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Role of social media in information-seeking behaviour of international students

A systematic literature review

A systematic literature review

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Abstract

Purpose – The purpose of this paper is to investigate the information-seeking behaviour of international students in terms of their information needs and to highlight the role of social media.

Design/methodology/approach – In this paper, a systematic literature survey was conducted in order to investigate information-seeking trends among international students while using social media. As a result, an exhaustive systematic literature review (SLR) was carried out in order to investigate social media as a source for the observation of the behaviours of international students. For this purpose, 71 articles were selected from various well-known sources after an intensive SLR process of searching, filtering and enforcing the inclusion and exclusion criteria.

Findings – As an outcome of this study, the information-seeking behaviour of international students was highlighted with respect to social media as a source of information. In addition, this research identifies the information needs of the international students and categorizes them by the roles played by the social media in fulfilling the information needs.

Practical implications – A comparative study that highlighted the dearth of studies which merge the social media and information-seeking behaviour of international students as well as identify the future direction for the researchers and for benefits of international students.

Originality/value – A detail SLR which highlights the need of shifting the information seeking behaviour from libraries to social media in regard to the new environment for international students.

Keywords Social media, Systematic literature review, International students, Information need, Information-seeking behaviour, Role of social media

Paper type Literature review

Introduction

International students come from various countries with different backgrounds and cultures. Therefore, information seeking is a problem in a new environment, where international students need large amounts of information (Safahieh and Singh, 2006; Ward *et al.*, 2005; Yi, 2007). In addition, the information needs and information-seeking behaviour of international students are different from those of the students belonging to the host country (Ishimura and Bartlett, 2014). Further, Sin (2015) found that it is more difficult for international students to find legal, financial, personal, cultural and transportation



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information compared to academic information. In the past, libraries were major sources of information for international students, but research that covers their information needs in a new environment is limited (Ishimura and Bartlett, 2014; Liu and Winn, 2009). Furthermore, issues in the new environment may cause mental problems and other forms of distress for international students, and they are unable to obtain the desired output from libraries (Liu, 2009; Ward and Kennedy, 1993b). However, with the advancement in technology, the trend of seeking information has changed, especially in the academic (Cerretani *et al.*, 2016) and health context (Sezer, 2016). Hence, nowadays, social media makes life easy for international students (Saw *et al.*, 2013). But there is a dearth of studies specifically investigating the role of social media in supporting information-seeking behaviour of international students (Ishimura and Bartlett, 2014; Liu and Winn, 2009; Saw *et al.*, 2013). Therefore, it is necessary to conduct studies on the information-seeking behaviour of international students using social media. However, in order to understand information-seeking behaviour on social media, it is necessary to understand the general meaning of information-seeking behaviour. First, it will help to correlate the social media context as an information-seeking source during research. Second, this understanding will enable adaptations to be made to social media in order to change the information-seeking behaviour of international students with regard to their information needs.

According to Wilson (1999), information-seeking behaviour arises from the need for information. It is a sub-part of information behaviour. Ellis *et al.* (1993) and Ellis (1989) emphasized that information-seeking behaviour consists of eight core sub-processes, which include starting, chaining, browsing, differentiating, monitoring, extracting, verifying and ending. The seeker initiates the search process (starting), followed with looking for footnotes and citations (chaining), then conducting semi-directed or semi-structured searching from the material (browsing), differentiating the information source (differentiating), keeping up-to-date (monitoring), extracting the relevant material (extracting), checking the accuracy (verifying) and finally tying up loose ends with final search (ending) (Ellis, 1989; Ellis *et al.*, 1993).

Furthermore, Kuhlthau (1991) complemented Ellis's model and called the activities performed during the information-seeking behaviour stages. The stages are initiation, selection, exploration, formulation, collection and presentation (Kuhlthau, 1991, 2004). Initially, the information seeker initiates the information searching due to lack of knowledge on a certain topic that needs answering (initiation), the seeker gets the information about general topic (selection), starts the searching on topic (exploration), focuses on a specific topic (formulation), gets the relevant data (collection) and presents the finding (presentation) (Kuhlthau, 1991).

Other researchers, such as Wilson (1997), defined information-seeking behaviour in terms of passive attention, passive research, active research and on-going research. Passive attention and passive research are when an individual unintentionally gains knowledge while not actively conducting any search for information, while active and on-going research involve the active task of performing a search process. Nevertheless, researchers (Ellis, 1989; Krikelas, 1983; Kuhlthau, 1991; Leckie *et al.*, 1996; Wilson, 1981, 1997) agreed that information-seeking behaviour basically arises from a need, and that need is fulfilled by some source. With regard to information-seeking behaviour on social media, Chen *et al.* (2014) argued that active information-seeking behaviour on social media involves affective commitment, continuance commitment and normative commitment. However, information-seeking behaviour that is attributed to the search for information from traditional sources such as reading materials like newspapers, books, magazines and journals, is slightly different from information-seeking

behaviour with regard to online resources, including social media (Balakrishnan and Gan, 2016; Borrego and Anglada, 2016; Khoo, 2014). According to Kim *et al.* (2013) and Tess (2013), the role of social media in supporting information-seeking behaviour is understudied and not well understood. Further, research on the use of social media in facilitating information-seeking among international students is also lacking (Jansen *et al.*, 2011; Li and Chen, 2014; Smith and Khawaja, 2011).

