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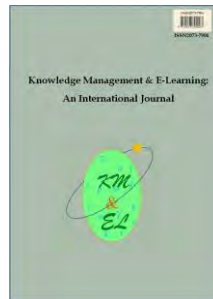
Mathupayas Thongmak
Thammasat University, Thailand

Predictors of online search performance: A uses and gratification perspective

Mathupayas Thongmak*

MIS Department, Thammasat Business School
Thammasat University, Thailand
E-mail: mathupayas@tbs.tu.ac.th

*Corresponding author

Abstract: A study of online search, especially search performance, is vital because people heavily rely on the Internet nowadays. The purposes of this study are thus to examine the gratification needs affecting Internet users' intention to search information online, to explore the antecedents of online search performance, and to investigate online information-seeking behavior according to each search purpose. A survey of Internet users in Thailand is carried out. Data are collected extensively both from students and workers. Four hundred fifty-three questionnaires are collected online. Individuals use the Internet to search for information differently, for academic/ working achievement, problem-solving, and personal information needs. The main gratifications are information seeking and Internet ambiance. Internet search intention is a strong determinant of a user's online search performance and corresponding behavior. The theoretical implication is that researchers could apply the research framework to other contexts such as the specific information search. Information source providers could use the findings to modify online resources and their presentations for users effectively. Teachers/ managers could guide their students/ workers to search effectively. This study combines the U&G and the TPB theories. The novel aspects of gratifications i.e., anti-traditional media sentiment and Internet ambiance are also explored.

Keywords: Information search; Uses and gratifications; Online search intention; Search performance; Theory of planned behavior

Biographical notes: Mathupayas Thongmak is an associate professor of Information Systems in the Management Information Systems department of Thammasat Business School, Thammasat University in Bangkok, Thailand. She holds a Ph.D. in Computer Engineering from the Faculty of Engineering, Chulalongkorn University. Her research interests include innovation & management, adoption and diffusion of IS/ IT, IS education/ learning & education relating to IS/IT, social media & marketing, software quality, digital piracy, and green ICT. Her research has appeared in various journals, including Journal of Computer Information Systems, International Journal of Lifelong Education, International Journal of Electronic Commerce Studies, Heliyon, Online Journal of Applied Knowledge Management, Electronic Green Journal, Knowledge Management & E-Learning, International Journal of Knowledge Management, Journal of E-Learning and Higher Education, International Journal of Information Technologies and Systems Approach, International Journal of Software Engineering and Knowledge Engineering, and Education for Information. She has reviewed multiple journals, including Information Technology & People, Journal of International Marketing, Journal of Research in Interactive Marketing, European Journal of Marketing, Sage Open, Engineering Journal, International Journal of Electronic Commerce Studies,

Knowledge Management & E-Learning, Technology in Society, Teaching and Teacher Education, Recent Patents on Computer Science, Telematics and Informatics, Children and Youth Services Review, Journal of Retailing and Consumer Services, Electronic Commerce Research and Applications, Palgrave Communications, Heliyon.

1. Introduction

Information is a key resource leading to the prosperity of organizations (Lewis & Mallaiah, 2014). There is a greater power attached to it. Relevant and timely information enables successful communication, decision-making, and reactions of business (Parvez, 2012). An individual's information need is the gap between his/ her knowledge about a problem and what he/ she knows how to solve it. It leads an individual to search for information (Bhat & Shafi, 2014). Advanced information technologies such as the Internet have become a vital tool changing people's information search process and helping them to seek information to solve specific problems (Choi, 2013; Kulviwat, Guo, & Engchanil, 2004). The Internet is an external source of information search, involving the day-to-day lives of more than a quarter of the world's people (Parvez, 2012; Tan & Chen, 2012). A search engine is a dominant online information source (Chung & Koo, 2015). Besides, three sets of strategies associated with information problem solving (IPS) are search engine strategies, browsing strategies, and direct access strategies. IPS also requires metacognitive knowledge, perceived orientation, perceived self-efficacy, system knowledge, and prior subject knowledge from searchers. Evaluating information is one of the processes in solution generation in the IPS context (Huang, Law, Ge, Hu, & Chen, 2019).

Electronic information sources (e-resources) have substantially increased (Choi, 2013). E-resources have been predicted that they will be used more than 90% in 2020 (Chandel & Saikia, 2012). In the academic domain, these sources support the core functions of higher institutions, which are learning, teaching, and research (Alison, Kiyingi, & Baziraake, 2012). Most research is available in the electronic format, making academicians become Internet-dependent, because of the development of Information Technology (IT) (Chandel & Saikia, 2012; Alison et al., 2012). Although online information sources offer many advantages such as giving solutions to specific problems, providing convenient remote access, keeping users up to date, and saving search times, they face many challenges at all levels of their selection, acquisition, preservation, maintenance, and management such as information overloads (Chandel & Saikia, 2012; Kulviwat et al., 2004). In the Internet economy, information is not a scarce resource, but the time and attention of users (Kink & Hess, 2008). Therefore, search effectiveness, which is an individual's ability to retrieve and use relevant information from external sources, is gaining more and more important in online information searching (Kulviwat et al., 2004).

The motivation of information seekers affects the information-acquisition process and its outcomes (Rains & Karmikel, 2009). Understanding the search process and information seekers' motivation is important to guide the refinement of the search system (Cartright, White, & Horvitz, 2011). Motivation and arousal play a vital role in search performance. However, only a few literature studies consider the psychological roles in the search process (Quinn, 2003). The Uses and Gratifications (U&G) theory is a psychological communication perspective, focusing on an individual's choice and use of media (Ko, Cho, & Roberts, 2005). It has been found to be a useful framework for

Internet studies (Chen, 2011). The theory has been shaped by various contexts and is still undergoing development (Kink & Hess, 2008; Sundar & Limperos, 2013). In addition, the scheme of uses and gratifications has to be context-specific (H. Lim & Kumar, 2017). Contextual and environmental aspects also greatly influence the use of e-resources (Alison et al., 2012). Gratification or motivation varies across different cultures (H. Lim & Kumar, 2017), but most studies regarding Internet gratification are conducted in Western environments such as the UK and the US. Only a study by Roy (2009) identifies the usage motivations of Indian Internet users.

