

# **Social Media for Teaching and Learning within Higher Education Institution: A Bibliometric Analysis of the Literature (2008-2018)**

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**Abstract**—Research on the topic of social media for teaching and learning in the higher education have received much attention from academia and practitioners. Social media technology was acknowledged not only as an important communication tool between faculty members and students but also shows great potential as the next social learning platform that better serves the teaching, learning and administration of a higher education institute. Its informal setting allows more flexibility for both students and faculty members to teach and learn anywhere and everywhere. Despite its important, little is known about how this research topic is evolving within the literature. Hence, using a bibliometric analysis technique this study examines the trends, topics, and challenges addressed by previous research for the past ten years (2008-2018). The paper ends by discussing future research directions related to this topic.

**Keywords**— Social media technology, higher education, teaching and learning bibliometric analysis.

## **1 Introduction**

The use of social media for teaching and learning activities among the faculty members in higher education institution (HEI) has been widely reported in academic manuscripts published in journals and conference proceedings. The use of social media was reported not only to improve communication channels among students and faculty members but also said to impact student's academic performance, student's engagement, and support teaching and learning activities [1][2][3].

The new generation of students whom social media have heavily penetrated their lives has transformed the teaching delivery approaches [4]. HEI integrated the use of

social media with their existing learning management system platform to provide students with better learning experiences. This education transformation is essential as it helps to centre the effort to promote better engagement between students and learning activities [5]. Through active engagement, it can help to improve students' academic performances [6].

Despite the impacts of social media on teaching and learning activities in HEI, the acceptance and adoption of this technology in teaching and learning context is still not well understood [7]. According to [7], the use of social media technology by students and faculty members are closely associated for personal and professional purposes. Ironically, the frequency of using this technology for teaching and learning purposes is low and only limited to only small group of students (not campus-wide).

Therefore, this study is designed to examine the evolution of this research topic within the literature. The outcome of this paper is essential to help researchers and practitioners to understand the research topic better and made significant contributions to the body of knowledge.

In order to achieve the objective mentioned above, this study adopts a bibliometric analysis method to discuss the development and growth of the research topic within the literature. This method is suitable to map the development and structure of a scientific field [8] and widely adopted by most of the previous researchers. Based on the analysis, this study suggests future directions of this research topic.

In summary, this paper starts by discussing its research motivation (this section), followed by a section that elaborates on the research methodology adopted in this study, then a section discussing the outcome of the research findings, a section articulating the future direction of this research topic and ended with a section that concludes this research paper.

## **2 Research Method**

In this study, the manuscripts were searched using Google Scholar as the source database. This database is used over others as this topic is still at its infancy level. Limiting them to specific databases (e.g., SCI, SSCI) might restrict the manuscripts selection process. 'Social media', 'higher education', 'teaching and learning' and 'university' were used as keywords during the searching process. A total of 1, 373 manuscripts were found in the database using these keywords. The manuscript searching process was conducted from 1<sup>st</sup> February to 30<sup>th</sup> March 2018.

From the list of manuscripts, papers that fulfil the following criterion were shortlisted and downloaded for analysis:

1. the manuscript's title should reflect a research work that focuses on social media in teaching and learning within higher education context; and
2. have empirical findings; or
3. a literature analysis; and
4. published between the year of 2008 to 2018; and
5. published as either a journal article, or a conference proceeding or a book chapter.

Based on the above criterion, a total of 94 manuscripts were downloaded and analysed for this study. All retrieved information about the manuscripts were pre-processed to remove redundant information. The similar manuscript that was published either as a conference paper or a journal article was consolidated by selecting manuscript published as a journal article. The processed data were aggregated into a database which includes information such as article id number, article title, abstract, source journal, institution, country, and publication's year.