Social media plays a vital role in the sharing of information and is used to convey different types of information (i.e. sensitive, sensational, political and casual information) (Osatuyi, 2013). Information is shared in social media in real time. Hence, the information sought in social media generally consists of the most recent and up-to-date information. Reviews and recommendations for information seeking can be easily found in the social media, hence making it a source of information for students (Balakrishnan and Gan, 2016; Kim *et al.*, 2014). The reasons for using social media as an information-seeking tool are diverse, and include social interaction, information seeking, passing the time, entertainment, relaxation, expression of opinion, information sharing and surveillance/knowledge about others (Lin and Lu, 2011; Osatuyi, 2013; Whiting and Williams, 2013). In terms of the types of social media, according to Kim *et al.* (2014), 98 per cent of users use social network sites (SNSs), 95 per cent use wikis as an information source, 73 per cent use user reviews, 69 per cent use media-sharing sites and 49 per cent gain information from question and answer sites. However, only between 25 and 34 per cent of users seek information from blogs and microblogs because, according to Kim *et al.* (2014), the respondents of their study rarely used blogs and microblogs as sources of information. Meanwhile, Isari *et al.* (2016) reported a surprising outcome, where during collaborative problem solving, the results of Twitter and Skype as information sources were the same even in terms of the length of the messages, the volume, subjects and changes in the frequency, but both were equally effective no matter which type of social media was used. Further, SNSs affect the proficiency of international students with regard to whom and how they communicate with local hosts (Raymond and Wang, 2015) but are limited to identifying the reduction of uncertainty and anxiety during communication. Information-seeking behaviour is used to reduce the uncertainty (Wilson, 1999), but is lacking in research for identifying it in a social media context.

In general, limited research has been conducted on the topic of information-seeking behaviour of international students and their use of social media to support their information seeking in terms of active, passive and on-going information-seeking behaviour. Therefore, the main objective of this study was to understand the role of social media in supporting the information-seeking behaviour of international students. This paper is also aimed at providing a review so as to gauge the current status of knowledge on the topic. Therefore, there is a need to summarize the existing literature by way of providing a systematic literature review (SLR) on the topics mentioned. The paper is organized as follows. First, we discuss the methods applied for the SLR. Then, the results of the review are discussed, and finally, we conclude with a summary of the paper, and also highlight the limitations of the research and make recommendations for future works.

Methods

A SLR is aimed at presenting and evaluating the literature related to the research topic by utilizing a thorough and auditable methodology (Carver *et al.*, 2013; Kitchenham, 2004; Levy and Ellis, 2006). This research adopted the SLR, a methodology proposed by Kitchenham (2004) and Kitchenham *et al.* (2008) in order to understand the role of social media in the context of the information-seeking behaviour of international students.

This SLR involves several discrete activities which are categorized into three main phases: planning the review, conducting the review and reporting the review. The validity and reliability of the systematic review process are ensured by following each step as prescribed in the three phases.

The planning activity focuses on developing the review protocol. It explains the workflow of how the review is conducted by the researcher. The planning phase involves the identification of the research questions, the search strategy and the evaluation of the resources, the inclusion and exclusion criteria, the quality assessment of the resources, and the method of analysis. The second phase executes the defined protocol in the planning phase, while the explanation of the final report is elaborated in the final phase. However, the methodology by Kitchenham *et al.* (2008) was adapted based on the recent work of Esfahani *et al.* (2015). Esfahani *et al.* (2015) also conducted a SLR titled “The Status Quo and the Prospect of Green IT and Green IS: A Systematic Literature Review” and simplified the methodology for easy reference. However, the paper by Esfahani *et al.* (2015) was lacking in the use of databases.

Figure 1 depicts the activities of each phase (Esfahani *et al.*, 2015), while each of the SLR phases will be described in the following subsections.

Phase 1: planning

1.1 Identifying the need

The introduction section mentioned that there is a need to study information-seeking behaviour and the role of social media in supporting the information-seeking behaviour of international students. Therefore, two research questions were developed to assist the literature review process.

1.2 Research questions

The research questions that were specifically addressed by this study were as follows:

- RQ1. What information needs concerning international students require solutions through information seeking?
- RQ2. What are the roles of social media in supporting the information-seeking behaviour of international students?

Phase 2: conducting

2.1 Conducting the review

In order to get a sense of the current state of the research on information-seeking behaviour, the role of social media and international students, both academic journals and conference proceedings were examined through scientific databases. First, the review began with a search of seven premier IS academic journals categorized as the top IS basket journals (Levy and Ellis, 2006). These journals were the *Management Information Systems Quarterly*, *Information Systems Research*, *Journal of Management Information Systems*,

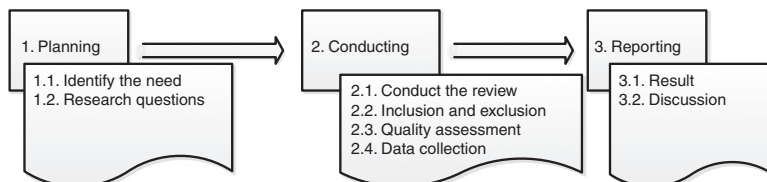


Figure 1.
Activities in
systematic literature
review adopted from
Esfahani *et al.* (2015)

Journal of the Association for Information Systems, Communications of ACM, European Journal of Information Systems and Information Systems Journal.

