HOW DO STUDENTS SELECT SOCIAL NETWORKING SITES?

AN ANALYTIC HIERARCHY PROCESS (AHP) MODEL

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ABSTRACT

Social networking sites are popular among university students, and students today are indeed spoiled for choice. New emerging social networking sites sprout up amid popular sites, while some existing ones die out. Given the choice of so many social networking sites, how do students decide which one they will sign up for and stay on as an active user? The answer to this question is of interest to social networking site designers and marketers. The market of social networking sites is highly competitive. To maintain the current user base and continue to attract new users, how should social networking sites design their sites? Marketers spend a fairly large percent of their marketing budget on social media marketing. To formulate an effective social media strategy, how much do marketers understand the users of social networking sites? Learning from website evaluation studies, this study intends to provide some answers to these questions by examining how university students decide between two popular social networking sites, Facebook and Twitter. We first developed an analytic hierarchy process (AHP) model of four main selection criteria and 12 sub-criteria, and then administered a

questionnaire to a group of university students attending a course at a Malaysian university. AHP analyses of the responses from 12 respondents provided an insight into the decision-making process involved in students' selection of social networking sites. It seemed that of the four main criteria, privacy was the top concern, followed by functionality, usability, and content. The sub-criteria that were of key concern to the students were apps, revenue-generating opportunities, ease of use, and information security. Between Facebook and Twitter, the students thought that Facebook was the better choice. This information is useful for social networking site designers to design sites that are more relevant to their users' needs, and for marketers to craft more effective marketing communications strategies.

Keywords: Analytic Hierarchy Process, Social Networking Site, Website Evaluation, Selection Criteria, University Students

INTRODUCTION

As the number of social networking sites increases, university students' choice of networking sites, whether it is Facebook, Twitter, Google+, Instagram, and so on, is increasingly a critical business issue for both site operators and marketers. On the one hand, site operators are keen to know what makes their sites appealing to the students; on the other hand, marketers are eager to understand how students make the choice as this would enable them to formulate an effective social media communication plan. Why university students choose to register with one particular social networking site and stay on as an active user, but not on others, still remains interesting. To provide a much-needed answer to this question, an analysis into the way students decide between different social networking sites is therefore valuable.

Past studies have focused mostly on students' attitudes towards social networking sites (Peluchette & Karl, 2008); types of users and their activities on social networking sites (Alarcon-del-Amo & Lorenzo-Romero, 2011); students' usage of social networking sites and the types of content they post (Miller, Parsons & Lifer, 2010); motivation behind the use of social networking sites (Kim, Shim, & Ahn, 2011); and attitudes and behavior leading to use intention (Pelling & White, 2009). To close the research gaps, the objective of this study is to examine the selection criteria university students use to choose between two of today's most popular social networking sites, Facebook and Twitter. In this study, students who are active users of both Facebook and Twitter mull over four main criteria

and twelve sub-criteria. Using an analytic hierarchy process (AHP) method, we are able to estimate the relative importance of site selection criteria used by university students in deciding between these two popular social networking sites.

In the sections that follow, we explain social networking sites, discuss website evaluation, review website selection criteria, explain the analytic hierarchy process, describe the research methodology, present the analysis results, and conclude the paper.

RESEARCH BACKGROUND

Social Networking Sites

Social networking sites are one of six types of social media applications, as classified by Kaplan and Haenlein (2010). The other five are blogs, collaborative projects, content communities, virtual social worlds, and virtual game worlds. Social networking sites are classified as high on self-presentation/self-disclosure and medium on social presence/media richness. On social networking sites, users can create a profile, invite friends, read and write posts, share photos and videos, etc.

Social networking sites have gained popularity in recent years, as evidenced by a growing number of both sites and users. In early October 2012, Facebook, the world's most popular social networking site, reported having over one billion active users (Strange, 2012). Other popular social networking sites include Twitter, Google+, and Instagram. Social networking sites are used by both business and individual users. For example, human resource departments gather information about job applicants (Brown & Vaughn, 2011) and hotels communicate with their customers (Escobar-Rodríguez & Carvajal-Trujillo, 2013) on social networking sites. Social networking sites are also hugely popular among students and can be a valuable education tool (Stanciu, Mihai, & Aleca, 2012).