### 2.1 Bibliometric Analysis

Bibliometric analysis is a method uses to give an insight into the growth of literature and the flow of knowledge within a specified field of research. This method uses empiric data and quantitative analysis to trace formal communications in the form of published literature [8]. The output of the analysis is helpful to provide the trends and patterns of publications within the research topic. This study examines the trends of this topic by analysing the distributions of the manuscript by year, types, countries and institutions. This study also categorised previous research based on themes emerging from the publications. Text analysis was conducted on the title and abstract of each manuscript in understanding the theme of the research documents.

## 3 Findings

### 3.1 Publication by Year and Document Types

The number of publications related to this topic is showing a decreasing pattern starting from the year 2012 to 2016. However, in 2017 the pattern changed where the interest in this topic starts to increase. Until mid of 2018 (when this research is conducted), the number of publications related to this topic is 9 and this positive trend most likely to continue. The majority (85%) of the manuscripts are published as a journal article. All the manuscripts are written in English. Figure 1 shows the trend of distribution of manuscript by year.

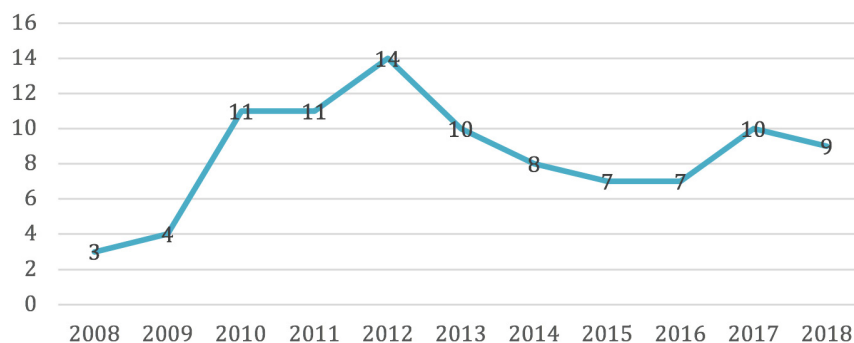


Fig. 1. Distribution of manuscript by years

### 3.2 Distribution by Countries and Institution

Figure 2 shows the distribution of the countries publishing manuscript related to the topic. Most of the researchers are coming from USA, United Kingdom, Malaysia, Australia, Canada, Italy, South Africa, Egypt, Ireland and Jordan. In total researchers from 25 countries across the world focus on this topic. The top 6 institutions publishing research related to this topic are from Michigan State University (USA), St John University (USA), University of Florance (Italy), Ryerson University (USA), University of South Australia, and Universiti of Malaya (Malaysia). This topic is an interest of researchers coming from both developed and developing countries.

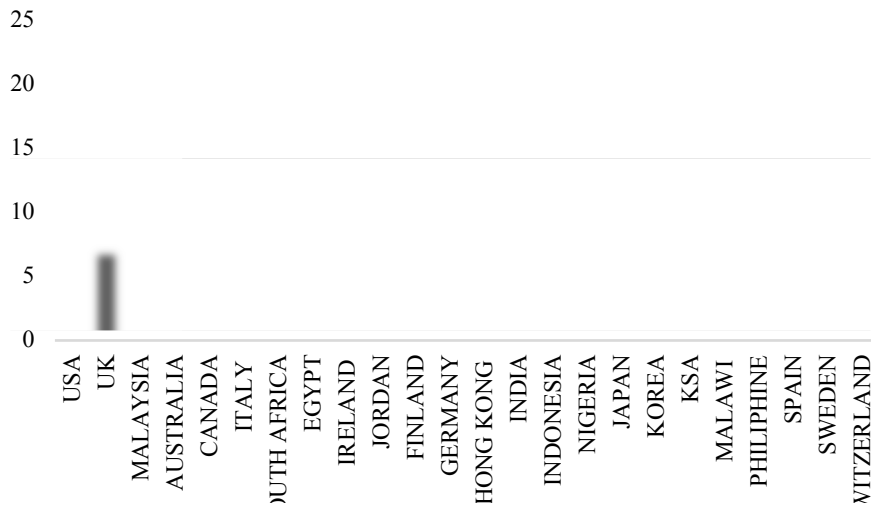
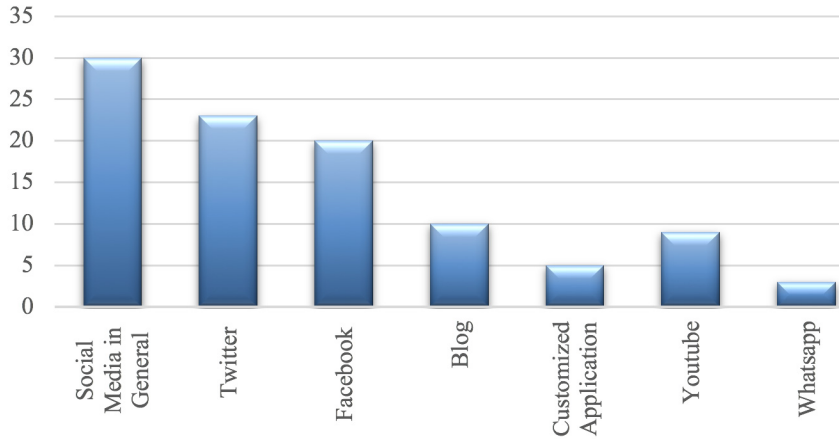