For a further search and a more effective literature coverage, the suggestion of Levy and Ellis (2006) was followed, whereby the following journals were also searched: *Journal of Strategic Information Systems, Journal of Information Technology, Journal of Computer Information Systems, Information Systems Frontier, Information and Management, Communications of the Association for Information Systems, Australian Journal of Information Systems, and Academy of Management Journal.* Renowned AIS-based conferences were also used (Alderson *et al.*, 2004; Kitchenham, 2004; Petticrew and Roberts, 2006; Sauerland and Neugebauer, 2000), namely, the Proceedings of the International Conference on Information Systems, Hawaii International Conference on System Sciences, American Conference on Information Systems, Australian Conference on Information Systems, and Pacific Asia Conference on Information Systems.

However, this study did not rely solely on ISI journals and conferences for fear of missing important data from other sources. Even Kitchenham *et al.* (2008) mentioned the usefulness of using databases, giving the example of Juristo *et al.* (2006). However, Juristo *et al.* (2006) only used the ACM and IEEE electronic databases, whereas in this study, four scientific online databases were used based on the guidelines of Dybå and Dingsøy (2008), and the relevancy and availability of the search terms. Table I shows the selected scientific online databases and the reasons for using them. Furthermore, additional studies from non-ISI journals or conferences were included if they were determined to be relevant and useful for the study.

The four online databases listed in Table I were searched using the listed search expressions shown in Table II.

Microsoft Excel was used together with Mendeley software for the purpose of managing the retrieved articles. Microsoft Excel was used to assist in the drawing of graphs and in the calculations, whereas Mendeley kept the articles according to the year/author/time they were published in and managed the references during the writing of the SLR.

Online databases	Reason to choose
Science Direct (SD)	Covers the physical sciences and engineering, life sciences, health science, social science and humanities (www.sciencedirect.com/)
Web of Science (WOS)	Covers the source of intelligent information for businesses and professionals (http://thomsonreuters.com/about-us/)
Scopus (SCP)	Covers the fields of science, technology, medicine, social sciences and arts and humanities, analyse and visualize the research (www.elsevier.com/online-tools/scopus)
IEEE	Covers the professional association for the advancement of technology (www.ieee.org/index.html)

Table I.
Selected scientific
online databases

A1. Information seeking	B1. International students	C1. Issues	D1. Social technology D2. Social media
A2. Information seeking behaviour	B2. Abroad students	C2. Difficulties	D3. Digital media D4. Digital technology
	B3. Overseas students	C3. Challenges	D5. Facebook D6. Twitter
	B4. Foreign students		D7. YouTube

Table II.
Search expressions
used in the study

2.2 Study selection and the inclusion and exclusion criteria

The selection of studies was done through five phases, as outlined in Table III.

The purpose of this selection procedure was to identify and select the papers that matched the objectives of the SLR. It was not expected that the selected keywords (through databases) would return all the papers related to the topic. So, some inclusion and exclusion criteria were applied to refine the results. The Mendeley reference manager helped to manage the duplicate references more efficiently and to generate an integrated file.

The inclusion and exclusion criteria were used to ensure that only the relevant articles were included in the SLR process. As social media started to become a phenomenon in 2000 (Edosomwan *et al.*, 2011), the researchers decided to include the time frame from the year 2000 to 2015 as summarized in Table IV. Meanwhile, information seeking behaviour topic is used for the last four decades and to support the statements we added the old references. The inclusion and exclusion criteria are presented in Table IV.

2.3 Quality assessment

In the quality assessment step, each of the included papers was assessed as shown in Figure 2. This step was carried out during the data extraction activity and was used to ensure that the included paper made a valuable contribution to the SLR process. The following three quality assessment criteria (Dyba and Dingsøy, 2008) were applied to all the included papers as well as summarized in list below to get the precision results:

- Rigor: has a thorough and appropriate approach been applied to key research methods in the study?
- Credibility: are the findings well-presented and meaningful?
- Relevance: how useful are the findings to the higher education research community?

Quality assessment criteria (Dyba and Dingsøy, 2008).

Quality threshold:

- (1) Is the paper based on research (or is it merely a “lessons learned” report based on expert opinion)?

Table III.
Inclusion phases

Phase	Phase description
P1	Selection of studies-based on the conducted search
P2	Screening: inclusion-based on the inclusion criteria
P3	Screening: exclusion-based on the exclusion criteria
P4	Screening: exclusion-based quality assessment criteria
P5	Confirmation

Table IV.
Inclusion/
exclusion criteria

Inclusion criteria	Indirectly or directly answer any one or more research question Focus on the role of social media in information seeking behaviour and problems of international students Published in years: 2000-2015
Exclusion criteria	Exclude irrelevant books or overhead presentations Exclude which is not related to the research field Papers when only abstract and no full text were available Articles that did not match the inclusion criteria

- (2) Is there a clear statement of the aims of the research?
 (3) Is there an adequate description of the context in which the research was carried out?

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Rigor:

- (4) Was the research design appropriate to address the aims of the research?
 (5) Was the recruitment strategy appropriate to the aims of the research?
 (6) Was there a control group with which to compare treatments?
 (7) Was the data collected in a way that addressed the research issue?
 (8) Was the data analysis sufficiently rigorous?

Credibility:

- (9) Has the relationship between researcher and participants been considered to an adequate degree?
 (10) Is there a clear statement of findings?

Relevance:

- (11) Is the study of value for research or practice?

