Factors Influencing the Use of Web 2.0 Tools: Usage Trends and Expectations

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Web 2.0 technologies have become fundamental tools for students to become active learners by posting their thoughts and ideas in collaboration with teachers using Web 2.0 applicatios. In order to understand why they use respective applications in Web 2.0 technologies, this study quantitatively investigate three (3) factors influencing the use of Web 2.0 among undergraduate students. The three (3) independents variables are the Use of Online Tools, Usage Trends and Expectations and one (1) dependent variable is the Use of Web 2.0. The paper draws on the practical experience of undergraduate students across different modes of studies. The results show a significant support of all the three (3) independents variables towards the Use of Web 2.0 by the undergraduates.

Keywords –Web 2.0,Undergraduate Students, Online Tools, Usage Trends, Expectations

I. INTRODUCTION

Today, the emergence of the Web, Web 2.0 and the Semantic Web with interactive characteristics has allowed people to collaborate and interact in virtual societies more easily than ever. The tools have generated unrestricted flow of ideas and freedom by blurring the lines between students and teachers. In Malaysia, most students are well exposed to Web 2.0 applications and comfortable to use them for learning purpose [23], while the young generation use Web 2.0 to make communication in effective and interactive way [12].

Web 2.0 has developed various software applications according to respective needs and requirement. Since 2003, the use of software application such as Wikipedia, for podcasting, blogging and collaborative content, MySpace and Facebook for social networking, Flickr and YouTube for multimedia content, del.icio.us for social tagging, and Second Life for social gaming [14]. The intriguing potential benefits of the Web 2.0 software applications have motivated the majority of Web 2.0 users who are youngsters [6], and this group who are categorized as the 'Digital Natives' [18] will certainly enjoy the benefits upon discovering the worth of using it [11].

A considerable amount of research works has been produced to report the new digital technologies and Web 2.0 platforms. According to [1], these new digital technologies and Web 2.0 platforms allow innovative, more economical and sustainable ways of conducting research, collaborating, and disseminating research ideas devoid requiring to conduct behind closed doors by select gatekeepers. Apart from that, research materials are made openly and easily accessible throughout the entire scholarly communication lifecycle. This development has encouraged undergraduates to aggressively utilize Web 2.0 as they would be able to effectively participate in the virtual communities with no or minimum cost.

[8] in their study, reported that Web 2.0 also provide advantages, such as collective editing and collaboration; and user centered platforms for information sharing and publishing. However, they opine that Web 2.0 may also disrupt conventional ideas about how content is generated, shared, and distributed and how users interact online.

To address factors that influence the use of Web 2.0 among undergraduates, this study has adopted and adapted the work of [23]. The purpose of their study was to highlight and capture the use of Web 2.0 applications by Malaysian students for learning. However, this study was carried out to investigate factors that influence the use of Web 2.0 among undergraduate students, such as the use of online tools, usage trends, and exploring the expectations of the undergraduates on the use of such applications. The survey was also conducted to test the adoption and adaption research model, followed by discussions on research methodology and findings of the study based on the conducted analysis. The paper ends with a discussion of results and the limitation of the study.

II. LITERATURE REVIEW

A. Web 2.0

The beginning of Web 2.0 is the extension of Web 1.0. To this date, various definitions of the term Web 2.0 have been given by many researchers. There is a range of definitions of what constitutes a "Web 2.0 application". The various definitions are illustrated in Table 1 as follows.

Table 1: Terms & Definition on Web 2.0

Terms & Definitions	Source
Known also as social computing, which involved end user driven applications such as • blogs, • podcasts, • wikis, • social networking websites, • search engines, • auction websites, • games, • Voice over IP and • peer-to-peer services.	[14]
• A combination of new technologies (like web services, AJAX, RSS, mashups), • A new types of applications (i.e. social software, like wikis, blogs, social networking), • A new patterns of interaction, and new principles of organisation (e.g. participation, wisdom of crowds), and • A new business models (such as long tail, webtop, etc.).	[13]
An evolving collection of trends and technologies that foster user-generated content, user interactivity, collaboration, and information sharing (examples of Web 2.0 technologies include wikis, blogs, forums, podcasting, social networking, and social bookmarking)	[17]
Is about blogs, wikis, RSS (Really Simple Syndication) and social tagging. Examples of Web 2.0 include: • YouTube, • Facebook, • MySpace, • Flickr's, • del.icio.us, • CiteULike	[9] citation by [22]
Social networking applications such as blogs, forums, podcasts, and wikis. On top, Web 2.0 applications such as • Facebook, • Hi5, • LinkedIn, • MySpace, • Nexopia, • Twitter, and • YouTube These applications enable the users to share ideas, opinions, and interests within their individual networks over the internet in convenient ways.	[12]