E-resources come with opportunities and problems (Chandel & Saikia, 2012). However, only a little research relating to their usage has been carried out (Alison et al., 2012). Identifying the information needs of searchers and information resource usage patterns are important to the development of the e-resources such as online library databases and supporting technologies for students/ officers (Lewis & Mallaiah, 2014). The ability to accommodate users with various perspectives is also essential for successful information retrieval (Bhat & Shafi, 2014). The Theory of Planned Behavior (TPB) is an ideal framework to explain IT adoption (Peng, Zhu, Tong, & Jiang, 2012). An intention-based model could help to understand users' social and behavioral factors. Thus, the TPB is adapted to explain the intention-behavior relationship between online search intention and consequent behavior. The TPB theory and its associated factors can be applied together with the U&G theory to extensively comprehend Internet search behavior and its performance. None of past studies, as described in the Literature review and Theory section, have looked deeply into the antecedents of online search performance using these theories together.

The objectives of the study are specified as follows.

- To explore the impact of U&G factors on online search intention.

- To examine the influence of online search intention on its associated behavior.

- To investigate the effects of online search intention and behavior on online search performance.

- To find out the purposes of online search by the respondents and the frequency of online search for each purpose.

2. Literature review and theory

2.1. Related research

Kulviwat et al. (2004) proposed a conceptual model to investigate determinants of online information search. Kink and Hess (2008) applied the U&G approach and the TPB to compare search engines and traditional information sources consisting of paper-based encyclopedias, yellow pages, and telephone-based directory assistance. Findings pointed that search engines could fulfill users' needs wider. S. Lim (2009) adopted the Social Cognitive Theory (SCT) to examine the information behavior of college students relating to Wikipedia. Information utility and students' positive emotions toward Wikipedia were connected to their usage. Cuillier and Piotrowski (2009) applied the U&G theory to explore the use of Internet information and access to public government records. Using Internet information was positively related to the support to access public records. Roy (2009) utilized the U&G theory to identify Internet gratification in the Indian context. Six

gratifications: self-development, wide exposure, user friendly, relaxation, career opportunities, and global exchange, were extracted. These gratifications differed between males and females and between light Internet users and heavy Internet users. Goel, Hofman, Lahaie, Pennock, and Watts (2010) tried to explore the impact of online search on future outcomes. The study confirmed that search counts predicted the future behavior of consumers. Zhang, Huang, and Chen (2010) combined the Task Technology Fit (TTF) and the Unified Theory of Acceptance and Use of Technology (UTAUT) to form the mobile-search acceptance model. The empirical test indicated that performance expectancy, social influence, and perceived cost significantly affected intention to use.

In the tourism context, Pennington-Gray, Schroeder, and Kaplanidou (2011) explored past experiences, information search behaviors, and risk perceptions of travelers on the likelihood to travel. All factors had significant influences on the travel intention. Parvez (2012) conducted online surveys and interviews to explore the choices of managers of financial institutions in India, types of information, and online/ traditional sources used by them. Findings indicated that financial and industrial-specific databases were utilized electronically the most. Millawithanachchi (2012) identified the Critical Success Factors (CSFs) on the postgraduate students' use of e-resources in the University of Colombo. The technology factor was the most critical, while library support, information literacy, computer competency, usefulness, and user attitudes were other CSFs. Alison et al. (2012) examined the use of electronic health information resources by graduate students, teaching staff/ researchers, heads of departments, and librarians in three universities offering medical education in Uganda. The e-resources usage depended on human factors and institutional factors. Tan and Chen (2012) compared three online information sources for tourism: non-commercial travel blogs, Wikipedia, and Yahoo! Knowledge+. Peng et al. (2012) developed a conceptual model based on the TPB to explore the intention and behavior of non-users to adopt the Internet. Perceived popularity of the Internet predicted subsequent behavior, mediated by the non-users' intention. Perceived capacity to adopt the Internet (self-efficacy) was a factor directly influencing the Internet adoption behavior of non-users. Hicks et al. (2012) examined why people use Yelp.com. The results showed that the U&G perspectives: information seeking, entertainment, convenience, interpersonal utility, and pass time, were the reasons why individuals used Yelp.com.

Whiting and Williams (2013) applied the U&G theory to explore gratifications that users received from social media. Ten gratifications included social interaction, information seeking, pass time, entertainment, relaxation, communicator utility, convenience utility, expression of opinion, information sharing, and surveillance/knowledge about others. Lewis and Mallaiah (2014) studied the use of information resources in libraries by students, faculty members, and research scholars of the engineering college in India. The findings revealed significant differences in the satisfaction of information resources among users. Luo and Remus (2014) proposed an integrated framework for the Web-based Information Service (WIS) adoption, combining the Technology Acceptance Model (TAM) and the U&G. The empirical tests supported the proposed model. Singer, Pruulmann-Vengerfeldt, Norbisrath, and Lewandowski (2015) explored whether the online activities of users affected their search capabilities or not. Findings indicated that there were significant user differences among various search tasks. Chung and Koo (2015) examined and tested a research model for information searches on social media for tourism purposes, based on the Value-based Adoption Model (VAM). The perceived value of social media was a primary factor driving travelers to use social media. The travelers were also influenced by both benefits (i.e., information reliability, and enjoyment), and sacrifices (i.e., complexity, perceived effort). Wijetunge (2017) explored the use of e-resources in libraries in Sri Lanka. Data from

librarians pointed that individual mostly used open-access materials for their research and believed that e-resources could fulfill their needs.

2.2. The uses and gratifications theory and the theory of planned behavior

The Uses and Gratification (U&G) theory explained the selection and consumption of certain media by individuals, relating to their needs and gratifications (Chigona, Kankwenda, & Manjoo, 2008; Cuillier & Piotrowski, 2009; C. S. Lee & Ma, 2012; S. Lim, 2009; Malik, Dhir, & Nieminen, 2016; Whiting & Williams, 2013). Since media audiences were goal-oriented, they chose and used specific media purposefully to achieve their goals (Hou & Shim, 2010; C. S. Lee & Ma, 2012; Stafford, 2005). The theory could be applied to study both traditional media such as newspapers and new media such as the Internet (Chigona et al., 2008; C. S. Lee & Ma, 2012; S. Lim, 2009; Luo & Remus, 2014). It was applied to different areas such as motivations, gratifications, expectancy-value, audience activities, and media consumption (Luo & Remus, 2014). The strengths of the U&G theory were flexibility, robustness, and usefulness. The theory allowed researchers to explore the media experience using single or multiple sets of psychological needs, psychological motives, psychological gratifications, communication channels, and communication content, both in a specific context or a cross-cultural context (Chigona et al., 2008).