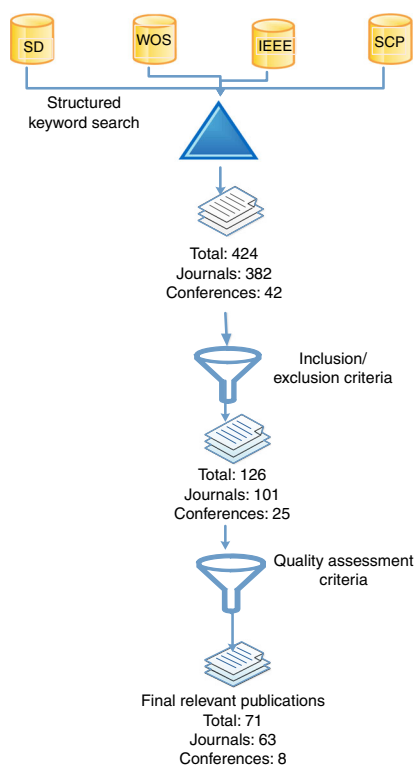


Figure 2.
Publication collection
method flow

The first three criteria formed the minimum quality threshold, so as to exclude those papers which did not meet the objectives of the review. The five criteria (4-8) covered the issue of rigor, which considered the research methodology applied, data collection tools and techniques, and also the trustworthiness of the findings. Criteria 9 and 10 were related to the credibility of the papers, which ensured the validity and meaningfulness of the findings. The final criterion (11) covered the relevance of the study to the higher education research community. The quality of the selected papers was tested by the utilization of a measurement instrument based on the defined criteria in the list above (see Figure A1).

2.4 Data collection and analysis

A data collection form was designed to collect the most relevant information from the selected papers in order to facilitate the process of analysing the compiled data. This form, which from now on will be referred to as the data schema, is presented in Table V. The schema was completed following a further review of the selected studies by the researchers, before agreement was reached on all the issues in the final data that had been collected.

Papers were analysed by two researchers (S.H, S.B) in the group. The researchers analysed the papers based on the codes of broad themes (Dybå and Dingsøy, 2008). However, the codes were assigned independently. There was a high level of agreement between the researchers. All disagreements were discussed until a consensus was met. Any conflicts were considered and solved by all five researchers. The findings presented in Tables VI and VII are the results of the codes of broad themes after analysing the collected data. The following section on Phase 3 presents the reports on the findings of the SLR and the discussions.

Phase 3: reporting

3.1 Findings

This section reports the results of the SLR that was conducted. As highlighted in Section 2, the objective of the selection process was to identify as many relevant papers as possible for the SLR. The strategy for conducting the search and selection of the relevant papers through databases is shown in Figure 2.

The initial search was conducted through the selected outlets by using the defined search expressions and the search process that had been explained previously. The initial search result returned a total 424 publications, including 382 journal articles and 42 conference papers, as summarized in Figure 2.

Basic information	It includes the title and the author(s) of the paper
Publication	It refers to whether the publication is a journal or conference proceeding
Year	It refers to the publication year of the article
Objectives	It refers to the objectives that the paper tries to fulfil
Filed	It identifies the stream of the paper, whether it is related to information seeking behaviour or social media or international students
Focus	It deals with the focus of the paper. It focuses on the role of social media, providing information to overcome the problems of international students related to study abroad
Future work	It proposes the future work and the challenges related to the research questions

Table V.
Data schema

Categories of information needs	Specific information needs	Author/s
Academic related	Academic adjustment, academic performance, international service programme, academic difficulties, adapting to academic work, future career adapting, method of teaching problems, admissions and selection, orientation services, student activities, academic life, living on or off campus, transportation, visa, courses and education	Abdullah <i>et al.</i> (2013), Alavi and Mansor (2011), Baharak and Roselan (2013), Catalano (2012), Chen and Chen (2009), Mahmud <i>et al.</i> (2010), Malaklolunthu and Selan (2011), Murphy and Özturgut (2009), Novera (2004), Rienties <i>et al.</i> (2012), Safahieh and Singh (2006), Senel <i>et al.</i> (2007), Shahraniza <i>et al.</i> (2014), Smith and Khawaja (2011), Wan <i>et al.</i> (2013), Wei <i>et al.</i> (2011), Wilkins <i>et al.</i> (2012), Yusoff and Othman (2011) and Zhai (2004)
Financial related	Financial constraint, fee, financial aid, part-time job, lacks adequate research support and scholarship	Baharak and Roselan (2013), Chen (1999), Harman (2003), Li and Kaye (1998), Malaklolunthu and Selan (2011), Mori (2000), Murphy and Özturgut (2009), Roberts <i>et al.</i> (1999), Senel and Kamini Maraj (2007), Sherry <i>et al.</i> (2010) and Smith and Khawaja (2011)
Sociocultural related	Personal adjustment, social adjustment, religion differences, cultural adjustment, relationship of international students and teachers, food, lifestyle, language barrier, English difficulties, loneliness, acculturation stress, friendship and interaction	Alavi and Mansor (2011), Bochner <i>et al.</i> (1997), Deshpande and Viswesvaran (1992), Hsieh (2006), Jeong (2004), Klineberg and Hull (1979), Lin and Yi (1997), Liu (2009), Malaklolunthu and Selan (2011), Poyrazli and Lopez (2007), Safahieh and Singh (2006), Senel and Kamini Maraj (2007), Ward and Kennedy (1993a, b), Ward <i>et al.</i> (1998) and Zhou <i>et al.</i> (2008)
Health related	Health insurance, climate, health services, living services	Alavi and Mansor (2011), Liu (2009), Mahmud <i>et al.</i> (2010), Safahieh and Singh (2006), Senel and Kamini Maraj (2007), Shahraniza <i>et al.</i> (2014), Smith and Khawaja (2011), Wilson, (2000), Wilson (1997) and Yoon and Kim (2014)