Fig. 2. Distribution of manuscript by countries

### 3.3 Distribution by Social Media Application

Figure 3 shows the distributions of social media application used by researchers when conducting their research. The majority (30%) of the publications focus on the use of social media application in general. They examined this topic broadly without specifying on any specific social media application. The remaining 70% of the publications focus on a specific social media application when conducting their research.

Twenty-three percent of the publications focus on the use of Twitter, 20 percent focus on the use of Facebook, 10 percent focus on the use of weblog and 9 percent of the publications focus on Youtube. The remaining of the publications focus on an application such as Whatsapp (3%) and customised social media application (5%).

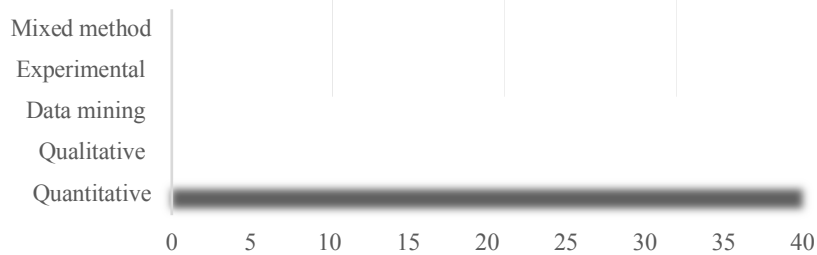


**Fig. 3.** Distribution by the social media application

### 3.4 Distribution of Research Methods

Figure 4 shows the distribution of research method(s) used by researchers when examining the topic. The majority (40%) of the research adopted a quantitative research methodology. The survey approach was used as the primary data collection technique. Twenty-five percent of the researchers adopted a qualitative research methodology. Using this methodology, the researchers collected data using face to face interviews, observations (ethnography) techniques. Fifteen percent of the researchers adopted an experimental research methodology, and the remaining (10%) of the researchers adopted mixed research methodology where they combined both survey and interviews approaches to collect data from respondents.

Interestingly, within the quantitative research methodology approach, researchers are using data science approach to get a better feel of the data generated by the respondents using social media applications. These researchers adopted data mining and social network analysis to analyse the secondary data generated from the interactions generated from the respondents.



**Fig. 4.** Distribution of research methods

### 3.5 Distribution of Research Focus

Table 1 listed a summary of the research focuses on previous research within this research topic. The following sub-sections analysed the trend and topics of this research area.

