrowding of tourist sites and some other environmental impacts.

Although Malaysia has inherited an abundance of heritage buildings all over the country, the understanding on their conservation practices remains vague or unclear (Harun, 2011). According to Timothy (2018), heritage refers to an inheritance from the past that is valued and utilised today, and passed on to future generations. In Malaysia, heritage resources are vast and widespread, and they include many objects, places and events, not heretofore considered to be traditional heritage tourism products. Furthermore, people are becoming more sophisticated in their travel choices and desires as well as investing more interest in the deeper meanings of places, local identities and their own connections to the places they visit (Timothy, 2018). These changes indicate a growing recognition of the heritage tourism including Malaysia.

Tourism often leads to mixed impacts. On the upside, this sector offers jobs opportunities, brings in foreign exchanges and generates income to support local development. On the other hand, this sector can also cause degradation to the environment. The damage caused by tourism to the people, economy and environment of destinations, especially in the long run often remains hidden from tourists (Moscardo, Woods, & Saltzer, 2004; Chawla, 2005). In 1972, the World Heritage Convention of UNESCO launched an initiative to preserve heritage sites considered to be of great value to humanity by listing cultural and natural heritage sites worldwide in order to protect them. In the process of industrialisation for economic development, many of these heritage sites have become increasingly threatened. For the protection of these heritage sites, the Convention enacted an international treaty called “The Protection of the World Cultural and Natural Heritage”. The safeguard of these heritage sites however often remains incomplete or aborted at the national level, especially in developing and least developed countries (Huang, Tsaur, & Yang, 2012). To ensure the protection of these heritage sites, UNESCO has declared many heritage sites in different countries as WHS to allow consistent monitoring of their condition. However, each of these sites has different implications for how the international community chooses to identify, reify, protect, and promote something called “World Heritage” as a privileged category (Meskell, 2013). In Southeast Asia, particularly in Singapore and Malaysia, the conservation-development conflict or ‘conservation dilemma’ is further complicated by the plurality of cultures within the cities, all with their own claim to a unique heritage (Kong & Yeoh, 1994).

Much of the research in the past scrutinised the role of the media in communicating science to the public (e.g. Crouzat et al., 2018; Tinch et al., 2018). However, the role of media in communicating the awareness of conservation particularly on heritage sites has rarely been studied. Usually, heritage attracts much wider attention from scholars in anthropology, archaeology, geography, history and sociology because of its dynamic links to memory, culture and society (Nakano, 2018). Conservation of heritage buildings contributes to the emotional state

of the people and the sensitivity towards the past. Hence, it is important to ensure that the awareness and knowledge about conservation of these heritage sites are communicated to the public. As such, the role of mass media is increasingly recognised as a pivotal part of the conservation efforts. The media collects, frames, and distributes information and can be a significant player in portraying and shaping conservation awareness to the public (Gore, Siemer, Shanahan, Schuefele, & Decker, 2005; Rust, 2015; Showkat, 2016). The conservation goals outlined in global strategic plans (Moss, Jensen & Gusset, 2015) may be achieved by educating the community about conservation issues and promoting sustainable behaviours (Gusset & Dick 2010) via the mass media. Thus, the examining of media framing for heritage conservation is quintessential for an in-depth understanding of this issue. It is also important to note that there is very little or none at all, studies that used media or communication theory to analyse the awareness and education of the community about conservation issues by media. Therefore, framing as the theoretical framework of this study would complement previous studies in the communication spectrum.

LITERATURE REVIEW

Heritage conservation

The conservation of heritage buildings has become a main agenda especially in the tourism industry whilst in practice, it has generated a great demand. Armitage and Irons (2013) asserted that conservation practices has evolved over the decades since its formal introduction and has moved from its initial, almost exclusive, focus on old buildings to a broader spectrum which encompasses more than just historical significance. Publics, professionals and scholars have all become more concerned and aware of cultural heritage. This concern is not only towards monuments and buildings but also the conservation process and final appearance of the heritage buildings. The identity of a people and nation is largely defined by their heritage. Heritage is something which is inherited down from one generation to another (Prentice, 1994). It is mainly conserved heritage buildings passed on to future generations that are identified as being of cultural significance today, and this would be difficult to achieve if the best practices approach to the maintenance and management of heritage buildings is not fully adopted.