Table VI.
Information needs
of international
students

Role of social media	Author/s
Social interaction	Ellison <i>et al.</i> (2010), Garrett and Cutting (2012), Luo and Zhong (2015), Malaklolunthu and Selan (2011), Shao (2009), Sin (2015), Sin and Kim (2013), Wan <i>et al.</i> (2013) and Wodzicki <i>et al.</i> (2012)
Information source	Austin <i>et al.</i> (2012), Cox and McLeod (2014), DeAndrea <i>et al.</i> (2012), Friesen and Lowe (2012), Garcia-Martin and Garcia-Sánchez (2015), Gray <i>et al.</i> (2013), Greene <i>et al.</i> (2011), Hamid <i>et al.</i> (2015), Hendrickson <i>et al.</i> (2011), Himelboim <i>et al.</i> (2013), Lai <i>et al.</i> (2013), Lee and Ma (2011), Liyana and Noorhidawati (2014), Oh <i>et al.</i> (2013), Peng <i>et al.</i> (2014), Robillard <i>et al.</i> (2013), Shao (2009), Tan (2013), Tyshchuk <i>et al.</i> (2014), Valenzuela <i>et al.</i> (2009) and Zhou <i>et al.</i> (2008)
Education advocacy	Kim <i>et al.</i> (2013), Oh <i>et al.</i> (2013), See <i>et al.</i> (2014), Shahraniza <i>et al.</i> (2014), Shao (2009), Whiting and Williams (2013), Yoon and Kim (2014) and Yusoff and Othman (2011)

Table VII.
Role of social media

After the selection of papers based on the defined criteria (see Table V), the quality evaluation process was performed. The quality of the selected papers was tested by the utilization of a measurement instrument based on the defined criteria in Table V. Each included study was rated based on its quality threshold, rigor, credibility and relevance. Then, the questions on the quality measures (see Figure A1) were based on a yes or no scale, with “Yes” indicating the relevancy of the paper according to quality and “No” indicating the irrelevancy of the paper in meeting the quality. Based on the “Yes” and “No” scales, different quality assessment categories (as defined in the above list) were illustrated for each included paper, as shown in Figure 3. As it was obvious that almost all the papers were within the threshold of quality to be included, this showed that the relevance and rigor quality assessment criteria had more coverage. In contrast, credibility had less coverage. At least 80 per cent of all the quality assessment criteria were covered by the “Yes” answers.

3.2 Results and discussion

This section discusses the findings framed around the two research questions posed earlier in Section 2.

3.2.1 RQ1: What information needs concerning international students require solutions through information seeking? Based on the review, there are a variety of information needs of international students, as highlighted in Table VI. The table shows that the majority of the researchers discussed the information needs related to academic, financial, sociocultural and health issues.

For the purpose of discussion, these information needs are categorized as: academic-related information-seeking needs, financial-related information-seeking needs, sociocultural-related information-seeking needs and health-related information-seeking needs.

Academic-related information-seeking needs. One of the difficulties faced by international students is adjusting to a new academic environment in a new country (Rienties *et al.*, 2012; Yusoff and Othman, 2011; Zhai, 2004). Hence, these students have to seek information to prepare and to adapt to this new environment. The issues that are known to be related to the academic environment are the language barrier (Mahmud *et al.*, 2010; Wei *et al.*, 2011), academic adaptation (Abdullah *et al.*, 2013; Baharak and Roselan, 2013; Chen and Chen, 2009; Malaklolunthu and Selan, 2011; Smith and Khawaja, 2011; Wan *et al.*, 2013), academic performance (Murphy and Özturgut, 2009; Shahrniza *et al.*, 2014), financial problems, funds, admission processes and student insurance (Alavi and Mansor, 2011; Safahieh and Singh, 2006; Senel and Kamini Maraj, 2007; Smith and Khawaja, 2011). In order to be able to make a successful adjustment to the academic environment, international students need to be imbued with positive academic attitudes and beliefs, and be provided with counselling and

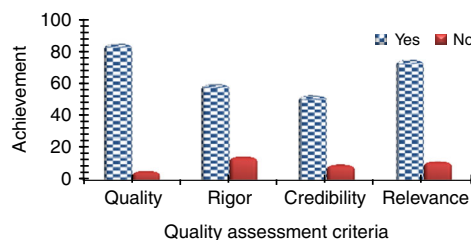


Figure 3.
Quality assessment
results for
included papers
and responses

language coaching (Wilkins *et al.*, 2012). Catalano (2012) demonstrated that students begin their search for information on the internet, and they then consult with the faculty and librarians. Furthermore, most international students do not face adjustment problems, but do encounter problems with academic processes (i.e. exam structure, fees structure and attendance), and limited financial aid and services in terms of their careers (Shahraniza *et al.*, 2014). Some international students face problems because of their lack of proficiency in English, academic requirements and the lack of facilities provided for Muslim international students in non-Muslim countries (Novera, 2004).

Financial-related information-seeking needs. The majority of international students face financial problems due to work restrictions in the host country (Li and Kaye, 1998; Roberts *et al.*, 1999; Senel and Kamini Maraj, 2007). The study showed that international students face financial constraints (Malaklolunthu and Selan, 2011; Smith and Khawaja, 2011), lack of part-time jobs (Malaklolunthu and Selan, 2011; Shahraniza *et al.*, 2014) and lack of research support and scholarships (Harman, 2003; Murphy and Özturgut, 2009). Another reason related to the financial aspect is the comparatively high tuition fees in universities in the developed countries (Chen, 1999; Mori, 2000). This shows that international students need sources of information from which they can obtain knowledge about part-time jobs or some sources of income (Malaklolunthu and Selan, 2011). Although international students on scholarships or assistantships do not face as many financial problems as compared to those without such support, yet, in most instances, the assistance paid out to students may still be insufficient (Sherry *et al.*, 2010).