Website Evaluation

To understand what social networking sites should do to attract users, we suggest examining studies on website evaluation. The term website evaluation generally refers to how closely a website has met the expectations of the users (Law, Qi, & Buhalis, 2010). While a poorly designed website turns users away, a good website can be key to attracting users (Hausman & Siekpe, 2009). Chiou, Lin, and Perng (2011) and Dickinger and Stangl (2013) highlight that as travellers frequently access travel websites for information,

evaluating the effectiveness of these websites is critical. Stepchenkova, Tang, Jang, Kirilenko and Morriosn(2010) explain that as websites provide information to visitors about tourist destinations, an evaluation of website performance can be essential for further website improvement. Lee and Kozar (2012) point out that measuring website effectiveness, which can affect the overall user experience, is important for a successful e-business.

However, website evaluation is problematic as there are diverse evaluation objectives, approaches, and criteria (Escobar-Rodríguez & Carvajal-Trujillo, 2013; Stepchenkova et al., 2010). There is no standard or comprehensive approach for website evaluation (Tsai, Chou, & Lai, 2010). To better understand website evaluation approaches, Law et al. (2010) reviewed 75 articles written between 1996 and 2009, and identified five approaches: counting, automated, numerical computation, user judgment, and combined methods. Chiou et al. (2011) reckon that evaluation criteria are not standard. Very frequently, the criteria are about the features of successful websites, which can be rather difficult to generalize across different types of websites. In addition, website performance is multi-faceted and this makes evaluation difficult (Lee & Kozar, 2012).

Website Selection Criteria

To identify the criteria that are used by university students when deciding on a social networking site to register with and stay on as an active user, we suggest looking at the criteria that are used for website evaluation. An understanding of the common website evaluation criteria can help explain how a particular social networking site appeals to students. Past studies have documented a vast number of these website evaluation criteria.

Attempting to find the common factors in website evaluation, Park and Gretzel (2007) reviewed over 150 tourism and non-tourism papers. They report that there are nine common factors: information quality (e.g., variety, scope, currency, conciseness, accuracy, authority, reliability, uniqueness); ease of use (e.g., usability, accessibility, navigability, logical structure); responsiveness (e.g., accessibility of service, e-mail service); security and privacy (e.g., information protection, online purchase security, privacy statement); visual appearance (e.g., attract attention, convey image); trust (e.g., brand recognition, consistency, intentions, credibility); interactivity (e.g., interactive features and communication); personalization (e.g., individualized attention, customization of offerings and information); and fulfilment (e.g., order process, accuracy of service promises). Chiou, Lin, and Perng (2010) later analyzed 83 papers and suggested three additional

factors: advertising/persuasion (e.g., marketing, promotional content, suggested products, recommendation, and incentives); playfulness (e.g., enjoyment, fun, pleasure); and technology integration.

Evaluation criteria differ across the types of websites being evaluated. Tsai et al. (2010) identify several criteria for assessing national park websites: navigability, speed, links, information relevancy, information richness, information currency, attractiveness, security, personalization, and responsiveness. Chung and Law (2003) propose a model for performance evaluation of hotel websites, with five major dimensions: information about facilities, customer contact, reservations, surrounding area, and website management. Pointing out that there was not enough research on the evaluation criteria for English learning websites, Liu, Liu, and Hwang (2011) suggest five main criteria: web usability, learning materials, functionality, technology integration, and learner preferences. Suggesting that attributes of shopping websites play a critical part in influencing purchase intention, Chen, Hsu, and Lin (2010) group the attributes into three types: technology (e.g., information security, privacy, usability); shopping (e.g., convenience, trust, delivery); and product (e.g., product value and merchandising). Dickinger and Stangl (2013) believe that tourism website performance can be measured with such criteria as system availability, ease of use, usefulness, navigational challenge, website design, content quality, trust, and enjoyment.

Evaluation is not only performed on commercial websites, but also government websites. To evaluate the effectiveness of government websites, Smith (2001) suggests two groups of criteria: information content (e.g., orientation to website, content, currency, metadata, services, accuracy, privacy, external recognition) and ease of use (e.g., links, feedback, accessibility, design, navigability). Elling, Lentzm, De Jong, and Bergh (2012) propose the use of a questionnaire to evaluate the quality of government websites, with three main criteria: ease of navigation (which consists of three sub-criteria: ease of use, hyperlinks, and structure); easy-to-understand content (which consists of three sub-criteria: relevance, comprehension, and completeness); and clear layout.