Terms & Definitions	Source
Considered to be interactive elements of web pages which employ user interactions with the technology and one another to provide content and functionality	[10]
Associate (8)Web 2.0 with terms such as • blogs, • wikis, • podcasts, • RSS feeds and • social web. The inventor of the Web, claims that Web 2.0 is no different from Web 1.0	Tim Berners-Lee, 2006 citation by [2]
Flickr and Youtube (Photograph and video sharing websites) which allow user to share visual content with others and 'wiki' application allow user to reliant on community produced and mass-edited content as epitomized in the online encyclopedia *Wikipedia*	[20]

B. Use of Online Tools Factor

Today's learners exist in a digital age, of which they have access to, and use of, a range of Social Web tools and software that provide gateways to a multiplicity of interactive resources for information, entertainment and, not least, communication. However, in learning and teaching it is said that the usage is patchy. An expert in the UK, known as JISC, conducted an independent inquiry into the strategic and policy implications for higher education of the experience and expectations of learners in the light of their increasing use of the newest technologies [24]. Their key findings of the study indicated that:

- Web technologies are able to develop a skill set that matches both to views on 21st century learning skills and employability skills such communication, creativity, leadership, collaboration and technology proficiency.
- May lead to the development of boundaries in Web such personal (messages), publishing (blogs and social media sites such as YouTube) and group space (social networking sites such as Facebook) and also a new style of communities of same or similar interest and networks.

In addition, the study also outlined the characteristics of this New Millennium Learners (NML) as in Table 2.

Table 2: New Millennium Learners' (NML) Characteristics

Society	• Existence of ICT • Ease of access and use • Information overload

NML's ICT Usage	• Technologically savvy, preference for electronic environments • Technology is a need • Multiple media usage, multimedia orientation • Connected • Shallow understanding of technology, lack of critical skills • Multimedia oriented
Personal Attitudes	• Active involvement, • Constant engagement • Very creative, expressive
Cognitive Patterns	• Non-linear, less textual, less structured • Multimodal, visual, dynamic representations • Discontinuous, distracted • Cognitive overload • Distracted
Working Attitudes	• Less fear of failure, risk takers • Instant gratification, impatient • Not looking for the "right answer" • All information is equal, surface oriented • Multitasking
Social Attitudes	• Extremely social • Need sense of security • Egocentric, likelihood striving to be independent • Feel a sense of entitlement

[20] and [12] discussed the many benefit of Web 2.0, such as allowing the users to share opinions, ideas, interests within their individual or group networks in any convenient ways. As such, it is not surprising to see the rapid increase in popularity of the Social Network Communities over the past five years. The applications are utilized for online conversations and sharing of content ubiquitously.

Furthermore, Web 2.0 are not only used by youngsters but also has been popularly used among librarians. The librarians will generally assist individuals with online resources. Besides, they also answer e-mail questions and chat online to assist their users. They are required to demonstrate the use of online information in classroom and workshop settings. In addition, librarians also write blogs and tweet on Twitter, administer the web and social networking sites like Facebook and MySpace [15]. As such, the hypothesis of the studies, H1: Use of Online Tools is significantly related to the Use of Web 2.0.

C. Usage Trends Factor

According to [24], the youngsters today use Web 2.0 tremendously in communication and looking up information (where the access is more fast and easy due to file sharing and export features available compare tradition way), share photos and also play online games. This argument has been supported by [4]. They also listed down the most popular Web 2.0 use by the user such

- Community Web 2.0 – to collaborate and share information,
- Mashups – allow data merging from different sites and;
- AJAX – allow creation of responsive user interfaces.