Sociocultural-related information-seeking needs. Adapting to a new culture is another challenge that international students encounter in a new environment. Thus, there is a need to provide an interaction platform for international students seeking information pertaining to the local culture. International students face problems like personal adjustment, social adjustment, religious adjustment, cultural adjustment (Malaklolunthu and Selan, 2011), relationship with other students and teachers (Alavi and Mansor, 2011), food, lifestyle, language barrier, English difficulties (Jeong, 2004; Safahieh and Singh, 2006), loneliness, acculturation stress, friendship and interaction (Poyrazli and Lopez, 2007; Senel and Kamini Maraj, 2007). There are different factors that affect the cultural adaptation. Some of these are information about the new culture (Ward and Searle, 1991), cross-cultural training (Deshpande and Viswesvaran, 1992), sociocultural issues (Ward *et al.*, 1998), strength of permanent and temporary residents in the host country (Ward and Kennedy, 1993a), cultural distance (Ward and Kennedy, 1993a), network of friends, value of the contact with the host country of residence (Bochner *et al.*, 1997; Zhou *et al.*, 2008) and previous experience abroad (Klineberg and Hull, 1979). All these factors have a significant impact on the information-seeking behaviour of international students. For example, strong social connections and a friendship network with residents in the host country will help them to adjust to a new cultural environment (Malaklolunthu and Selan, 2011). But if the international students are faced with acculturation, they may experience mental problems and depression (Liu, 2009; Ward and Kennedy, 1993b). However, a study by Hsieh (2006) showed that international students from Asia suffer more difficulties in adopting new cultural norms because their cultural background is different from the culture of the Western countries, and they are not proficient in English (Lin and Yi, 1997).

Health-related information-seeking needs. Health is another issue faced by international students in a new environment (Wilson, 2000). Generally, every other

issue (academic, sociocultural or financial) affects the well-being or health of the international students. Some of the health issues faced by international students are the effects of the weather, which is different from that in their home country (Mahmud *et al.*, 2010), poor health services (Safahieh and Singh, 2006), difficulties in their health insurance, which may not cover all hospitals (Senel and Kamini Maraj, 2007), difficulty in understanding the health information and resources (Yoon and Kim, 2014) and poor living conditions (Alavi and Mansor, 2011; Shahrniza *et al.*, 2014). Another health-related issue is mental health problems (Liu, 2009), while academic stress can lead students into negative habits such as smoking, alcohol consumption and drug taking (Wilson, 1997). Financial problems can also affect the academic performance of international students (Smith and Khawaja, 2011). Furthermore, medical treatment for international students is another issue. For them, medical treatment is very expensive as non-citizens rarely benefit from the medical incentives given to the local population, thus leading international students to seek health-related information from the internet or social media (Yoon and Kim, 2014).

3.2.2 RQ2: What are the roles of social media in supporting the information-seeking behaviour of international students? It can be posited that social media is an important source for the needs of the information for international students (Reddy, 2014; Whiting and Williams, 2013; Wiid *et al.*, 2014). Generally, international students come from different countries with different backgrounds, cultures, education, academic environments and demographic backgrounds (Abdullah *et al.*, 2013; Sherry *et al.*, 2010; Sin, 2015). Therefore, they face different problems in adjusting to a new environment (Safahieh and Singh, 2006). According to Smith and Khawaja (2011), one of the reasons is that when international students come into another country, they experience all kinds of acculturation, stresses and difficulties in adjusting to the environment in the host country. However, some international students find it enjoyable to come to a new country and experience a new culture (Hong, 2014). Based on the analysis of the literature performed, in order to support and address the issues or needs of international students, we categorize three roles of social media in facilitating the information-seeking behaviour of international students: social interaction, information source, and education advocacy.

Social interaction. Social media provides a platform for social interaction (Luo and Zhong, 2015; Shao, 2009). Some international students cannot express their views because they come from a different culture, and they face communication problems with the local students as well as with the teachers. Malaklolu and Selan (2011) mentioned one reason as being the lack of self-confidence in a new culture. However, if there is a strong social interaction between international students, it has a positive effect on their academic performance (Wan *et al.*, 2013; Wodzicki *et al.*, 2012). Garrett and Cutting (2012) conducted a research on international students in order to promote social interaction using the social media. It was claimed that when international students use different technologies for interaction, like Skype, Facebook and e-mail, it enhances their interaction with the local students, and they feel good about learning new cultures (Wan *et al.*, 2013). The students can share their problems with an online group (i.e. Facebook group) where they can interact socially with their fellow international students. Sin and Kim (2013) conducted a research on international students in American universities and found that Facebook plays an important role in the everyday life of international students and helps them by providing information. Facebook provides different connection strategies (public, private, multiple,

light-weight and substantive communication), which affect the information-seeking behaviour of the students (Ellison *et al.*, 2010).

However, learning from the social media is not regarded as something that is easy during interaction. In particular, interacting with other people while seeking for information on social media is a challenge for international students. According to Sin and Kim (2013), the reasons for these include the scattered knowledge on social media, variable quality and unresolved studies, and the fact that basic socio-analytical knowledge gained over a very short period of time can be problematic. Furthermore, Sin (2015) demonstrated that it is unclear as to what extent international students are using social media and what types of information-seeking challenges they face during their interaction on social media.