**Table 1.** Summary of research focus by previous studies (\* JA- Journal article, CP- Conference paper, BC – Book chapter)

	<b>Au- thors</b>	<b>Social Media Platform</b>	<b>Research Focus</b>	<b>Research Method</b>	<b>Paper Type</b>
1	[9]	Blog	Examine the use of a web blog as academic resources in a large-cohort of first-year students.	Observed online usage, analysed the blog content posted by the students	JA
2	[10]	Blog	Examine the actual use of weblog in class towards improving a better learning experience.	Observed and analysed the blog's activities and artefacts, interviewed 50 selected students	JA
3	[11]	Facebook	Examine the use of Facebook among students and faculty members.	Interviewed 50 students and faculty members	JA
4	[12]	Youtube & Facebook	Explore the role of social media in involving undergraduate students in a centred learning environment.	Observed 131 undergraduate students usage behaviour completing their assignment	CP
5	[13]	Facebook	Compare the differences in usage between students and faculty members in a university	Surveyed 120 students and 62 faculty members.	JA
6	[14]	Customised social media application	Examine the effects of interventions (based on sense of community features) that was designed to promote effective social media usage for learning purposes.	Observed the network activities based on the executed interventions.	CP
7	[15]	Social media in general	Examine the strengths, weaknesses, opportunities and threats using social media for teaching and learning in HEI.	Interviewed 40 actual initiatives of social media adoption by UK-based HEI.	JA
8	[16]	Twitter	Analyse the use of microblogging application to examine the learning process that takes place among students in HEI	Analyzed the microblogging posts among 32 students that take place for 70days.	JA
9	[17]	Social media in general	Examine the effect of social media as a supportive communication tool to promote sense of community and community of practice in a classroom.	Surveyed 72 undergraduate students in Taiwan	JA
10	[18]	Social media in general	Investigate the antecedents and consequences of social media utilisation in teaching by faculty members.	Surveyed 249 faculty members	JA
11	[19]	Social media in general	Examine the usability of social media to support collaborative learning between in-campus and out-campus students.	Observed the usage of students to complete the collaborative task	JA

	<b>Au- thors</b>	<b>Social Media Platform</b>	<b>Research Focus</b>	<b>Research Method</b>	<b>Paper Type</b>
12	[20]	Social media in general	Examine faculty members' awareness of social media and use of social media for personal, professional and teaching purposes.	Surveyed faculty members in the US	BC
13	[21]	Social media in general	Examine the effect of social media on the new student's intellectual and social lives when adjusting their life in university.	Surveyed 256 new students in US university	JA
14	[22]	Twitter	Demonstrate the twitter's functionalities and proposed strategies to increase class engagement using twitter	Case study	CP
15	[23]	Twitter	Demonstrate how Twitter is used as an educational tool to help engage students and to mobilise faculty into a more active and participatory role.	Conducted series of experiments on 125 first-year students	JA
16	[24]	Social media in general	Examine the faculty members personal development as preparation to adopt social media technology for teaching	Interviewed 24 chairs and program director in a university in the UK	JA
17	[25]	Facebook & Blog	Investigate the use of the social technology in teaching and learning (understand the context and challenges) and examine the impact of this technology towards enhancing students learning	Interviewed students and lecturers at a university in South Africa	JA
18	[26]	Twitter	Demonstrate an empirical evident how twitter could be used to support active learning outside the classroom	Conducted a series of experiments with 15 students	JA
18	[27]	Social media in general	Evaluate how six social media technologies are used by faculty members and students in 3 Australian universities.	Surveyed and interviewed the students and faculty members from 3 universities.	JA
19	[28]	Social media in general	Examine the role of social media application to support the implementation of social constructivist pedagogy towards contributing better academic achievement	Surveyed 105 accounting students in a university in Spain	JA
20	[29]	Customized social media application	Investigate the faculty members experiences using social media technology for teaching purposes	Interviewed ten faculty members	JA
21	[30]	Social media in general	Predict the influence of technology adoption based antecedents on the faculty member's technology utilisation.	Surveyed 249 faculty members in a university in the US.	JA
22	[31]	Social media in general	Explore the previous literature to understand the role of social media in the higher education classroom.	Literature review	JA
23	[32]	Twitter	Compare the differences in academic use of Twitter between students and faculty members	Surveyed 181 students and faculty members in a university in the UK	JA