The motivations/ gratifications for media consumption could vary among the U&G studies due to the nature of media (Yang & Liu, 2014). Each medium was not similar in terms of its specific content, presentation mode, and user environment (H. Lim & Kumar, 2017). Moreover, many studies suggested that the Internet uses depending on the motivations and usage types such as escape motivation for movies, social interaction for Facebook, identity for political blogs, gaming entertainment, and information for town construction projects (Cuillier & Piotrowski, 2009). The motivations of Internet usage were entertainment, pass time, relaxation, social information, escapism, social interaction, information seeking, and preference to use the Web (Luo & Remus, 2014). The general gratifications were social, emotional, competition, entertainment, time-related, information, escape, connection, social status, and convenience (Sundar & Limperos, 2013). Other gratifications were cognitive, affective, personal integration, social integrative, and tension release (Sangwan, 2005). The U&G theory was suitable for investigating Internet uses (S. Lim, 2009). In general, people used the Internet to satisfy interpersonal needs, informational needs, entertainment needs, and much more (Hicks et al., 2012). Several researchers had employed the U&G theory in online contexts, for instance, virtual community, Yelp.com, Facebook, web-based information service, and so on. Their findings supported the significance of information seeking, entertainment, socializing, status-seeking, convenience, interpersonal utility, pass time, and information sharing (Hicks et al., 2012; C. S. Lee & Ma, 2012; H. Lim & Kumar, 2017; Luo & Remus, 2014; Malik et al., 2016; Sangwan, 2005).

The Theory of Planned Behavior (TPB) was the development of the Theory of Reasoned Action (TRA) (Kink & Hess, 2008). The TPB was an ideal framework for Information and Communication Technologies (ICTs) adoption, which had been widely applied in empirical research (Peng et al., 2012). Its basic assumption was that an individual implicitly or explicitly thought about the consequences of his/ her action. An individual's intention to conduct a behavior was the main determinant of actual behavior (Kink & Hess, 2008; Peng et al., 2012). Behavioral intention referred to the degree to which an individual was willing to try or perform a behavior (Peng et al., 2012). The intention was determined by three factors: attitudes toward the behavior, subjective

norms, and perceived behavioral control (Kink & Hess, 2008; Peng et al., 2012). Since this research aims to specify the antecedents of online search performance, which actual search from the Internet is the primary driver. The TPB is firstly applied since the intention is the main reason for actual behavior. The U&G is combined later to examine searchers' motivations because it is proven to be a suitable framework for Internet studies that online search is included.

3.   Research hypotheses
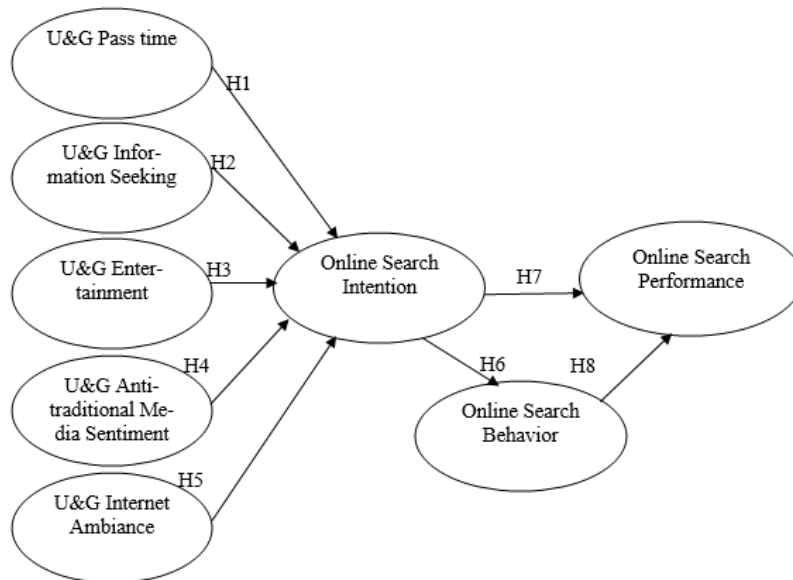
The research model and hypotheses are presented in Fig. 1.

Fig. 1. The research model

3.1. The uses and gratifications drivers of online search intention

Specifying gratifications that people look for from media can provide insightful reasons for the continued use of those media (Malik et al., 2016). Empirical research confirms that the gratification-seeking motives of users explain the adoption of media technology (Jung, Chan-Olmsted, Park, & Kim, 2012). Gratification seeking or the motives to use technology such as the health-related website significantly influence users' intention to use that technology (Yoo & Robbins, 2008). The frequency of SNSs usage is linked to a user's pleasure. Twitter usage frequency positively associates with a motive to connect with others as well (Hicks et al., 2012).

3.1.1. Pass time

Pass time is one of the U&G motivations driving the use of web-based information services (Luo & Remus, 2014). It is also a reason that makes people use Yelp.com (Hicks et al., 2012). The majority of respondents (76 percent) in the study of Whiting and Williams (2013) report the use of social media to pass the time when they have idle time

or feel bored at work or school. Leisure is a reason why adolescents consume the Internet (García-Jiménez, López-Ayala-López, & Gaona-Pisionero, 2012). In the study of Chan and Fang (2007), 38 percent of young people in Hong Kong aged 15 to 24 use the Internet because of leisure. Hence, the hypothesis is as follows:

Hypothesis 1. *There is a positive relationship between the passing time and online search intention*