The appreciation for heritage amongst the public is considered low as asserted by Greffe (2004). This perspective is supported by Azahari and Mohamad (2012) who stated that the public awareness of preserving the heritage is largely based on the changes in the social and economic environment. This implies that the public only appreciates or conserves heritage mainly because of its economic value rather than the intangible value of the place. Heritage is widely regarded at the central and metropolitan levels as a form of economic and social cultural capital for the pursuit of assorted beneficial goals. Two main issues concerning the public with regard to the preservation of built environment heritage are the creation of new jobs and the need to maintain the novelty of products. Awareness is an important component both for the protection of cultural heritage and for transforming the cultural heritage into a positive factor. Hence, it is important for the public to understand the importance of conservation to ensure that the economic value of heritage sites is sustained. In highlighting this, Woon, Chatterjee and Cordery (2019) stated that the listing of heritage resources is important for their protection, conservation and transmission of values that focus on economic benefits. In general, conservation is a technical activity towards historical buildings. It involves physical action to preserve the fabric and material of the heritage buildings.

It is also a process to prevent decay and prolong the life of the buildings (Harun, 2011). Henderson (2012) further explained that conservation implies a degree of intervention and perhaps modification to ensure a building's survival and safeguarding. It is to ensure that the special qualities of the place are protected, enhanced, enjoyed and understood by present and future generations. This denotes heritage conservation as an important tool in the perspective of social and cultural functions by inculcating a national and civic pride and a sense of connection between the future generation and their past which helps to bind people together.

Heritage conservation in Malaysia

Malaysia has been blessed with a rich history and evolving culture which is demonstrated through its heritage buildings. Its unique buildings and architecture are further enriched with the cultural aspects of the country's past history (Sodangi, Khamidi & Idrus, 2013a). Undoubtedly, buildings reflect the cultural identity of a country and its people. Thus, Malaysia's rich and distinctive multicultural architectural heritage with strong Islamic, Chinese and Western influences are well-portrayed in its heritage buildings. More than three centuries of colonisation by the Portuguese, Dutch and British is visibly evident today in the presence of unique colonial architectural styles. These unique heritage buildings can be seen in all major cities and were fundamental to the establishment of heritage cities in the country (Idrus, Khamidi & Sodangi, 2010). Cities such as George Town, Ipoh, Kuala Lumpur, Kuching, Malacca and Taiping have many historical buildings built during the colonial era (1511–1957) which reflect different architectural styles influenced by different colonisers.

To date, the heritage buildings in these cities have become one of the urban identities in Malaysia (Ahamd, 2002). These unique elements can be seen in the houses of worship and the peaceful co-existence of various religions as well as the combination of Asian and colonial architectures and multicultural heritage exhibited in the rituals, trades and cuisine of the city community. The listing of both Penang and Melaka as UNESCO World Heritage Sites gave a tremendous boost to Malaysian pride and local confidence (Nasution, 2008). Many countries have tried and successfully obtained the recognition and validation of their cultural values, and as a result, the concept of heritage has expanded in that it encompasses places and objects that are significant in a myriad of ways to different segments of society (de la Torre, 2013).

The conservation activities of heritage resources in Malaysia or elsewhere in the world, requires immense human effort; more so now as it has become a necessity for socio-economic development and ultimately, sustainable development for human survival (Chan, Sarah, Halimaton, & Rahimah, 2010; Sarah et al., 2013). Over the past few years, public awareness on the importance of heritage conservation for sustainable socio-economic development has heightened in Malaysia (Halimaton, Rahimah, Sarah & Chan, 2010; Chan et. al. 2010; Chan, Halimaton, & Sarah, 2011; Sarah et al., 2013; Chan & Halimaton, 2013; Chan 2014) as the growth of tourism has propelled the emergence of heritage tourism in Malaysia.

THEORETICAL FRAMEWORK

The concept of framing is often described as the process of framing that involves selection and salience. This implies that some aspects, events or issues, perceived as important and significant to the public, are selected and made salient in the communication context. Hence, the issue or event promotes and unravels, for instance, a prominent problem that can be defined and/or treatment recommendation (Entman, 1993).