	<b>Au- thors</b>	<b>Social Media Platform</b>	<b>Research Focus</b>	<b>Research Method</b>	<b>Paper Type</b>
24	[33]	Twitter	Investigate the factors that contributed to the reasons why faculty members are using Twitter and how they are using it in a higher education setting.	Surveyed 755 faculty members and educators	JA
25	[34]	Social media in general	Examine how students managed the information available on social media as their source of academic information	Surveyed 845 undergraduate students in the US.	JA
26	[35]	Whatsapp	Investigate the varieties of informality discourse between Saudi's instructors and students.	Analysed 157,000 posting from 10 WhatsApp groups.	CP
27	[4]	Social media in general	Examine the faculty members level of social media adoption for teaching and learning	Surveyed 120 faculty members in a university in Malaysia	JA
28	[36]	Facebook	Evaluate empirically the influence of using Facebook to increase student engagement and understanding	Conducted series of experiments with 1,200 students.	JA
29	[37]	Social media in general	Investigate the motivational factors that contribute to students engagement with social media as a learning platform	Surveyed 99 undergraduate students in a UK university	JA
30	[38]	Facebook	Examine innovative pedagogy that supports the use of Facebook as a co-learning community	Online ethnography	JA
31	[39]	Customized social media platform	Explore the flow and exchange of information among students using university managed social media platform	Analyzed students interaction with the platform using data mining technique	JA
32	[40]	Social media in general	Explore the motivation, use, practices and challenges faced by faculty members using social media for teaching	Surveyed 6139 faculty members across universities in Italy	JA
33	[41]	Social media in general	Explore the use of social media and investigated the challenges faced by faculty members in Egypt.	Surveyed 190 faculty members from 8 universities in Egypt.	JA
34	[3]	Wikipedia	Investigate the acceptance of students using Wikipedia for teaching and learning purposes	Surveyed 113 students from a university in South Africa.	JA
35	[6]	Social media in general	Examine the effect of social media usage and multitasking behaviour on academic performance	Surveyed 348 undergraduate students from 8 universities in Hong Kong	JA
36	[2]	Facebook	Examine the determinants of SM adoption using Technology acceptance model & E-learning acceptance model.	Surveyed 300 students from a university in Malaysia	JA
37	[1]	Social media in general	Investigate the effect of social media usage on academic performance from Constructivism Theory & Technology Acceptance Model perspectives	Surveyed 723 undergraduate students from 5 different universities	JA



	<b>Au- thors</b>	<b>Social Media Platform</b>	<b>Research Focus</b>	<b>Research Method</b>	<b>Paper Type</b>
38	[42]	Whatsapp	Evaluate the effects of using social media for academic monitoring, counselling and tutoring of university students.	Surveyed 120 undergraduate students in Spain	JA
39	[43]	Youtube	Examine the usage pattern and associated factors that influence student's acceptance of Youtube as a complementary learning tool.	Surveyed 321 undergraduate from a university in Malaysia	JA

From the literature analysis, previous research can be categorised into four major themes. The themes are 1) impact on teaching and learning, 2) social media use for teaching and learning, 3) students engagement and 4) supporting tool for teaching and learning. These themes were examined from varieties of a research setting, social media applications and research methods. The next subsections discuss each theme separately.

### 3.6 Impact on Learning & Teaching

Previous studies have shown that the use of social media for teaching and learning have an impact towards student's learning experiences [10][37]. For instance, using a weblog, a student will engage with an active learning environment where they have to read the blogs of others, write a comment, read a comment and provide feedback to the comments [10]. Active interactions and engagement between students and faculty members made students feel that they are engaging themselves in learning activities. This is essential to provide students with positive learning experiences as they feel they are not left out in class [37].