3.1.2. Information seeking

Information seeking is the most salient reason for Internet usage (Luo & Remus, 2014). Searching for information and learning are reasons for Internet consumption (Chigona et al., 2008; García-Jiménez et al., 2012). Most Hong Kong young respondents (98 percent) choose the Internet for information searches (Chan & Fang, 2007). Information, knowledge, learning, and research are the content that Internet users often seek in distance education (Stafford, 2005). Past research indicates that information seeking is the main motivator of Web consumption (C. S. Lee & Ma, 2012). It is also one of the U&G motivations for web-based information services (Luo & Remus, 2014). There are positive relationships between the support for access and the usage of the Internet to retrieve news and information in three studies, across different samples (college students, online users, and the U.S. citizens), and different survey modes (paper, online, and telephone) (Cuillier & Piotrowski, 2009). Most respondents report that they use Wikipedia to obtain information and knowledge, to find facts, and to search for topics that they want to learn more about. Information utility is significantly correlated with an individual's use of Wikipedia (S. Lim, 2009). Information need is strongly related to the members' satisfaction with a virtual community (Sangwan, 2005). Information seeking is the most important motive of users to use Yelp.com (Hicks et al., 2012). Information seeking is the motive of participants who want to bypass the Great Firewall (GFW) from inside or outside China (Yang & Liu, 2014). Information seeking refers to the extent to which news on social media providing relevant and updated information for users. This gratification significantly correlates with the usage behavior and users' intention to share news on social media (C. S. Lee & Ma, 2012). People use social media to find information such as sales, deals, products, events, birthdays, parties, businesses, and self-education as well (Whiting & Williams, 2013). In Yahoo! Answers, finding relevant information from surroundings, seeking advice or opinions, and learning are significantly related to its users' expectations (Choi, 2013). Thus, the hypothesis is as follows:

Hypothesis 2. *There is a positive relationship between information seeking and online search intention*

3.1.3. Entertainment

Entertainment is the U&G motivation to utilize web-based information services (Luo & Remus, 2014). Thirty-eight percent of young people with ages ranging from 15 to 24 years in Hong Kong take part in entertainment activities on the Internet (Chan & Fang, 2007). People use the mobile Internet for entertainment materials such as ring-tones, music, wallpapers, or pictures (Chigona et al., 2008). Entertainment is positively associated with participants in the study of Yang and Liu (2014), who bypassing the Great Firewall from outside China. Audiovisual entertainments such as downloading movies or listening to free music are reasons for adolescents using the Internet (García-Jiménez et al., 2012). Entertainment is the ability of media to satisfy users' needs for enjoyment or emotional release. Past studies indicate that entertainment positively drives

an individual's reading of the Internet news. Platforms such as mobile apps are also a good source of entertainment when various users contribute content on such platforms (C. S. Lee & Ma, 2012). Enjoyment positively impacts social media use for traveling information search (Chung & Koo, 2015). Entertainment gratification could increase the participants' likelihood to commit to a brand in online SNSs (H. Lim & Kumar, 2017). Most of the respondents (64 percent) use social media as an entertainment source, by playing games, listening to music, or watching videos on social media (Whiting & Williams, 2013). Therefore, the hypothesis is as follows:

Hypothesis 3. *There is a positive relationship between entertainment and online search intention*

3.1.4. Anti-traditional media sentiment

If a consumer does not satisfy with the current media, he/ she tends to adopt new media: old television vs. multimedia cable services, print media vs. e-book, for instance (Jung et al., 2012). Another example is the advantage of a QR code over a normal bar code, in which information is extensively displayed in both vertical and horizontal directions. QR code allows greater amounts of information and services stored within. The integration of QR codes with paper-based learning materials also provides benefits for learners such as ease of use and instant gratification (Leone & Leo, 2011). This is in accord with the U&G theory specifying that an individual turns to the Internet when his/ her needs are not fulfilled by the initial communication medium (Hou & Shim, 2010). Users, who utilize the Internet for information searches, spend less time gathering information from the traditional media (Kink & Hess, 2008). Respondents in the study of Kink and Hess (2008) choose search engines as a medium for collecting information more often than encyclopedias, yellow pages, and directory assistance. The credibility of television news, radio news, and news magazines significantly positively predict the reliance on the traditional media and the convenience of Web usage (Johnson & Kaye, 2002). There is a significant displacement impact of the Internet on broadcast TVs. The utilization of Internet news is increased, while the use of broadcast news is decreased. The Internet displaces some newspaper usage as well. It provides users more satisfied with their needs than traditional media. The superiority value of the Internet is also significantly higher than other traditional media (except cable) (Dimmick, Chen, & Li, 2004). Gratifications received from print media such as newspapers, magazines, or books are positively related to the awareness, interest, and intention to use e-book readers (Jung et al., 2012). Sixty percent of managers in financial institutions from the study of Parvez (2012) prefer information in electronic format. Only six percent of them select a traditional (printed) format. Respondents in the study of Kaye (2010) mention that they connect to online blogs because they want to be independent of distasteful traditional media. They believe that information on the conservative media is biased. Compared to magazines, newspapers, radio, and television, young people in Hong Kong utilize the Internet for information search, homework, health education, entertainment, and leisure activities more than other means (Chan & Fang, 2007). Thus, the hypothesis is as follows:

Hypothesis 4. *There is a positive relationship between anti-traditional media sentiment and online search intention*

3.1.5. Internet ambiance

New media such as the Internet provide a wide range of content (Dimmick et al., 2004). Two sources of Internet using processes are direct usage for information searches and

indirect usage for randomly surfing the Internet (Stafford, 2005). Motivations to use the Internet are process gratifications (speed, clarity of purpose, purchase interest, personal involvement, personal interest, interactions, people, controversy, and technology) (Chigona et al., 2008). Attitudes of postgraduates at the University of Colombo toward online resources, i.e., likeability, pleasantness, or wise ideas significantly drive them to use those resources (Millawithanachchi, 2012). Positive feelings of enjoyment and pleasure increase the overall value of the search experience (Sirdeshmukh, Ahmad, Khan, & Ashill, 2018). In terms of Twitter, content gratification is within information content that is carried by Twitter. Content gratification has a positive effect on the satisfaction level of a user, which is subsequently a positive driver of his/ her continuance intention (Liu, Cheung, & Lee, 2010). Perceived content quality has a significant impact on the confirmation of e-books (Shin, 2011). Information quality gratification affects the usage of specific media. It significantly increases the intention to engage in social commerce as well (Sharma & Crossler, 2014). Information sharing such as updates, pictures, and interesting content is a type of social media use in addition to information seeking (Whiting & Williams, 2013). Coolness in terms of uniqueness, distinctive, and style is one of the possible new gratifications received from media technology (Sundar & Limperos, 2013). There is a significant relationship between technology attractiveness and the behavioral intention of users (S. H. Wang, 2017). People have a strong intention to adopt the Internet when they perceive that it is more popular (Peng et al., 2012). In terms of blog ambiance, users like to affiliate with a specific blogger because of his/ her good writing. They find that blogs are humorous and interesting and enjoy their variety (Kaye, 2010). Hence, the hypothesis is as follows:

Hypothesis 5. *There is a positive relationship between Internet ambiance and online search intention*

3.2. Consequences of online search intention and behavior

3.2.1. Online search intention

Understanding the intention of users/ non-users is vital since it reveals their adoption behavior (Peng et al., 2012). The Theory of Planned Behavior, a development of the Theory of Reasoned Action, has a basic assumption that the actual behavior of a person is accurately predicted by his/ her intention to perform that behavior (Kink & Hess, 2008; Peng et al., 2012). Behavioral intention is the willingness of a person to try or perform the behavior (Peng et al., 2012). Usage behavior could be the amount of use, the duration of use, or the type of use (Luo & Remus, 2014). The stronger intention of an individual to use the Internet significantly increases the likelihood of that person to adopt the Internet (Peng et al., 2012). Search is a basic element of information needs (Parvez, 2012). Behavioral intention to use web-based information services significantly positively correlates with consequent usage behavior (Luo & Remus, 2014). The more frequency that respondents in the study of Hicks et al. (2012) visit Yelp.com indicates the more motives of them to use the website. The hypothesis is proposed thereupon.

Hypothesis 6. *There is a positive relationship between online search intention and online search behavior*

As more materials are available online, students are more likely to use them remotely (Catalano, 2013). To have an opportunity to use the Internet every day to finish schoolwork or personal tasks, students become advanced users who move comfortably on the Internet. They can perform their search tasks efficiently (Quintana, Pujol, & Romaní,

2012). Four common stages for a successful search and information selection are 1) formulating demand/ intention and preparing the search, 2) conducting the search and accessing resources, 3) processing and evaluating information, and presenting the results (Quintana et al., 2012). Database selection, search vocabulary, limit and expand options, for instance, are the various components to make a successful search (Quinn, 2003). Search time, search amount, and search accuracy could be used to assess the efficiency and effectiveness of search task performance (Sharit, Taha, Berkowsky, Profita, & Czaja, 2015). Searchers have to be more proactive to make information-seeking more effective (Tan & Chen, 2012). As a general rule, the higher intention to participate in a given behavior, its performance will probably be higher (Peng et al., 2012). Higher levels of search motivation enhance the external information search activity (Schmidt & Spreng, 1996). Motivation to search positively affects online information search (Kulviwat et al., 2004). Search interest also correlates with the performance of students (Chambers & Andre, 1997). Motivation and arousal play a significant role in search performance. The motivational states of searchers should be monitored. Emotions, feelings, and perceptions affect search strategies, performance, and satisfaction, while interface features, search processes, and results drive feelings (Gwizdka & Lopatovska, 2009). As a result, the hypothesis is as follows:

> **Hypothesis 7**. *There is a positive relationship between online search intention and online search performance*

3.2.2. Online search behavior

The users' needs lead them to utilize a specific medium to gratify their needs. They repeatedly use that medium afterward due to the obtained gratifications (Hicks et al., 2012). For example, the more time (active months on Twitter, total tweets, and @replies) users spend on Twitter, the more those users are fulfilled their needs for connection (Chen, 2011; Hicks et al., 2012). This continued motivation strongly influences a choice of an individual to visit Yelp.com or other SNSs more frequently (Hicks et al., 2012). According to the Task-Technology Fit (TTF), utilization or technology use affects performance (Zhang et al., 2010). The repetition of a task could improve its performance. Task performance becomes routine and less involved because of the task repetition and familiarity with the task. Experienced users perform shorter and faster visits on a website because of their superior performance and speed. They can find what they are looking for better and are less distracted by unrelated activities (Dahlen, 2002). Each searcher conducts one or multiple experiments to find the most effective way to improve his/ her search performance (Quinn, 2003). For instance, leisure tourists conduct an extensive information search to select the right destination, accommodation, and transportation, to enhance the trip quality, and to decrease their uncertainty. They need to perform more intense searches, particularly when they are very unfamiliar with the place (Tan & Chen, 2012). Habits of users to express their information needs affect the success of searches (Bhat & Shafi, 2014). Therefore, the hypothesis is as follows:

> **Hypothesis 8**. *There is a positive relationship between online search behavior and online search performance*

4. Methods

4.1. Questionnaire design

An online questionnaire was developed to collect data from Internet users both in studying-aged and working-aged people to validate the proposed research framework and associated constructs. The questionnaire had a section relating to the U&G factors, a section involving the search intention, behavior, and performance, and a section collecting the demographic data of respondents in terms of gender, age, educational level, Internet access devices, and Internet access speed. The measured factors were pass time (UG_PT), information seeking (UG_IS), entertainment (UG_ET), anti-traditional media sentiment (UG_AT), Internet ambiance (UG_IA), online search intention (S_I), online search behavior (S_B), online search performance (S_P). All items of factors were measured using a 5-point Likert scale except for online search behavior, which was measured in more detail using a 7-point Likert scale. All measures used in this study were developed based on the available literature and previous studies. The measures for pass time, information-seeking, and entertainment were adapted from Luo, Chea, and Chen (2011). The UG_PT questions were "When I use information from the Internet, I use… because it passes time when I am bored/ when I have nothing better to do/when I want to occupy my time". The UG_IS questions were "When I use information from the Internet, I use… because it is easier/ to get information for free/ to look for information". The UG_ET questions were "When I use information from the Internet, I use… because it is entertaining/ because I just like to use it/ because it is enjoyable". The items for anti-traditional media sentiment and Internet ambiance were adapted from Kaye (2010). The UG_AT questions were "When I use information from the Internet, I use… to expose traditional information sources for bias/ to avoid conservative media information sources/ to expose traditional information sources when they make mistakes". The UG_IA questions were "When I use information from the Internet, I use… because of the good writing of the Internet information/ because the Internet information is humorous/ because the Internet information are interesting". The questions for online search intention were applied from Limberg and Sundin (2006) and S. W.-Y. Lee and Tsai (2011). The S_I questions were "Regarding searching information from the Internet, your interest/ intention… to search for new learning materials/ to read and understand the content of a text/ to organize and synthesize the searched materials or synthesize information from various sources". The measures for online search behavior were adapted from Rieh and Hilligoss (2008). The S_B questions were "Please specify… your frequency to search information from Internet for academic or working achievement/ your frequency to search information from the Internet for problem solving/ your frequency to search information from the Internet for personal information needs". The items for online search performance were modified from Madden, Ford, Miller, and Levy (2006). The S_P questions were "Regarding searching information from the Internet, you mostly… not found the right information - found the right information/ found information slowly – found information quickly/ get insufficient – get sufficient information that you need".