In the field of media studies, Tuchman (1978) and Gitlin (1980) were two of the earliest scholars to apply framing to communication research. They asserted that news is a social construction, and the media has an important effect on what is perceived by the public to be a reality. They also suggested that media representation often coincides with the definition that is provided by the holder of power, or the elites in the society. In this way, the media allows this dominant group to be opinion leaders to define events or issues, and subsequently shapes others' values, attitudes and opinions.

Framing focuses on how media draws the attention of the public towards specific topics, sets the agenda, and then takes a step further to create a frame, through which the audience will comprehend such information. According to Ardèvol-Abreu (2015), creating frames for stories is commonly a mindful choice by sources, reporters, journalists and/or editors. The issue that is highlighted is further framed in a specific theme in addition to making it more salient to the public. That issue will be highlighted using certain keywords, sentences, images, sources of information, etc, thereby providing it more salience. Framing in the text, however, will induce the recipient to think the issue over and can affect his/her culture ultimately (Entman, 1993). Central to the process of framing is the role of the mass media. The way issues are framed by the media could also trigger different perceptions among individuals. People respond differently when information is framed either positively or negatively (Ferguson & Gallagher, 2007). Hence, the mass media are important carriers of information that have the potential to shape people's opinion towards certain issues.

Ultimately, the main objective in framing is selection and highlighting. This is because, the media coverage has the ability to influence how the public and policy maker become more aware of and think about an issue (Soroka, 2002). In discussing competing and multiple frames, Scheufele and Tewksbury (2007) stated that the reader will engage in a systematic breakdown of the information by comparing the relative strength of different frames in competitive situations, thus leading them to draw different conclusions on the idea being promoted by the frames. On the other hand, Chong and Drukman (2007) suggested that repeated exposure through frames has a greater impact on those who are less knowledgeable on the subject matter and also on those who are more likely to be influenced by the peripheral cues. Other contributing factors that play an important role in frames are frequency, accessibility and relevance. Frequency is defined as the number of times the media repeatedly presents the particular frame. The greater the repetition, the greater the force, impact or emphasis. Accessibility and repetition are interrelated as accessibility improves repetition. While relevance refers to the core of the subject matter based on peripheral cues, this refers to the stimuli that will influence individuals on a particular subject matter. This implies that the effects of framing are unpredictable and may impact the public based on the issues that are framed. Thus, coverage on an issue or event in terms of heritage conservation based on certain themes and attributes would be able to provide deeper understanding and impact public opinion and perception on the issue.

Research questions

Based on the theoretical framework, this study is going to answer the following research questions:

- What were the frames employed by *The Star* and *New Straits Times* to portray the issue of heritage conservation in Malaysia?
- What themes were discussed with regard to heritage conservation?

METHODOLOGY

This study employed content analysis as its research method. Two online newspapers, *The Star* and *New Straits Times* were chosen as the case study to examine their media coverage on conservation especially on heritage issues. Both newspapers are leading English-language newspapers in Malaysia and owned by Star Publication and Media Prima, respectively. According to Audit Bureau of Circulations (ABC), as of 30 June 2018, *The Star* with an average daily circulation of 298,288 copies and *New Straits Times* with 54,490 copies were the most widely read English newspapers in Malaysia. As *The Star* and *New Straits Times* have the highest circulation compared to other English-language newspapers in Malaysia, they were selected as the sample of the study.

Sampling time frame

All conservation-related news articles dated between 1 June 2008 and 31 July 2018 from both of the selected newspapers were examined. This period was selected to reflect the decade since UNESCO designated WHS sites in Malaysia so that a more inclusive picture can emerge. In this aspect, this study attempts to analyse how the selected newspapers reported conservation-related news articles in the selected time frame.

Coding procedures

The units of analysis were news articles. All news articles that appeared in the two dailies with the keywords “conservation of the heritage sites in Malaysia” were scrutinised. In total, 99 articles were identified during the selected period. To answer the first research question, the study employed the inductive or emergent coding approach for analysing frames. The coding categories were outlined after a preliminary examination of the data. As a result, four categories of frames were identified for this study:

1. Straight news — basic straightforward news stories, usually providing facts and information.
2. Column — a recurring space in a newspaper where a writer regularly expresses his/her own research/views/opinions; and including features.
3. Letters—letters by individuals and general public giving their lay or expert views on an issue/topic.
4. Others — those not categorised under any of the above frames.

