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Research Paper

A Systematic Literature Review of Social Media for Informal learning

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Abstract

Social media has become a valued platform to facilitate communication and informal learning for both individuals and organizations. Significant attention to academic and professional fields attracts these trends. The rapid growth of research in social media for informal learning is increasing day by day. However, there are limited existing research studies that are found including the Systematic Literature Review (SLR), surveys, taxonomies, and simple reviews. SLR aims to deliver a comprehensive review and a better understanding of social media for informal learning. This study conducts an SLR to gather, analyze, and synthesize the data. Social media for informal learning SLR includes articles from different libraries. 114 primary studies are selected after the review and selection process for social media for informal learning. Further, we analyze and categorize the selected primary studies according to the various relevant research topics including the user's behavior, benefits, utilities, platform, tools for social media, and other topics. For this SLR, most of the reviewed studies focus on social media for informal learning users' behaviour that highlight the research work in the future. The main objective of this SLR is to indicate the enhancement of informal learning with social media and give a new direction of research. The study comprehends the use of social media for informal learning and differentiates between informal learning and formal learning. This study highlights social media for informal learning in research activities with diverse conceptual lenses for informal learning research adopted by social media.

Keywords:
Social Media Platforms, Informal learning, User Behavior, Data Synthesis, Educational Technology, Knowledge Sharing

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ورقة بحثية

مراجعة منهجية لأدبيات التعلم غير الرسمي عبر وسائل التواصل الاجتماعي

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المستخلص

أصبحت وسائل التواصل الاجتماعي منصات ذات قيمة كبيرة لتسهيل التواصل بين المستخدمين ووسائل للتعلم غير الرسمي للأفراد والمنظمات. تجذب هذه الوسائل اهتمام المستخدمين في المجالات الأكاديمية والمهنية. وتزداد الأبحاث المنشورة حول وسائل التواصل الاجتماعي واستخدامها في التعلم غير الرسمي يومًا بعد يوم. ومع ذلك، فإن هناك نقصاً في الأبحاث المسحية والمراجعات الأدبية الممنهجة والاستطلاعات، والتصنيفات، حول الموضوع. تهدف هذه المراجعة المنهجية إلى تقديم مسح شامل، وفهم أفضل لدور وسائل التواصل الاجتماعي في التعلم غير الرسمي. يقوم هذا البحث بإجراء مراجعة منهجية لجمع البيانات المطلوبة وتحليلها وتصنيفها. تم اختيار ١١٤ دراسة أولية بعد عملية المراجعة والاختيار حول وسائل التواصل الاجتماعي للتعلم غير الرسمي. وقمنا بعد ذلك بتحليل وتصنيف الدراسات الأولية المختارة وفقًا لموضوعات بحثية مختلفة ذات صلة، بما في ذلك سلوك المستخدم، والفوائد الخاصة، والفوائد العامة، والمنصات المستخدمة، وأدوات وسائل التواصل الاجتماعي، وموضوعات أخرى. بالنسبة لهذه المراجعة المنهجية، تركز معظم الدراسات التي تم مراجعتها على سلوك مستخدمي وسائل التواصل الاجتماعي للتعلم غير الرسمي، مما يبرز اتجاه الأعمال البحثية المستقبلية. الهدف الرئيس من هذه المراجعة المنهجية هو توضيح تعزيز التعلم غير الرسمي عبر وسائل التواصل الاجتماعي، وتوجيه البحث نحو اتجاه جديد. تستوعب الدراسة استخدام وسائل التواصل الاجتماعي في التعلم غير الرسمي، وتفرق بين التعلم غير الرسمي والتعلم الرسمي. تسلط هذه الدراسة الضوء على وسائل التواصل الاجتماعي للتعلم غير الرسمي في الأنشطة البحثية من خلال عدسات مفاهيمية متنوعة تم تبنيها في أبحاث التعلم غير الرسمي بواسطة وسائل التواصل الاجتماعي.

الكلمات الرئيسة

منصات التواصل الاجتماعي، التعلم غير الرسمي، سلوك المستخدم، تكنولوجيا التعليم، تبادل المعرفة

1. Introduction

In recent years, social media has evolved beyond its original purpose of connecting people and sharing information. It has become an influential platform for facilitating informal learning among individuals and organizations alike. Unlike formal education, informal learning is characterized by its spontaneous, self-directed, and often collaborative nature. Social media platforms, with their interactive features and wide-reaching networks, are uniquely positioned to support this form of learning. They offer users the ability to engage in knowledge-sharing, seek out information, and participate in discussions that contribute to personal and professional growth. Despite the growing recognition of social media's potential in enhancing informal learning, research in this area remains relatively limited and fragmented. While there have been numerous studies exploring various aspects of social media use, few have focused specifically on its role in informal learning. Furthermore, existing literature often lacks a comprehensive synthesis of findings, making it challenging to form a cohesive understanding of how social media contributes to informal learning processes.