4.2. Data collection and analysis

This study is a sub-project of a project titled INFORMATION VERIFICATION. The respondents were studying-aged users and working-aged users. The questionnaire was pretested to check the comprehensiveness of the questionnaire and to modify the questions (if necessary) first. Next, it was distributed online by two research assistants

using quota sampling (200 full-time students and 200 full-time workers). This study followed the rule of thumb of 5 respondents per variable (Bentler & Chou, 1987). In addition, according to Gorsuch (1983) and Tang, Gong, Han, and Peng (2018), a sample size of 350-400 respondents was quite adequate. A total of 453 valid questionnaires was obtained. Two hundred and ten questionnaires belonged to full-time officers, while 243 questionnaires were from full-time students. The acquired data were then processed in two main steps that were 1) the validation of the measurement model using the Confirmatory Factor Analysis (CFA) and 2) the assessment of the Structural Equation Model (SEM) to explore the relationships among constructs. Cronbach's alpha values were also evaluated to examine the internal consistency of the constructs. The multiple goodness-of-fit indices were assessed for the CFA and SEM.

5. Results

5.1. Demographics of the respondents

The descriptive statistics of respondents were shown in Table 1. Among 453 respondents, most of them were female (69.3%). The majority of respondents were at age 20-24 years old (34.9%). Their educational levels were bachelor's degrees (65.8%). They mostly used mobile phones or notebooks to access the Internet (88.5% and 74%). They generally utilized 3G for their mobile phones (84.8%) or Hi-speed Internet access (62.9%). The last research objective was aimed at how frequently the respondents conduct online searches on the Internet for different purposes. The respondents reported that they mainly searched online information for work or academic purposes 4-6 times per week (17.7%), for problem-solving 1-3 times or 4-6 times per week (21.2%), and for their personal information needs everyday 1-3 hours per day (34.4%). The findings were in line with the study of Chan and Fang (2007), indicating that young people in Hong Kong frequently used the Internet for music and fun. On the other hand, young people in Hong Kong also utilized the Internet so often for homework, particularly female respondents.

Table 1
Descriptive statistics of the respondents

Details	Participants (n = 453)
Gender	
Male	139 (30.7%)
Female	314 (69.3%)
Age (years old)	
< 15	10 (2.2%)
15 – 19	86 (19.0%)
20 – 24	158 (34.9%)
25 – 29	81 (17.9%)
30 – 34	71 (15.7%)
35 – 39	28 (6.2%)
>= 40	19 (4.2%)
Educational Level	
Lower than bachelor degree	60 (13.2%)
Bachelor degree	298 (65.8%)

Higher than bachelor degree	95 (21.0%)
Internet Access Device (respondents can select more than one choice)	
Mobile phone	401 (88.5%)
Tablet	142 (31.3%)
Notebook/ Netbook	335 (74.0%)
Desktop computer	232 (51.2%)
Internet Access Speed (respondents can select more than one choice)	
Edge	97 (21.4%)
3G	384 (84.8%)
Modem	47 (10.4%)
Hi-speed Internet (ADSL)	285 (62.9%)
Frequency to Search Online Information for Work/ Academic Achievement	
< 1 time per week	19 (4.2%)
1-3 times per week	62 (13.7%)
4-6 times per week	80 (17.7%)
Everyday less than 1 hour per day	56 (12.4%)
Everyday 1-3 hours per day	112 (24.7%)
Everyday 4-6 hours per day	79 (17.4%)
Everyday more than 6 hours per day	45 (9.9%)
Frequency to Search Online Information for Problem Solving	
< 1 time per week	40 (8.8%)
1-3 times per week	96 (21.2%)
4-6 times per week	96 (21.2%)
Everyday less than 1 hour per day	95 (21.0%)
Everyday 1-3 hours per day	66 (14.6%)
Everyday 4-6 hours per day	36 (7.9%)
Everyday more than 6 hours per day	24 (5.3%)
Frequency to Search Online Information for Personal Information Needs	
< 1 time per week	9 (2.0%)
1-3 times per week	43 (9.5%)
4-6 times per week	66 (14.6%)
Everyday less than 1 hour per day	90 (19.9%)
Everyday 1-3 hours per day	156 (34.4%)
Everyday 4-6 hours per day	51 (11.3%)
Everyday more than 6 hours per day	38 (8.4%)

5.2. Validation of the measurement model

A CFA was conducted to assess the measurement model. The reliability of each construct was evaluated using both Cronbach's alpha and the Composite Reliability (CR), as shown in Table 2. All CR values were higher than 0.7, showing good reliability (Churchill Jr, 1979; Hair et al., 1998; Wen, Prybutok, & Xu, 2011). The Cronbach's

alpha values demonstrated the acceptable internal consistency of all constructs, based on the ideal threshold of 0.7 and the acceptable threshold of 0.5 (Tillmann & Silcock, 1997).