The second research question examines the themes that were discussed in the news articles on heritage conservation. The following themes were generated based on previous research (Hsiao, 2015) and modified to the needs of this study. Therefore, five themes were used for this study:

1. Tourism promotional—tourism sites promotion
2. Protection—preservation activities and conservation activities
3. Values—heritage values and community values
4. Participation—stakeholder participation and community involvement
5. Awareness and education—Awareness and educational programmes related to heritage conservation

Data analysis and inter-coder reliability

The 99 news articles collected from both *The Star* and *New Straits Times* were analysed using descriptive statistics such as frequencies and percentage, as well as subjected to qualitative interpretation. In categorising and measuring a content element, there is a risk of subjectivity in interpreting the context units; therefore, a second coder was appointed to code the data. Noting that the defect of a wrong decision would definitely influence the research outcome, the coders cross-checked each other’s decisions in categorising the units during the pilot study. Further, Holsti’s (1969) percent agreement index was applied in this statistical procedure. Reconciliations were conducted among the three coders for the low agreement indexes that emerged. Only when all the indexes achieved the required value of .7, or the acceptable level by convention, were the coders allowed to proceed with data analysis. Randomised dates from both *The Star* and *New Straits Times* were selected and assigned to these three coders so as to ensure equal treatment.

RESULTS AND DISCUSSION

Distribution of news articles

Table 1 shows that a total of 40 articles from *The Star* and 59 articles from *New Straits Times* were collected for the period 2008 to 2018.

Table 1. Distribution of *The Star* and *New Straits Times* articles from 2008 to 2018

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<i>The Star</i>	4	3	0	10	0	0	10	0	10	0	3
<i>NSTP</i>	7	13	9	8	7	3	1	1	7	2	1

The news coverage of heritage conservation by *The Star* and *New Straits Times* were uneven during the study period. Table 1 shows that there were no articles regarding heritage conservation published in 2010, 2012, 2013, 2015 and 2017 for *The Star*. In contrast, the frequency of published articles in *The Star* was highest in 2011, 2014 and 2016 totalling 30 published articles. For *New Straits Times*, the frequency was highest in 2009, 2010 and 2011 with a total of 30 articles. Not surprisingly, 11 articles and 16 articles published in 2008 and 2009, respectively which can be linked back to the announcement of UNESCO World Heritage Sites in 2008.

Location of news coverage

Figure 1 shows the news coverage based on location. Of the total news articles published, 55 were related to heritage conservation issues in Georgetown, Penang which scored the highest coverage among other states. Kuala Lumpur ranked the second highest with 18 articles followed by Melaka with 6 articles. The news reporting of both newspapers covered all the UNESCO-designated heritage sites listed in Malaysia: historical cities of Georgetown, Penang and Malacca; Kinabalu Park, Sabah; Gunung Mulu Park, Sarawak and Lenggong Valley, Perak.