Besides that, social media is also reported to improve student's academic achievement [6]. According to [6], using social media, it required the students to be multitasking. Social media multitasking behaviour helps the students to achieve better academic performance. Through multitasking behaviour, a student will be more alert of their studies as they need to focus on completing dual tasks and also continuously give attention to the tasks they need to complete. Hence, this behaviour is preferable for academic achievement.

Social media is also reported to improve student's flow and exchange of information between students [39]. Rapid exchange of information help students to be updated with the assigned academic tasks. This active exchange of information is essential to promote active learning environment [23]. Social media is also said to be a dynamic source of learning among the students [34]. Through social media, students can get background information on the subject matter, glean on others' opinion or find solutions or how-to instructions. According to [34] social media can provide information that traditional resources cannot efficiently provide.

Content analysis of student's microblogging post showed that social media application was used to support learning activities informally [16]. Undergraduate students are using social media application for private informal communication when working on a project. In addition, to support communication, this application was also identified to

facilitate students with group works, examine of direct thoughts and cause of learning among students, a reflection of thoughts and steering learning interventions applied in learning activities.

Finally, social media is also identified to help faculty members to implement collaborative and innovative driven pedagogy when teaching in class [28][38]. For instance, using social media faculty members can adopt social constructivism pedagogy which was found to be helpful in helping students achieved better academic performance. According to [28], using this pedagogy student should be able to learn/create meaning from the social interactions that take place between students and faculty members. This pedagogy which focuses on “demand-pull” model of distributing and creating knowledge is suitable for the new generation of students who are technology savvy.

Through the use of social media in the classroom, faculty members can explore and experiment with innovative pedagogy where they can combine traditional pedagogy with social media technology. For instance, [38] combined ‘norm-critical’ and ‘consciousness-raising’ pedagogy to stimulate and assist students in learning cooperatively using Facebook. This pedagogy supports a co-learning approach where students help each other during the learning activities.

### **3.7 Social Media Use for Teaching and Learning**

Base on the literature analysis, social media adoption can be categorised into two main group of users - 1) among students and 2) among faculty members. From a student adoption point of view, previous researchers put much attention towards understanding: 1) how the students use social media for learning purposes, 2) what are the student’s preferable social media applications and 3) how to promote collaborative environment among students by using social media applications [9][11][12][20]. In addition, there are also studies that examined the features of social media applications and suggested strategies that can be applied to promote active participation among students. Previous studies have examined the pattern and trends of social media use within the class, campus-wide and nation-wide settings [1][2][27][41].

From a faculty member adoption point of view, researchers are interested in examining: 1) how faculty members use the social media application, 2) what are the barriers/obstacles and challenges faced by faculty members when using the social media application for teaching and 3) factors that promote use of social media applications among faculty members [18][33][40][41]. Previous studies indicated that faculty adoption of social media is still at the early majority adoption level [4]. At this level of adoption, faculty members agreed on the importance and success of adopting the social media application but, they are still cautious on giving their full commitment and efforts in using this application for teaching purposes.

Previous studies indicated that faculty members are not willing to trade their privacy by ‘friending’ with their students. Faculty members feel uncomfortable to expose their personal life to their students [40]. Besides privacy threats, faculty members believe that using social media for teaching it might: 1) reduce their teaching role, 2) suitable

teaching pedagogy, 3) institutional administrative issues in term of policy, infrastructure support, workload issues, ownership of assessment and content shared publicly, etc. [15][40].

Despite the obstacles, faculty members agreed that through social media application it could help better relationship with students, support improvement in learning by promoting collaborative, reflective and independent learning [15]. The use of social media application for teaching can also provide opportunities to create and maintain a community of students and promote class project or assignment indirectly through a network of friends [15].

Majority of previous studies that examine students or faculty members use social media application for teaching and learning usually use a case study of a specific course, class or university. The focus is mainly to demonstrate how the social media applications are used for teaching purposes. There is a need to examine social media application for teaching and learning using theoretical lenses. This approach helps to give a better understanding of students and faculty members adoption behaviour. As per record, very few studies used theoretical lenses to examine students and faculty members adoption behaviour [1][3][4][18].