Therefore the hypothesis of the Usage Trends factors in this studies is, H2: Usage Trends is significantly related to the Use of Web 2.0.

D. Expectations Factor

The study conducted among New Millennium Learners (NML) by [24] found that:

- Students require face to face contact with staff,
- Students are more influenced by school methods of delivery,
- Staff capability with ICT and effective use of technology is a further dimension,
- Students face conceptual difficulties in understanding the context and;
- Students' practical skills on ICT can be harnessed by staff

Due to the above statement, the hypothesis of Expectations factors is, H3: Expectations is significantly related to the Use of Web 2.0.

III. RESEARCH MODEL

Figure 1 shows the research model for studying factors that influence the use of Web 2.0. The model was adapted and adopted based on the work of [23]. The dependent variable is the dimension about the Use of Web 2.0. Meanwhile, the independent variables are Use of Online Tools factors, Usage Trends factors and Expectations factors.
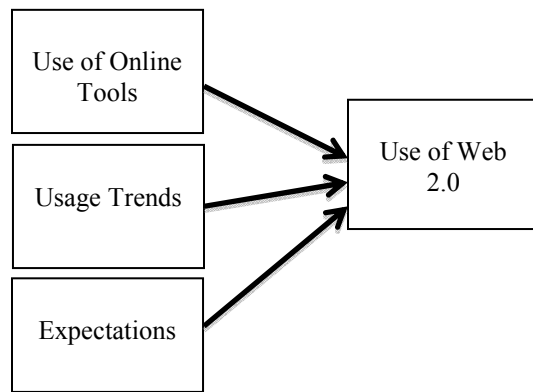
Figure 1

IV. METHODOLOGY

According to [21], a researcher should adopt a reliable measurement in order to avoid developing a new measurement. As such, this study use a questionnaire as an instrument for collecting the data. The questionnaire was developed based on the work of [23]. Prior to the actual data collection, the instrument was pre-tested and pilot tested with 72 respondents. All measures for the variables shown in Figure 1 used Likert Scale anchored with five options with 1 for "Strongly Disagree", 2 for "Disagree", 3 for "Undecided / Neutral", 4 for "Agree" and 5 for "Strongly Agree".

The questionnaire is divided into 4 parts, where part A captures information on respondents demographic, part B to part D capture information for measuring the independent and dependent variables. Overall, there are altogether 45 items used in the questionnaire.

By adopting the simple random technique, the questionnaires were distributed to 420 respondents. However, out of this number, only 405 were returned. Upon further scrutiny on the returned questionnaire, 5 had to be removed due to incomplete respond, yielding 400 questionnaires for analyzing the data.

V. FINDINGS

A. Respondents Profiles:

Table 3 describes the demographic profile of the respondents. There are about 72% of the respondents, aged between 22 to 24 years and about 2% represent ages of 28 to 30 and 31 above years respectively. Meanwhile, there are about 246 female respondents, while the remaining of 154 respondents is Male. In addition, about 87% respondents from full time mode of study and minimum is about 2% which from Flexible Learning Program (FLP). With regard to the preference on technology, majority of the respondents i.e. 29% prefer to use mobile phone and around 2% prefer to use handheld computer.

Table 3: Demographic Profile of Respondents

Characteristics	Items	Frequency	Percentage
Age	19-21	73	18%
	22-24	288	72%
	25-27	24	6%
	28-30	9	2%
	31 and above	6	2%
Gender	Male	154	38%
	Female	246	62%
Mode of Study	Full Time	349	87%
	Pelajar Luar Kampus (PLK)	16	4%
	Elektronik-Pengajian Jarak Jauh (e-PJJ)	26	6%
	Flexible Learning Program (FLP)	9	2%
Technology	Laptop	93	23%
	Mobile Phone	116	29%
	Desktop Computer	58	14%
	Portable Media Player	69	17%
	Digital Camera	45	11%
	Game Console	11	3%
	ComputerHandheld	8	2%

B. Reliability Analysis

Reliability test was performed to determine the scale's internal consistency strength. The results as shown in Table 4 presents that all variables are above the recommended cut-off value which is 0.7 [16], hence the scale used in the study was reliable.