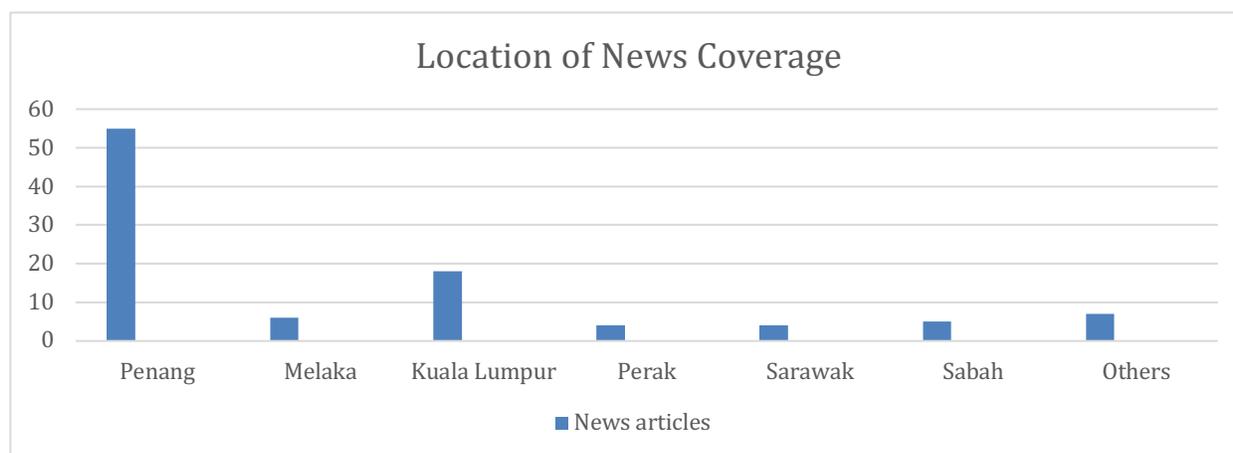


Figure 1. Location of news coverage

Based on content analysis, most of the articles can be classified into four types of news including straight news, column, letters and others. Table 2 shows that straight news predominate the type of news reported in both online newspapers. According to Van Dijk (1988), when straight news dominates the coverage, it leaves little room for the creativeness of journalists, resulting in a top-down communication format. However, straight news reports only the most essential information concisely thus influences the readers' interpretation and perspective on their understanding of the heritage conservation issues. Table 2 shows the distribution of articles based on type.

Types of news

Table 2. Type of news

Type of news	Characteristics	Number of articles	
		<i>The Star</i>	<i>NSTP</i>
Straight news	Basic straightforward news stories, usually providing facts and information.	32	31
Column	A recurring space in a newspaper where a writer regularly expresses his/her own research/views/opinions; and including features	6	21

Letters	Letters by individuals and general public giving their lay or expert views on an issue/topic	2	3
Others		0	4

Presence of pictures

Photos sometimes are really worth a thousand words. In news reporting, the photograph acts as a tool to draw attention to a big story, to further illustrate statements made in the story, and to give readers' more details about the information presented. In line with this, Jamilah and Habibah (2016) stated that photos can also express any given situation in an accurate, clear and simple manner, plus provide a more interesting pattern to the press as well as making it easier to read for the reader. The results show that *The Star* published 13 articles with inclusions of picture in their coverage of heritage conservation or 33% of the overall news articles. On the other hand, *New Straits Times* published 31 articles with pictures (52%). The usage of images is very important in a news report as it depicts a realistic form of representation and its representation that is similar to the linguistic analogy, with its own codes and conventions or interpretation (Mustaffa, 2011). This is because, with images included, readers are able to visualise the situation or the story that they read from the newspaper. This construction of public understanding using visual images is referred to as framing (O'Donnell, 2013) and can influence public interpretation about heritage conservation. Furthermore, visuals are attention-grabbing (Garcia & Stark, 1991) and readily foster an emotional connection with the viewer (Iyer, Webster, Hornsey, & Vanman, 2014). Readers are able to connect themselves with the story that they read and instil an emotional connection towards the story.

News sources

The credibility of a story is dependent on source and medium credibility (Greer, 2003; Kiouisis, 2001). According to Yang and Md Sidin (2012), news sources are important in determining the reporting quality as they reflect the direction of a newspaper in terms of its development and inclination. Table 3 shows that authorities including government officials and ministers were the dominant choice of sources with a total of 64 articles being referred to them. Official sources are more credible than non-official sources (Golan, 2010). *The Star* and *New Straits Times* also turned to academicians and other professionals or experts such as architect, business manager and business owner whenever their expertise were warranted on the strategies regarding heritage conservation. *The Star* included voices of the local community and it shows that the newspaper tried to include elements of humanity in its reporting. Table 3 describes the different type of sources in heritage conservation reporting for *The Star* and *New Straits Times*.

Table 3. News sources

Sources	Number of articles	
	<i>The Star</i>	<i>NSTP</i>
Authorities	29	34
Academician	2	1
General Public	2	0
NGOs	0	1
Others	7	23

Themes

For this category, the most important element is the content of the news which is given a specific theme. Themes reviewed here include tourism promotional, protection, values, participation and awareness and education. These themes represent how both newspapers construct the heritage conservation issues. These themes were generated based on the previous research done by Hsiao (2015) and modified for this study. According to the framing theory, the media highlights certain events then places them within a particular context to encourage or discourage certain interpretations. In this study, both newspapers, *The Star* and *NSTP* integrated a selective influence over how people view the heritage conservation issues. These five themes show that, the interpretation of heritage conservation issues are based on the perspective of economic (tourism promotional theme), sustainability (protection theme), social (participation and awareness and education theme) and cultural (values). The framing theory also states that the newspaper editor should decide which facts, values and perspectives will be given prominence in the news reporting. Table 4 below describes the different types of themes and their characteristics.