Table 2
Results of the confirmatory factor analysis

Construct	No. of items	Mean/SD	AVE	CR	Cronbach's alpha
U&G Pass time	3	3.77/0.99	0.676	0.861	0.811
U&G Information Seeking	3	4.42/0.66	0.624	0.833	0.795
U&G Entertainment	3	4.00/0.83	0.656	0.851	0.863
U&G Anti-traditional Media Sentiment	3	3.03/0.99	0.722	0.886	0.834
U&G Internet Ambiance	3	3.63/0.71	0.515	0.760	0.672
Online Search Intention	3	3.84/0.64	0.567	0.797	0.775
Online Search Behavior	3	4.10/1.30	0.657	0.852	0.762
Online Search Performance	3	3.84/0.73	0.628	0.835	0.809

The convergent and discriminant validity were measured to verify construct validity (Tang et al., 2018). All constructs had loadings over 0.515 and all Average Variance Extracted (AVE) measures were higher than the cut off value of 0.5 (Hair et al., 1998; Wen et al., 2011), presenting the adequate convergent validity. The square root of AVE compared to inter-construct correlations, as shown in Table 3, met the acceptance criteria that the square root of AVE is higher than its correlations with other constructs (Fornell & Larcker, 1981; Tang et al., 2018). Therefore, the rule for discriminant validity, which was the degree of construct distinctiveness (Tang et al., 2018), was supported.

Table 3
Inter-construct correlation matrix

Construct	UG_PT	UG_IS	UG_ET	UG_AT	UG_IA	S_I	S_B	S_P
U&G Pass time	**0.822**							
U&G Information Seeking	0.264	**0.790**						
U&G Entertainment	0.487	0.514	**0.810**					
U&G Anti-traditional Media Sentiment	0.131	0.089	0.221	**0.850**				
U&G Internet Ambiance	0.280	0.433	0.534	0.365	**0.718**			
Online Search Intention	0.190	0.508	0.337	0.201	0.440	**0.753**		
Online Search Behavior	-0.099	-0.006	0.164	0.114	0.130	0.319	**0.811**	
Online Search Performance	0.129	0.498	0.299	0.184	0.361	0.716	0.203	**0.792**

The general benchmark criteria were also applied to check the Goodness-of-Fit of the research model (Bentler, 2006; Bollen, 1987; Hooper, Coughlan, & Mullen, 2008; Kline, 2010; Schermelleh-Engel, Moosbrugger, & Müller, 2003; Schreiber, Nora, Stage, Barlow, & King, 2006; Schumacker & Lomax, 2004; Y. S. Wang, Wu, & Wang, 2009). The measurement model was well fitted as shown in Table 4.

Table 4
Fit indices for the measurement model

Goodness-of-fit measure	Recommend Value	Measurement Model
$\chi 2/df$	<= .3	1.99
SRMR	<= .08	.0553
GFI	>= .9	.928
AGFI	>= .9	.902
NFI	>= .9	.908
TLI	> .9	.939
IFI	> .95	.952
CFI	> .95	.951
RMSEA	< .06	.047
p-value for test of close fit	$.05 <= p\text{-value} <= .10$	*p-value* = .789
HOTLER	> 200	281

5.3. Fitting the structural model

Next, the SEM analysis was conducted to test the significance of the research model and to explore the relationships among constructs. As shown in Table 5, all common benchmark criteria were satisfied, indicating the adequate fit of the structural model. The coefficients of the model showed a positive and significant relationship between the information-seeking motive and the Internet search intention (H2) ($\beta = 0.416.$ $p < 0.001$) and a positive and significant relationship between Internet ambiance and online search intention (H5) ($\beta = 0.254.$ $p < 0.005$). However, there are no significant relationships between pass time, entertainment, and anti-traditional media sentiment, and online search intention (H1, H3, and H4 respectively). The structural model also supports the importance of online search intention on its corresponding behavior (H6) ($\beta = 0.304.$ $p < 0.001$) and the strong relationship between the intention and online search performance (H7) ($\beta = 0.745.$ $p < 0.001$), but no significant effect of the Internet search behavior on search performance (H8). The squared multiple correlations of the SEM output were as follows: online search intention 0.345; online search behavior 0.092; and online search performance 0.546. The research model could explain 54.6% of the variance in Internet search performance. In sum, four of eight hypotheses were supported, as presented in Fig. 2.

From the path coefficients, the influence of U&G pass time ((-0.015)*0.745 + (-0.015)*0.304*(-0.021) = -0.011), U&G information seeking (0.416*0.745 + 0.416*0.304*(-0.021) = 0.311), U&G entertainment (0.001*0.745 + 0.001*0.304*(-0.021) = 0.001), U&G anti-traditional media sentiment (0.065*0.745 + 0.065*0.304*(-0.021) = 0.048), U&G Internet ambiance (0.254*0.745 + 0.254*0.304*(-0.021) = 0.187),

online search intention (0.745 + 0.304*(-0.021) = 0.741), and online search behavior (-0.021) on online search performance were calculated. Findings indicated that online search intention, U&G information seeking, and U&G Internet ambiance had the strongest effects on online search performance respectively.

Table 5
Fit indices for the structural model

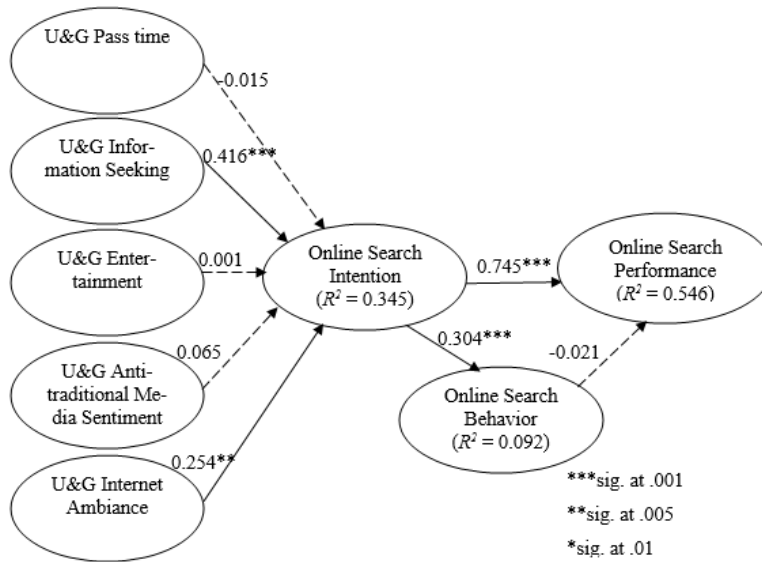| Goodness-of-fit measure	Recommend Value	Structural Model
χ^2/df	<= .3	1.966
SRMR	<= .08	.0599
GFI	>= .9	.928
AGFI	>= .9	.904
NFI	>= .9	.906
TLI	> .9	.940
IFI	> .95	.951
CFI	> .95	.951
RMSEA	< .06	.046
p-value for test of close fit	*.05 <= p-value <= .10*	*p-value* = .833
HOTLER	> 200	284