This work is significant for several reasons. First, it offers a comprehensive overview of the existing literature, which can serve as a valuable resource for researchers and practitioners interested in the intersection of social media and informal learning. Second, by highlighting the most commonly used models and theories, such as the Technology Acceptance Model-3 (TAM-3) and Constructivism Theory (CT), the study provides insights into the theoretical underpinnings that have shaped research in this field. Finally, the findings from this SLR can guide future research efforts, helping to advance our understanding of how social media can be effectively leveraged to enhance informal learning.

1. Background

In the age of globalization and technological revolution, it is obvious that social media including Twitter, YouTube, and Facebook are the most important informal learning channels in the 21st century and an integral part of our present life (Shohel, 2016; Kjellberg, 2010). For instance, Facebook and YouTube provide researchers the chance to make use of various learning materials (Moran et al., 2012). To improve the acceptance of informal learning, technological dynamics in the present day such as social media should be considered. Social media has been integrated within the learning environment and proven to be supportive tools for the various academic activities and tasks (Jaffar, 2012; Moran et al., 2012; Kirschner and Karpinski, 2010). Although social media facilitates evolution of international collaboration for non-formal learning, there is still a lack of literature on how social media can be used for non-formal education for educational purposes or activities in academic research. is a way to promote (Dermentzi et al., 2016; Ellison and Boyd, 2013). According to a survey conducted by (Manca and Ranieri, 2017), it was noted that Twitter, YouTube, and Facebook were considered the most valuable sites. The survey presented some benefits reported by the respondents such as self-promotion, openness, and information sharing, being connected and developing networks, and

providing support (Singh, 2014). Today, social media applications move away from personal use. It is adopted rapidly by organizations as a tool of communication and information sharing regarding a variety of various sources (Al-Sabaawi and Dahlan, 2018). Social media is being used to share information as a way to promote overall awareness and government initiatives. Others can use a tool to generate business information and incorporate users into different fields of activity. Healthcare organizations use social media applications and information sharing tools to effectively help work-related information flow among teams (Alsabawy et al., 2013, Al-Sabaawi and Dahlan, 2019). However, there are no e-arts yet developed to regularly analyze studies as a way to provide researchers with a fundamental concept of the most advanced social media tools for informal learning.

Therefore, there are three foremost aims of this study. The first objective of the study is to analyze, synthesize, summarize, and collect information about the accuracy and worth of existing studies in the literature from 2010 to 2017. The second objective is to expansively report on the realistic and universal outcomes from the learning domain of the previous studies. The last objective is to classify the gaps that need to be proposed and more explore the opportunities for further research in the field of learning. To accomplish these three objectives, the following research questions (RQs) are designed and developed:

- What are the uses of social media for informal learning in research activities?
- What are the diverse conceptual lenses for informal learning research adopted by social media?
- What are the gaps and limitations in existing social media research for informal learning?

This paper is made up of five sections. The first section delivers the background on social media and non-formal education. The procedure by which the review process was accompanied is given in the second section. The results of the SLR are provided in the third section, and the fourth section provides a discussion on the results of the RQs, are arranged. Lastly, the Fifth section refers to the conversation of the review and its conclusion.

1.1 Informal Learning

The concept of Informal Learning plays a growing role in how individuals think of everyday learning. If there is a need to know or learn something, individuals may look it up in a book, look it up online, or contact someone for support. Informal learning transpires outside normal school settings and other educational programs. This implies that informal learning is a form of learning without stringent structures of time and space (Arquero and Romero, 2013). Carliner (2012) stressed that informal learning is a method in which learners set their learning objectives, determine what successful completion would look like, and have learner-controlled specifics. Additionally, Behringer and Coles (2003), observed that informal learning is defined by the activities of peoples, and not defined by institutional settings or any standard curricula. In this direction, informal learning is not directed at any planned or structured objectives, time, or learning support (Behringer and Coles, 2003). The learning nature of the situation is not clear to the learners. Therefore, informal

learning does not address educational objectives and results; rather, it focuses on practical objectives and purposes (Kahnwald, 2009; Callaghan and Bower, 2012). A lot of information is now on the ICT tools, and hence the context of informal learning can also be physical or virtual, or between the two (Erjavec, 2013; Ranieri and Bruni, 2013). For instance, an individual can learn something by watching a video online and make use of the knowledge immediately in a real-world setting (Klomsri *et al*., 2013; Dafoulas and Shokri, 2016). Informal learning is often contextualized and takes place where an individual can make instant use of the knowledge gained (Cox, 2013; Tudor, 2013). Self-directed learning is most often considered in the research community (Marsick and Watkins, 2015: Le Clus, 2011). Table 1. Shows informal learning definitions from previous literature.