Table 4. Themes and characteristics

No.	Themes	Characteristics
1	Tourism promotional	Tourism sites promotion
2	Protection	Preservation activities Conservation activities
3	Values	Heritage values Community values
4	Participation	Stakeholder participation Community involvement
5	Awareness and education	Awareness and educational programme related to heritage conservation

Protection

Based on the analysis, *The Star*'s focus was mainly on the protection aspect, that is, preservation and conservation of heritage sites in Malaysia. Its reporting highlighted the strategies, initiatives and solutions that were undertaken to protect heritage buildings and sites. For example, the news article "*Protecting heritage brick by brick*" reported that buildings were built in the late 1800s should not be maintained using regular cement but limestone or *batu kapur* in Malay. An excerpt taken from this article reads:

"It might take two weeks to three months to mature slaked limestone and some skill is involved in preparing the limestone. We try to allow cement wherever possible to balance modern development with heritage conservation but on the old walls, cement can be harmful." he said.

Under the protection theme, there were also some news stories on the federal and state government initiatives to support the heritage conservation efforts. For example, news articles like "*Penang submitted proposal on management of RM25m allocation for heritage*" and "*19 heritage sites gazetted in Sabah*". Both articles stated there was enough allocation and fund for heritage conservation restoration works provided by the authorities.

"The bulk of the RM25mil allocation for heritage conservation in George Town under Budget 2009 will go towards restoration works and other physical works in the core zone area."

"The scope of work will include restoration of shophouses, religious buildings and monuments, upgrading of landscape, transportation and traffic systems, programmes to promote tourism, cultural activities and other intangible heritage, and preparation works to curb natural disasters," state Local Government and Traffic Management Committee chairman Chow Kon Yeow said.

(Penang submitted proposal on management of RM25m allocation for heritage, *The Star*, 20 April 2009)

"There are many more sites we have short-listed. The whole idea is to make sure they are maintained and that not just any development takes place" said Sabah Tourism, Culture and Environment Minister, Datuk Masidi Manjun."

(19 heritage sites gazetted in Sabah, *NST*, 10 May 2008)

Values

Articles that have been classified under this theme portrayed contents related to heritage and community values. According to Mydan and Grahn (2011), the motivation for local preservation, and for spending time and money on cultural heritage objects belonging to the community, is not only primarily to preserve them for the future, but to establish and maintain common social institutions vital to the local identity. There were 23 news articles categorised under this theme which made it the second most important theme that were highlighted in *The Star's* and *NSTP's* news coverage. Hence, this reflects the importance of communicating the values of cultural

heritage to the local community and this corroborates with Armitage and Irons (2013) who highlighted that heritage becomes important when people believe so and start valuing them.

Awareness and education

The awareness and education on heritage conservation was another important theme that both newspapers widely covered. There were 15 news stories that covered heritage conservation awareness programmes, seminars, workshops and activities which reached out to the community at large.

One of the most interesting headlines found in *The Star* was “*Sketchers’ group, heritage society join forces in exhibition to raise awareness*”. According to this news article, Urban Sketchers Kuching and Sarawak Heritage Society joined forces to organise an exhibition to raise awareness on conservation issues. The exhibition was an opportunity for the heritage society to share stories on history, cultural heritage and of street scenes, people and buildings. The Urban Sketchers Kuching also played its role in promoting the heritage issues through art. Below are some excerpts taken from this news article:

“Since this is only a preview show leading up to another exhibition later this year, we only have five sketchers’ works on display. There will be more later this year focusing on heritage issues in and around Kuching, and maybe even across Sarawak, hopefully,” Wong said.

The heritage society seeks to raise awareness on the state’s history via buildings like the General Post Office which was built in 1932, Fort Margherita (1879), Square Tower (1879), among others.