Information sources. According to Himelboim *et al.* (2013), social media, such as Twitter, helps students to track information. In addition, Twitter facilitates the sharing of information in a faster manner (Hamid *et al.*, 2015; Lee and Ma, 2011). International students use Skype to communicate with their families and friends in an effort to overcome homesickness (Lai *et al.*, 2013). Students use YouTube videos in their learning classroom homework (Tan, 2013). SNSs can play an important role in meeting the needs of international students, helping them in their loneliness and in seeking information (Hendrickson *et al.*, 2011). Zhou *et al.* (2008) proposed that learning about cultures, coping with stress and social identification help in affective, behavioural and cognitive responses. They also suggested that teachers and institutions come up with policies that provide support, awareness and guidance to international students. Zhou *et al.* (2008) conducted a case study on international students in the USA and the UK, and they also discussed the need for a research to study international students in general. Furthermore, search engines are the first choice of students for obtaining information compared to online databases and libraries (Liyana and Noorhidawati, 2014).

Social media is also a big source of information on health. People use the social media on a daily basis (Cox and McLeod, 2014; García-Martín and García-Sánchez, 2015) to seek information on health, to share health information and to voice their opinions. This information guides them in the acquisition of new information and in making a decision in a truthful manner (Li and Sakamoto, 2014; Peng *et al.*, 2014). People ask questions on different social media to retrieve information about health from specialists (Friesen and Lowe, 2012; Greene *et al.*, 2011; Robillard *et al.*, 2013). In this way, social media has built a trust and prospects between people. Further, as Austin *et al.* (2012) demonstrated that emotional needs and information sources are primary motivations for users to utilize the social media. In addition, people use the social media for social health support, to seek information on health, and self-efficacy in relation to health (Oh *et al.*, 2013). International students use Facebook to seek information on minor health-related issues, and use the findings to treat minor illnesses themselves (Oh *et al.*, 2013). Social media also plays an integral role in the social adjustment of the students. The social support from friends and the faculty help them to adapt to the new environment (Gray *et al.*, 2013). Moreover, a site designed prior to the arrival of the students, helped them to increase their social perception that they had a lot of social support in making the adjustment (DeAndrea *et al.*, 2012). Further, there is a positive relationship between social media and students in terms of life satisfaction, trust, public and political activities (Valenzuela *et al.*, 2009).

Education advocacy. In facilitating education advocacy, Kim *et al.* (2013) showed that students (graduates and undergraduates) seek information from different social media platforms in the academic context. For instance, Facebook and Renren (the Chinese version of Facebook) play an important role in the adjustment and educational adoption of international students in seeking academic and health information from the social media (Oh *et al.*, 2013; Yoon and Kim, 2014). The role of social media in the education advocacy is further shown in a research by Shahrniza *et al.* (2014) who found that adjustment problems have an effect on the academic performance of international students. According to their evaluation, placement services, academic processes and financial problems are the three main adjustment problems that have an effect on the academic performance of international students. However, social support helps international students to make the psychological adjustment in terms of life satisfaction (Yusoff and Othman, 2011). Further, difficulties in adjustment bring international students together to make friends so as to release the stress of acculturation, and often, the friendship connection affects their psychological health and emotional growth (Hotta and Ting-Toomey, 2013). In addition, students use social media technologies to connect with their peers and with institutions for the purpose of learning. Despite the above, there is still a lack of understanding on the other roles played by social media in higher education (See *et al.*, 2014; Shao, 2009).

Conclusion

Earlier research was used to illustrate the importance of conducting this study. Then, a comprehensive SLR was performed to evaluate the current status of the information-seeking behaviour of international students and the role of social media. Two things were discovered. First, information-seeking behaviour arises as a consequence of a need perceived by the information user (Wilson, 1999). So, the first research question found the needs of international students that require solution but the extant literature offered limited insights to provide the source. These needs found from the literature during searching the keywords as problems, difficulties and challenges (Table II) of international students and called them as information needs (Table VI) based on the code of broad themes. These information needs were categorized into academic, financial, sociocultural and health-related needs. Second, a person or system is required to fulfil those needs. This led to the respective second research question which sought to discover the role of social media as a source for fulfilling the information needs of international students. The findings show that social media is an information source that is being used on a daily basis, and it plays an important role in providing different types of information, namely, on health, education, culture, institutions, teachers and students. Social media generally provides information in a passive way for international students on a daily basis. Further, international students can connect on social media with the host country students, other international students and their teachers. These connections help them to overcome homesickness, learn about new cultures, solve problems, release stress and maintain their emotional growth. In this way, social media plays a role as an active way for international students to seek information. However, further studies need to be conducted. As discussed in the introduction section, there is a lack of research into the activities that are performed by a person seeking for information on social media. Therefore, there is a gap in the literature with respect to the finding of information-seeking behaviour in the context of social media. First, there are studies on social media and information-seeking

behaviour, but lack of studies on the frequent merging of these two fields to solve the problems of international students. Therefore, it is necessary to conduct such studies to solve the problems of international students abroad and to learn about their information-seeking behaviour. In addition, empirical research has been conducted on information-seeking behaviour and social media, but few studies have been conducted on the technical part such as social relationships in social networking (Baratchi *et al.*, 2013; Fonseca *et al.*, 2014), and analyses of information networks (Ozsoylev and Walden, 2011) and social networks (Hoppe and Reinelt, 2010). Thus, more research needs to be focused on the technical part, such as an analysis of information-seeking behaviour from social networks, so as to understand how international students seek information from online networks. Second, to find information on social media a person needs to do certain things, where in the old days, a person had to perform certain activities or some additional/different activities to obtain information from libraries. In addition, more studies are needed to identify the different behaviours of international students, as mentioned in the introduction, such as in terms of active and passive information-seeking behaviour on social media.