Fig. 2. Structural model and R^2 values

6.   Discussion

The positive relationship between pass time and respondents' intention to seek information online was not supported. The result could be explained by the small significance of pass time motive to use Yelp.com of users who only read reviews (Hicks

et al., 2012) and a small number of respondents who used Wikipedia for passing time (S. Lim, 2009). There was a positive effect of information seeking on online search intention, harmonizing with the literature studies in the Research Hypotheses section. This study presented different viewpoints from the study of Song, Larose, Eastin, and Lin (2004), specifying that information-seeking gratification was unrelated to the Internet addiction tendency; the study of H. Lim and Kumar (2017), showing the insignificant relationship between the informational gratification of participants and the likelihood to commit brand online social networking; and the study of Ko et al. (2005), indicating the insignificance of informational motivation as a driver of a user's duration on a website.

There was no impact of entertainment gratification on search intention. The result was consistent with the insignificant influence of entertainment motivation on a user's time usage on a website (Ko et al., 2005), the insignificant relationship between entertainment and users' intention to share news on social media (C. S. Lee & Ma, 2012), the moderate playful experiences with Wikipedia of users (S. Lim, 2009), and the insignificant correlation of entertainment and the number of shared photos on SNSs (Malik et al., 2016). There was no positive influence of anti-traditional media sentiment gratification on the Internet search intention. The result was supported by the study of Lewis and Mallaiah (2014), showing that the satisfaction with printed media were quite high, but the satisfaction with online resources were moderate; the study of Chandel and Saikia (2012), emphasizing that printed material had not been replaced completely by online resources; the study of Johnson and Kaye (2002), pointing the insignificance impact of the convenience of using a website on the reliance on traditional media such as newspapers, television.

Internet ambiance was a positive antecedent of online search intention, conforming to the past research in the Research Hypotheses section. However, the results differed from the study of Peng et al. (2012), rejecting that the more favorable an individual perceived the Internet, the stronger intention the person had towards the Internet adoption. Conforming to the TPB, online search intention affected online search behavior. There was also a strong impact of online search intention on search performance. Nevertheless, online search behavior did not directly increase online search performance. The insignificant relationship could be explained by the study of Singer et al. (2015), indicating that search performance depended on user types; the study of Hicks et al. (2012), pointing the irrelevance of the frequency of Yelp.com usage and the selection of Yelp.com; the study of Pennington-Gray et al. (2011), showing the negative impact of extent of Internet information search on the likelihood to travel in the tourism context.

7. Conclusion and implications

People heavily rely on online search nowadays, but only a few studies have investigated what drives their search performance. Therefore, this study aims to investigate the influence of U&G factors on online search intention, to explore the impact of online search intention on search behavior, to study the relationships between online search intention/ behavior and online search performance, and to explore the frequency of the Internet search for each search goal. In addition, this study focuses on the antecedents of online search intention, which has been rarely explored in the literature. The findings support the influence of information-seeking and Internet ambiance gratifications on online search intention. Online search intention together with online search behavior strongly affects the search performance. The respondents frequently use online search to

fulfill different purposes: personal information needs, problem-solving, and academic/ working achievements.

7.1. Theoretical contributions

This study extends the body of literature regarding the Internet, the U&G, the TPB, and online search performance and presents the cross-cultural differences between Asian and Western countries, especially developing countries like Thailand. Samples of this research also included not only full-time students but also full-time officers. This study reveals the importance of online search intention according to the TPB on search performance. It also confirms the intention-behavior relationship between online search intention and consequent behavior. Besides, interestingly, online search performance is strongly significantly driven by searchers' intention, but not their behavior. Compared to other studies in the social sciences, R-squared values predicted by TPB factors proposed by this study are also quite high. Although online search behavior is not directly linked to online search performance, this study covers a wide range of searches (search for work or academic achievement, problem-solving, and personal information needs), which past research has never examined before. Some U&G factors are rarely observed in the literature but are confirmed their importance in this study i.e., Internet ambiance.

7.2. Managerial implications

Understanding the needs of Internet users to search online could help information providers such as librarians or IT officers to prepare suitable online sources that match user motivations most. Findings show that the online search performance of users will be significantly improved if they have a strong intention to search through the Internet. Respondents who intend to seek new learning materials, to read or understand the content, and to organize or synthesize information from various sources will find the right information quickly and get enough information that they need. Their intentions to search online also lead them to search more frequently. Students and workers generally search online information because of academic or working purposes, problem-solving, and personal information needs, respectively. Users' intentions are driven mainly by their information-seeking motives. They use the Internet because of its easiness. They want to look for information online and get free information. Users also use the Internet for information because online information is interesting, humorous, and good written. These gratification properties could be applied to the provided sources by the information providers. For example, libraries or IT people should provide good, entertaining, and attractive information/ content through free and easy-to-access online channels/ sources. These facilities will lead more users to be interested in online sources. In addition, users will conduct a successful information search if they have certain search intentions.

7.3. Limitations and future research

This research has been carried out using a sample of Thai people only. The sample contains a high proportion of respondents aged 20 to 24. Thus, the generalization of findings should concern practitioners who are interested to apply the results. Nevertheless, this study is one of the first empirical research to explore the online search intention, behavior, and performance of both students and workers, using the U&G theory (common gratifications and special gratifications) and the TPB theory.

In the future, the study should be replicated using samples from other Southeast Asian countries. Specific information sources such as online databases and specific information types such as journals or articles should be examined. According to Singer et al. (2015), there are six basic Internet user types consisting of active versatile Internet users, practical work-oriented Internet users, entertainment-oriented active Internet users, practical information-oriented small–scale Internet users, entertainment- and communication-oriented small–scale Internet users, and small–scale Internet users. Future research should be expanded to determine the detailed gratifications, information types, and preferences of each user type to increase online search performance. Experimental studies should be conducted to understand the different online search intentions, behavior, and performance for different search tasks (simple search, complex search, and exploratory search).

Author Statement

The author declares that there is no conflict of interest.

ORCID

Mathupayas Thongmak https://orcid.org/0000-0001-9064-2071

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