(The Star, 1 July 2014)

Additionally, the theme was also heavily discussed in some specific columns of the papers. This reflects the heightened awareness and interest on heritage preservation amongst the public. One of the article in *NST*’s Comments column by Subhadra Devan, a specialist writer, highlighted this issue in her article “*Heritage preservation efforts growing*”. In her article, she pointed out that the effort of conserving and preserving heritage sites is made on our own volition. An excerpt taken from this article is given here:

“There’s a new heritage drive in town, powered by people from all walks of life. From simple I love my hometown websites, to non-governmental heritage societies and heritage advocacy groups, heritage seems to be on a front burner”

(NSTP, 29 March 2013)

Tourism promotional

Media like newspaper play a significant role in achieving goals by disseminating information and creating awareness on certain issues (Mohd Hirly, Abdullah & Bahtiar, 2018). In this regard, the results found 9 news articles under the tourism promotional theme which were aimed at promoting heritage sites since heritage tourism has become a source of revenue for several states in Malaysia. For example, some excerpts from the news article “*Komtar reborn with new wonders*” can be seen promoting heritage tourism:

“This tallest structure in Penang is a reminder of the vision of former chief minister, the late Tun Dr Lim Chong Eu, who realised the need for both urban development and heritage conservation.”

“It is a big challenge to make an old building attractive again, but we managed to fill a niche by blending products that have family entertainment values and tourist appeal,” said OWG chief executive officer Datuk Seri Richard Koh.

(The Star, 19 December 2016)

However, this theme together with participation did not receive as much attention in media reporting with just 9 articles each, over the time frame of 10 years.

Participation

This theme explicates the involvement of community and stakeholders in heritage conservation efforts. The stakeholders involved include the official authorities (federal and state government), corporate organisations, and investors. The importance of heritage that is imbued with values and benefits, both to the individual as well as at the broader level, to the overall society can attract further the participation and involvement of the local community (Armitage & Irons, 2013). The involvement of the local community and other stakeholders can also be boosted through the manifestation of the destination image, social and cultural ties (Henderson, 2012). The importance and benefits are varied. They may be direct and tangible as in the case of economic benefits such as revenue generated by heritage tourism or less direct and intangible in the form of aesthetic, spiritual, cultural, social or educational aspects (Armitage & Irons, 2013) or intrinsic values such as social and cultural ties (Henderson, 2012; Cohen, 2014). Such benefits may flow from the pleasure one finds in the aesthetic quality of a heritage place or from a sense of identity, belonging or connection that the heritage place promotes in the community. This heritage value establishes its importance in the context of heritage tourism which in turn contributes to the economic and welfare of the local community and stakeholders around.

CONCLUSION

Heritage conservation is indeed an important issue in Malaysia as heritage represents the values of our society. Exploratory in nature, this study has managed to provide a glimpse into this vast field. Findings show that, over a 10-year period, only 99 articles covered this issue. This indicates a lack of interest from the media for this issue. It should be noted that a great deal of tourism relies on places with historic, indigenous and natural significance, where tourism products are offered. However, if these areas are not protected and preserved, we would be losing more than what we can imagine. Heritage is the window into history which is intrinsic to the identity of a place and its inhabitants, and which is necessary for the strengthening of social and cultural ties. Manifestations of heritage are a key component of tourist destination image, adding diversity and novelty to the stock of attractions and recreational settings. Hence it is important for the media to place stronger emphasis on the awareness of conserving heritage sites. The participation of the public towards conservation and preservation efforts is equally significant as these artefacts will be passed on to the future generation. Thus, creating concerned and engaged citizens would definitely support conservation efforts. If the media reporting of heritage artefacts supports their protection, conservation and the transmission of its values, it is important to understand the recipient of the reporting. Obviously, a stronger focus and emphasis on this issue would further help influence the public into contributing towards the conservation efforts. In this regard, the identification, protection, conservation and transmission of heritage values as well as public awareness and education should be the focus and emphasis in media reporting.

LIMITATIONS OF STUDY

As with any research, this study faced some limitations which affected its findings but these can be addressed in future studies. While the study looked at a specific time frame, volume, and thematic coverage, the findings do not provide a complete, historically representative picture of the issue. Future studies could expand this study by exploring the perspectives of other newspapers on heritage conservation, the roles of stakeholders in furthering heritage conservation efforts and also related policies.

Additionally, future studies could further develop these initial findings by interviewing the newspaper editors for a more qualitative approach. The views and perspectives of news editors can further provide rich insights on the news reporting style, method and the selection of frame used by their papers. These potential findings can hopefully provide a more in-depth understanding on heritage conservation in Malaysia.

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