### **3.8 Student Engagement**

The findings of the analysis show that social media is an essential tool used by students and faculty members to better engage with one another. Using social media students and faculty members can communicate informally outside of class period [35]. Although the communication is not at the personal level, social media application was proven to support open discourse between faculty and students. According to [35], although the communication is informal, there is a set of guidelines that need to be followed between two parties. Previous studies also have shown that the use of social media can improve student's engagement with course materials [36]. Providing feedback to questions asked is crucial to increase student's engagement with course materials [26].

In addition to the above, through social media use, it can help promotes positive engagement by shaping a sense of community among students and faculty members. The community of students who are connected with the same goal (i.e., learning) is forming a community of practice (CoP) [17]. Social media application is at the hearth of CoP as it allows students to expand their knowledge through connections with individuals that have similar interest. According to [17], their research findings demonstrated that using social media in the classroom, students can develop strong social connectedness and expressed favourable feelings regarding their learning experiences in the classes. This positive feeling will make learning a positive experience, as students are willing to help each other due to personal obligations to help others. Using social media application, the students can share information, opinion or feeling easily and openly with their friends. The bonding and binding of relationships that developed between them help enhance the feeling of a sense of community. The feeling of a sense of community is one of the crucial elements that determine the success of an online community [44].

### **3.9 Supporting Tool for Teaching and Learning**

Under this theme, previous studies examined the role use of social media as a supporting tool to help enhance teaching and learning processes. Compared to other themes, this theme received the least attention by previous researchers [42][43]. From the analysis, social media application was used as an additional communication channel to formal learning management system operated by the higher education management. It was also used as an alternative communication channel to support large classroom and interaction between on-campus and off-campus students [25].

## **4 Conclusion**

Despite the interest shown by many researchers for the past decade, it can be concluded that this topic is still under research and at its infancy level. Many empirical studies need to be conducted to support the exploratory findings. Furthermore, most of the findings are based on general surveys and did not back up by strong theoretical articulations. The findings need to be interpreted cautiously, as most of the sample populations are bias and are not generalizable.

In order to contribute to the body of the knowledge, this study proposed few points that can be considered to expand this research topic. Among them are:

1. examine the overall suitability of social media as a teaching and learning platform. Besides focusing on technology adoption-related issues, there is a need to consider the social and management aspects of using this application for teaching and learning purposes. There is a need to examine the effects of social related factors that promote a sense of belonging between students and faculty members. Since this application is socially driven, not being able to understand how social factors affect the usage of this application might not give full understanding on how to optimise the use of this application for teaching and learning.
2. Besides that, understanding the management aspects of adopting social media at an institutional level is also essential to ensure future success. Institutional policies of HEI needs to be social media friendly and most importantly will not add additional workload to both faculty members and students. There is also a need to identify the suitable assessments styles and teaching pedagogy that goes along with teaching activities using social media application. Evaluating informal interactions is a challenge which is worth examining in the future;
3. analyse the performance of social media as teaching and learning tools by giving better analytical insights to both faculty members and students on their performance. This analytical insight is essential to help especially faculty members make better decisions on how to optimise the use of this platform;
4. build up a stronger underlying basis of research on this topic by supporting it with theories. This research topic has a multidimensional perspective where it involves not only students but also faculty members, (formal and informal) community and technology. Examining these multi-dimensional topics from a variety of theoretical lenses can build a better understanding of this topic; and

5. integrate quantitative and qualitative research methodology with data science approaches (i.e., text mining, sentiment analysis) are highly recommended. Analysing the secondary data (e.g., Facebook posts, tweets) might provide better triangulation on the potential of this platform.

Above all, social media has a significant potential to support ubiquitous learning. The convergence of social media in the new generation of students requires higher education institute to formalise the use of social media in their teaching and learning activities. The new generation of students who are digital natives is very comfortable with social-based technology. Transforming the way education is delivered is essential to make sure students are able to grasp positive learning experiences while studying in a higher education institution.

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