Table 4: Reliability Analysis of Research Variables

Variables	No. of Items	Cronbach's Alpha
Use of Web 2.0	10	0.908
Use of Online Tools	14	0.893
Usage Trends	9	0.838
Expectations	6	0.859

C. Correlation Analysis

Correlation or regression analysis is the appropriate technique to measure between two (2) continuous variables such as interval or ratio scales in answering the objectives of the study and to test the degree and significance between variables [3]. Accoding to [7], it is provision when any study measure strengths of a relationship. The results showed that the values of Pearson correlation are between -0.217 and -0.098. Table 5 as follows show the details on each variable correlation:

Table 5: Details of Correlation

Relationship Between Variables	r value	Correlation
Use of Web 2.0 ➔ Use of Online Tools	-0.217	
Use of Web 2.0 ➔ Usage Trends	-0.098	Negative Very Weak Relationship
Use of Web 2.0 ➔ Expectations	-0.256	

As all the Pearson correlation values are less than 0.9, hence suggesting that the variables are not experiencing the problem of multicollinearity.

Table 6: Correlation Analysis Amongst Research Variables

Correlations

	Use of Web 2.0	Use of Online Tools	Usage Trends	Expectations
Use of Web 2.0	1			
Use of Online Tools	-.217**	1		
Usage Trends	-.098	.664**	1	
Expectations	-.256**	.435**	.452**	1

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

D. Regression Analysis

[3] noted that correlation analysis gauges only the degree to which two variables are related or tend to move together but there is no assumption that one is causing or affecting the other. Hence, in order to measure the degree and direction of influence of the independent variable on the dependent variable, the multiple regression analysis was also applied in this study. To this effect, the following equation is formulated i.e. The Use of Web 2.0 = $\beta 1$ Use of Online Tools + $\beta 2$ Usage Trends + $\beta 3$ Expectations + ξ. Table 7 and 8 present the results of the multiple regression analysis. As shown in Table 7, R square recorded a value of 0.091, hence implying that 9.1% variance in the Use of Web 2.0 can be explained by the combination of the independent variables which are Purpose, Usage Trends and Reactions.

Table 7: Model Summary of Regression Analysis Between Independent and Dependent Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.301[a]	0.091	0.084	0.76102

a. Predictors: (Constant), Use of Online Tools, Usage Trends, Expectations

Upon further scrutiny of the results, it is shown that, out of the three (3) investigated independent variables, all three (3) turned out to be influential in predicting the Use of Web 2.0. These variables were Use of Online Tools (t = -3.558, p < 0.05), Usage Trends (t = 2.356, p < 0.05) and Expectations (t = -3.911, p < 0.05). These three variables were found to be significant predictor as the recorded p-values were less than

0.05. Accordingly, based on the results, the equation is revised to The Use of Web 2.0 = -0.284 Use of Online Tools + 0.181 Usage Trends + -0.240 Expectations + 4.225. Given these results, H1, H2 and H3 are supported.

Table 8: Coefficient Table for Variables Predicting The Use of Web 2.0

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.225	0.173		24.368	.000
	Use of Online Tools	-.284	0.080	-.234	-3.558	.000
	Usage Trends	.181	0.077	.157	2.356	.019
	Expectations	-.240	0.061	-.216	-3.911	.000

a. Dependent Variable: Use of Web 2.0

VI. CONCLUSION & RECOMMENDATION

This study was conducted to investigate factors that influence the Use of Web 2.0 among undergraduate students across mode of learning. To achieve the objective, an empirical based framework consisting of three (3) independent variables, which are Use of Online Tools, Usage Trends and Expectations; and one dependent variable the Use of Web 2.0. Based on the analyses of the collected data, all three (3) variables were found to be relevant in influencing the Use of Web 2.0. Thus, the developed framework can be further tested in other settings. Researchers who are interested to further explore the topic may consider adopting the model to be tested in other universities or organization settings. From the practical viewpoint, the instrument can be extended to measure the cause and effect in the use of Web 2.0, not only among younger generations, but also among knowledge worker or pensioners. Just as in other study, this study is not without limitation. The first limitation is that the study should consider covering more faculties. In addition, besides using the survey research method, studies adopting qualitative or mixed method will provide richer and deeper understanding of the determinants that drive students towards the Use of Web 2.0.

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