There are also different opinions on what to emphasize. Pagani, Hofacker, and Goldsmith (2011) highlight that content is key to attracting users as there would be no readers if the content is uninteresting. Explaining that a website is only useful when meeting users' objective for visiting the website, Lee and Kozar (2012) state that usability is essential for a good interface between humans and computers. They propose ten constructs of website usability: simplicity, readability, consistency, learnability,

interactivity, navigability, content relevance, supportability, credibility, and telepresence. Braddy, Meade, and Kroustalis (2008) point out that such factors as website usability and website attractiveness influence the impression one has about an organization. Website usability refers to how easily users can find the information they seek. Website attractiveness refers to the layout of the website, e.g., colors, fonts, layouts, etc.

Some evaluation criteria are based on a theoretical underpinning. To assess tourism website performance, Stepchenkova et al. (2010) use a modified balanced scorecard, which consists of four dimensions: technical functionality, customer friendliness and usability, marketing effectiveness, and information content. Technical functionality is about website technicality, such as hyperlinks, tags, etc. Customer friendliness and usability pertains to website accessibility, website attractiveness, ease of navigation, etc. Marketing effectiveness consists of website positioning, ability to target travelers, customer relationship, etc. Information content is about meeting information needs of travelers. Dragulanescu (2002) draws on concepts from quality management to propose several criteria for assessing website quality. These criteria are accuracy, authority, coverage, currentness, density, interactivity, objectivity, and promptness.

In this study, having examined various website evaluation criteria, considered the characteristics and features of social networking sites, and consulted with several heavy users of social networking sites, we propose that there are four main criteria in the selection of social networking sites: content, functionality, usability, and privacy. Each main criterion has three sub-criteria. The sub-criteria of content are: advertisements, games, and apps. Those of functionality are: content management, community building, and revenue-generating opportunities. Those of usability are: ease of use, site performance, and personalization. Those of privacy are: privacy settings, user authentication, and information security.

RESEARCH METHODOLOGY

Analytic Hierarchy Process (AHP)

The analytic hierarchy process (AHP) is a useful method in decision-making when one is faced with various selection criteria and alternatives. In this situation, it would be useful to first identify which selection criterion is more important than another, and then to work out which alternative is more likely (Saaty, 1997, 2003, 2006).

There are broad practical applications of the AHP. Vaidya and Kumar (2006) reviewed 150 papers to report that there are three main groups of AHP applications. The first group consists of AHP applications in selection, evaluation, cost benefit analysis, allocation, planning and development, priority and ranking, and decision making. The second group consists of AHP applications in forecasting, medicine, and related fields. The third group consists of AHP applications with Quality Function Deployment (QFD).

The AHP has also been used to evaluate the quality of course websites in education. Lin (2010) applied the fuzzy AHP to examine four main criteria. Each main criterion has four sub-criteria. The criteria are system quality (e.g., accessibility, navigability, and response time and learnability); information quality (e.g., accuracy, currency, completeness, and format); service quality (e.g., reliability, responsiveness, trust, and empathy); and attractiveness (e.g., multimedia capability, webpage design, course design, and enjoyment).

Figure 1 depicts the AHP model purposely developed for this study, illustrating the main criteria, sub-criteria, and alternatives. When deciding what social networking sites should be the alternatives in the model, there is a need to first consider the number of alternatives. Ishizaka and Labib (2011) highlight that people in AHP studies tend to give better reflective opinions when comparing two alternatives and when they are not pressured to compare more pairs because of additional alternatives. Peters and Zelewski (2008) agree that it is time-consuming for the respondents to do the comparison when there are more alternatives. Thus, in this study, the AHP model only includes two of today's most popular social networking sites as the alternatives, namely Facebook and Twitter (Nielsen, 2012).

C1: Advertisements	F1: Content management	U1: Ease of use	P1: Privacy settings
C2: Games	F2: Community building	U2: Site performance	P2: User authentication
C3: Apps	F3: Revenue-generating opportunities	U3: Personalization	P3: Information security

Figure 1 AHP Model for Choosing between Two Social Networking Sites

Data Collection

We designed a questionnaire to display the main criteria, sub-criteria, and alternatives (Facebook and Twitter) as individual pairs and asked the respondents to compare the pairs on a scale ranging from 1 to 9 (Saaty, 1980), 1 being “equally important” or “about the same,” 5 being “important” or “better,” and 9 being “extremely important” or “extremely better.” There was also a section in the questionnaire asking the respondents about their usage of social networking sites.

The questionnaire was administered to a group of students attending a course at a Malaysian university. As the course consisted of students from different countries and popular social networking sites could differ in each country, to maintain homogeneity, a filter question was used to include only Malaysian students in this study. A total of 69 responses were received. Table 1 presents a summary of the usage of social networking sites among the respondents.