While this study followed the methodology proposed by Dybå and Dingsøyr (2008) and Kitchenham *et al.* (2008) along with a predefined study protocol and a continuous interaction of authors, it still has some limitations. First, although ISI journals and conferences were targeted, however, as far as is known, the search process did not find any articles from journals and conferences on the role of social media in the information-seeking behaviour of international students that specifically addressed their challenges. One of the limitations of this current work was by not targeting and including the library and information science database searches such as from the Library and Information Science Abstracts, Library and Information Science Technology Abstracts, Library and Information Source, and Education Resources Information Centre databases. This limitation could be addressed in future studies. Second, in the selection procedure, it was decided to include only academic and completed research papers. So, in this way, unrelated and incomplete papers were discarded. Lastly, the articles were evaluated by the authors, who rated them based on their knowledge following the defined schema. Although author bias is an associated risk but to overcome this risk, meetings were arranged for consensus. In these meetings, peer reviews were held and the contribution of each article was assessed. The review posited that social media plays an important role in supporting the information-seeking behaviour of international students who use the social media to fulfil their information needs. However, further studies need to be conducted for the benefit of international students and to find out about their information-seeking behaviour patterns with regard to social media. In addition, researchers need to compare the information seeking behaviour of international students using social media with those information-seeking behaviours of students from a host country.

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Further reading

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Appendix

1. Is this a research paper? Consider: <ul style="list-style-type: none"> Is the paper based on research (or is it merely a “lessons learned” report based on expert opinion)? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2. Is there a clear statement of the aims of the research? Consider: <ul style="list-style-type: none"> Is there a rationale for why the study was taken? Is the study’s focus or main focus on role of social media? Does the study relate to any category of conceptual, empirical, or design science study? Is there a clear statement of the study’s primary outcome? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3. Is there an adequate description of the context in which the research was carried out? Consider: <ul style="list-style-type: none"> The university in which social media apply. The country in which students come from different countries. The university and country in which social media play role as a seeking the information. The purpose of adoption the social media. Focus on specific problems (i.e. culture, finance, university, homesickness etc.) of international students. 	<input type="checkbox"/> Yes	<input type="checkbox"/> No

If question 1 or the questions 2 and 3 together received “No” as their answer, do not continue with the assessment.

4. Was the research design appropriate to address the aims of the research? Consider: <ul style="list-style-type: none"> Has the researcher justified the research design (e.g. have they discussed how they decided which methods to use)? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
5. Was the recruitment strategy appropriate to the aims of the research? Consider: <ul style="list-style-type: none"> Has the researcher explained how the participants or cases were identified and selected? Are the cases defined and described precisely? Was the cases representative of a defined population? Have the researchers explained why the participants or cases they selected were the most appropriate to provide access to the type of knowledge sought by the study? Was the sample size sufficiently large? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
6. Was there a control group with which to compare treatments? Consider: <ul style="list-style-type: none"> How were the controls selected? Were they representative of a defined population? Was there anything special about the controls? Was the non-response high? Could non-respondents be different in any way? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
7. Was the data collected in a way that addressed the research issue? Consider: <ul style="list-style-type: none"> Were all measures clearly defined (e.g. unit and counting rules)? Is it clear how data was collected (e.g. semi-structured interviews, focus group etc.)? Has the researcher justified the methods that were chosen? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No

(continued)

Figure A1.
Quality Assessment Form

<ul style="list-style-type: none"> • Has the researcher made the methods explicit (e.g. is there an indication of how interviews were conducted, did they use an interview guide)? • If the methods were modified during the study, has the researcher explained how and why? • Whether the form of the data is clear (e.g. tape recording g, video material, notes etc.). • Whether quality control methods were used to ensure completeness and accuracy of data collection. 		
<p>8. Was the data analysis sufficiently rigorous?</p> <p>Consider:</p> <ul style="list-style-type: none"> • Was there an in-depth description of the analysis process? • If thematic analysis was used, is it clear how the categories/ themes were derived from the data? • Has sufficient data been presented to support the findings? • To what extent has contradictory data been taken into account? • Whether quality control methods were used to verify the results. 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>9. Has the relationship between researcher and participants been considered adequately?</p> <p>Consider:</p> <ul style="list-style-type: none"> • Did the researcher critically examine their own role, potential bias and influence during the formulation of research questions, sample recruitment, data collection, and analysis and selection of data for presentation? • How the researcher responded to events during the study and whether they considered the implications of any changes in the research design? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>10. Is there a clear statement of findings?</p> <p>Consider:</p> <ul style="list-style-type: none"> • Are the findings explicit (e.g. magnitude of effect)? • Has an adequate discussion of the evidence, both for and against the researcher's arguments, been demonstrated? • Has the researcher discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst)? • Are limitations of the study discussed explicitly? • Are the findings discussed in relation to the original research questions? • Are the conclusions justified by the results? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>11. Is the study of value for research or practice?</p> <p>Consider:</p> <ul style="list-style-type: none"> • Does the researcher discuss the contribution the study makes to existing knowledge or understanding (e.g. do they consider the findings in relation to current practice or relevant research-based literature)? • Does the research identify new areas in which research is necessary? • Does the researcher discuss whether or how the findings can be transferred to other populations, or consider other ways in which the research can be used? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Figure A1.

Source: Dyba and Dingøyr (2008)

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