Of the 69 respondents, we then randomly selected 12 respondents for subsequent AHP analyses. To meet the selection criteria, a respondent must be an active user of both Facebook and Twitter, and must spend more than three hours daily on social networking sites. Eddie & Li (2001) emphasize that AHP does not require a big number of respondents – several or even just one respondent will do. They suggest that people with extensive relevant experience provide better insightful opinions. For example, Byun (2001), in an AHP study of the car purchase decision-making process, involved only 13 sales managers who each had more than 10 years of sales experience and were knowledgeable about their customers.

Table 1 Usage of Social Networking Sites among the Respondents

	Frequency	Percent (%)
Hours spent on social networking sites every day		
Less than 1 hour	7	10.1
Between 1 – 3 hours	18	26.1
Between 3 – 5 hours	20	29.0
Between 5 – 7 hours	17	24.6
Between 7 – 9 hours	5	7.2
More than 9 hours	2	2.9
Total	69	100%
Primary device used to access social networking sites		
Notebook	29	42.0
Smartphone	23	33.3
Desktop computer	11	15.9
Netbook	4	5.8
Other	2	2.9
Total	69	100%
Primary location to access social networking sites		
Home	60	87.0
Other	6	8.7
School	2	2.9
Coffee chain (e.g. Starbucks)	1	1.4
Total	69	100%

Table 2 presents a summary of the social networking sites most used by the respondents and their activities on these sites. The top three social networking sites were: Facebook (100%), Instagram (43.5%), and Twitter (30.4%). The top three social networking activities were: read posts (87%), chat online (69.6%), and share photos

(58%).

Table 2 Social Networking Sites and User Activities

	Frequency	Percent (%)
Social networking sites with an active user account		
Facebook	69	100.0
Instagram	30	43.5
Twitter	21	30.4
Google+	21	30.4
Foursquare	8	11.6
Tumblr	3	4.3
Pinterest	2	2.9
Tagged	2	2.9
Other	1	1.4
Activities on social networking sites		
Read posts	60	87.0
Chat online	48	69.6
Share photos	40	58.0
Write posts	38	55.1
Share videos	24	34.8
Tag items	21	30.4
Play games	20	29.0
Read advertisements	13	18.8
Use apps	12	17.4

Note: Percent is calculated out of 69 respondents.

ANALYSIS RESULTS

In this study, we used the software SuperDecisions to perform the AHP calculations. The prioritization of the main criteria, sub-criteria, and alternatives were derived by calculating the eigenvector of individual pairwise comparison matrices (Saaty, 1980; Saaty, 1994).

To assess how consistent the respondents had been in giving their opinions, a consistency index (CI) was first calculated for a matrix and then compared to the random index (RI) of its random matrix. A consistency ratio (CR) was then obtained by dividing the CI by RI. For a matrix to be considered satisfactory, its CR should be less than 0.1 as an indication that the respondents were consistent in giving their opinions (Bhushan & Rai, 2004; Saaty, 1980; Saaty, 1994). Analyses showed that all matrices had a satisfactory CR of less than 0.1: main criteria (0.039); content (0.008); functionality (0.065); usability

(0.026); and privacy (0.003). As there were only two alternatives, its matrix had a CR of 0.000 (Saaty & Vargas, 2000).

Table 3 shows the prioritization of the main criteria. The respondents were of the opinion that privacy was the top priority (0.361), followed by functionality (0.261), usability (0.258), and content (0.120). The column “ideals” shows the relative importance of individual criteria in relation to the one with the highest priority (which has a value of 1.000). In terms of relative importance, functionality, usability, and content were 72.3%, 71.3%, and 33.3% as important as privacy respectively.

Table 3 Prioritization of Main Criteria

Main Criteria	Ideals	Priorities
Privacy	1.000	0.361
Functionality	0.7229	0.261
Usability	0.7132	0.258
Content	0.3329	0.120

Table 4 shows the prioritization and ideals (in brackets) of the sub-criteria. For the sub-criteria of content, the respondents were of the opinion that apps were the top priority (0.498), followed by games (0.302) and advertisements (0.200). In terms of relative importance, games and advertisements were 60.8% and 40.2% as important as apps, respectively.

For the sub-criteria of functionality, the respondents thought that revenue-generating opportunities were the top priority (0.454), followed by content management (0.316) and community building (0.230). In terms of relative importance, content management and community building were 69.7% and 50.6% as important as revenue-generating opportunities respectively.

For the sub-criteria of usability, the respondents indicated that ease of use was the top priority (0.464), followed by site performance (0.331) and personalization (0.205). In terms of relative importance, site performance and personalization were 71.4% and 44.2% as important as ease of use, respectively.

For the sub-criteria of privacy, the respondents considered information security was the top priority (0.423), followed by privacy settings (0.301) and user authentication (0.276). In terms of relative importance, privacy settings and user authentication were 71% and 65.3% as important as information security, respectively.

Table 4 Prioritization of Sub-Criteria

Content	Functionality	Usability	Privacy
Apps	Revenue-generating opportunities	Ease of use	Information security
0.498	0.454	0.464	0.423
(1.000)	(1.000)	(1.000)	(1.000)
Games	Content management	Site performance	Privacy settings
0.302	0.316	0.331	0.301
(0.6078)	(0.6970)	(0.7142)	(0.7103)
Advertisements	Community building	Personalization	User authentication
0.200	0.230	0.205	0.276
(0.4019)	(0.5055)	(0.4427)	(0.6534)

Note: The “ideals” figures are in brackets

Table 5 shows the prioritization of the alternatives. The respondents were of the opinion that Facebook was a better alternative (0.683 vs. 0.317). Between Facebook and Twitter, the respondents considered Twitter to be 46.5% as good as Facebook.

Table 5 Prioritization of Alternatives

Alternatives	Ideals	Priorities
Facebook	1.000	0.683
Twitter	0.465	0.317

Figure 2 presents the final AHP model, which provides an overview of the prioritization of the main criteria, sub-criteria, and alternatives.

CONCLUSION

This study demonstrates the use of the AHP method to empirically assess the relative importance of site selection criteria used by university students in deciding between two popular social networking sites. The analysis not only shows which site is preferred by the students, but also explains how both sites have been evaluated by them.

The findings are congruent with what has been reported in past website evaluation studies, e.g., privacy (Park & Gretzel, 2007; Chen et al., 2010); functionality (Tsai et al., 2010); usability (Braddy et al., 2008; Park & Gretzel, 2007); and content (Smith, 2001; Stepchenkova et al., 2010). In view of the relative importance of individual main criteria,

social networking sites should focus on improving site privacy, functionality, and usability. As most of the content of social networking sites comes from the users themselves, providing content does not seem to be a huge responsibility of the sites.

C1: Advertisements	F1: Content management	U1: Ease of use	P1: Privacy settings
C2: Games	F2: Community building	U2: Site performance	P2: User authentication
C3: Apps	F3: Revenue-generating opportunities	U3: Personalization	P3: Information security

Figure 2 Final AHP Model

Drilling down into the sub-criteria of content, it is clear that users appreciate apps and games but not advertisements. As advertisements contribute to the revenue of social networking sites, it is essential that the sites maintain a good balance between the content that users want and advertisements. It is interesting to note that it is getting popular for people to use social media as a means to generate online sales, and this appears to have affected users' perceptions of the functions of social networking sites. Revenue-generating opportunities are weighted more than content management and community building. Users continue to place emphasis on ease of use and site performance, but are not too concerned with site personalization. Considering Internet threats, users also indicate that information security, privacy settings, and user authentication are important.

Now, site operators and marketers can use our AHP model as a reference point to better understand how and why students choose one particular site over another. To the site operators and marketers, in view of today's intense competition to win over users, our AHP model may be of considerable commercial value. Social networking sites can better design their sites to meet users' needs, not only to maintain their current user base, but also to attract new users. Marketers can better understand their target social networking audience to plan more effective social media communications.

RESEARCH LIMITATIONS

This study has three research limitations. First, as the 12 respondents who were randomly selected for the AHP analyses are Malaysians, their opinions do not necessarily represent those of students from different countries. Second, popularity of individual social networking sites might differ across countries. This study provided only Facebook and Twitter as the alternatives because both sites were then the two most popular social networking sites among Malaysians. Thus, the main criteria and sub-criteria in the AHP model do not necessarily apply to other social networking sites. Third, the main criteria and sub-criteria in the AHP model are derived from website evaluation studies and do not consider such factors as peer or emotional influences. These criteria only partially explain how the 12 respondents decided between Facebook and Twitter.

FUTURE RESEARCH DIRECTIONS

Future research can attempt a more comprehensive review of the criteria people consider when deciding on their preferred social networking sites. Besides website evaluation criteria, do peer or emotional influences affect how people decide among social networking sites? Would the criteria differ because of the demographic background of people? Would the criteria differ because of different social networking sites? Also, it would be interesting to examine how new emerging social networking sites have gained popularity over Facebook or Twitter. What are other criteria that attract users to switch to or sign up for another social networking site?

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