Table .1 Informal learning definitions from previous studies.

No	Definition	Reference
1.	Any kind of learning activity outside of formal or institutional contexts to acquire the required skills and the knowledge.	Cunningham, Hillier (2013)
2.	Informal learning is defined as the truly lifelong process through which each person acquires attitudes, values, skills, and knowledge from daily experience and family and neighborhoods, work and play, the marketplace, the library, and the mass media, and from educational influence and the means in their environment.	Norqvist (2016)
3.	Informal learning activities include reading, discussion, and meeting.	Lancaster et al., (2013)
4.	"Complex web of experiences and interactions that is conducted over a wide range of physical environments, including classrooms, coffee shops, squares, and libraries."	Jamieson & Simpson (2013)
5.	A process initiated by an intent to learn, followed by experience and action, feedback-seeking, and reflection	Noe et al. (2013)
6.	An activity that is “outside of a formal program or class” through which individuals know how to perform at work	Bingham & Conner (2010)
7.	This type of learning is never organized. Rather than being guided by a rigid curriculum, it is often thought of as experiential and spontaneous.	Eaton (2010)
8.	Informal learning is characterized as spontaneous through daily activities and interactions.	Hann & Caputo (2013)
9.	All deliberate, non-formal learning contradicts formal learning, where all learning is a social contract between the learner and the institution or organization.	Song & Lee (2014)

No	Definition	Reference
10.	Informal learning refers to any activity that involves understanding, knowledge, or skills outside a prescribed curricular context.	Manca & Ranieri (2016)
11.	Informal learning is defined as "a process in which learners set their learning objectives and determine what successful completion would look like"	Carliner (2012)
12.	Informal learning refers to learning that occurs individually or with other people to gain knowledge, skills, or understanding outside of formal or organized educational activities.	Nilsson & Rubenson (2014)
13.	Informal learning is defined as a form of cognitive activity that can be deliberate or reactive, and that leads to competences but not too formal qualifications.	Mulder (2013)

1.2 Social media definition

Although there are conflicting definitions and numerous overlapping views in the current studies, social media is usually referred to as a collection of Internet-based applications depending upon the theoretical and technical foundations of Web 2.0 to exchange user-generated content. Similarly, Web 2.0 is in exchange with the term social media. Several are described on social media as a huge variety of application software that permits enormous users to freely interact and share information (Oh et al., 2014; Escobar et al., 2014). Social media is a deliberate means of bringing people together by facilitating communication methods and sharing content, recognized as user created communication (Hajli and Lin, 2014). For working organizations, social media is also turning into a significant information channel as a tool for finding and retrieving available information that is developed through sharing among workplace employees. Social media can be defined as a web-based platform that allows employees to:

a) Send messages to specific members of the organization with specific co-workers.
b) Identify and clarify the co-workers as communication partners.
c) Edit text, post files, and sort messages linked to others or themselves
d) View messages, connections, linked files, and text.

According to the Everson et al. (2013) report, 61% of adult users go online to chat with others using social media sites. In the meantime, 73% of teenagers use social media sites as tools for online communications with their landed gentry. Correspondingly, Pew Research Centre conducts a recent study conducted that determines the 91% of smart-phone owners lie between the ages of 18 and 29, who used social networks during their study time at least once as compared with 55% the age of 50 or more. Table 2. Shows various definitions and concepts of social media in current studies as presented by researchers.

Table 2. Social media definitions from previous studies.

No	Definition	Reference
1	Social media is defined as new technologies and applications that use the Internet and web 2.0 technologies to allow users to create and participate in different communities through functionality such as communication.	Darwish & Lakhtaria (2011)
2	Social media, as stated, may refer to "technology used for three or more people"	Bingham & Conner (2010)
3	Social media is defined as a variety of online applications that develop on the technological and ideological basics of Web 2.0. These Internet-based applications facilitate human communication, interaction, and collaboration by allowing the exchange and creation of user-generated content	Delerue et al., (2012)
4	Social media is a platform where users can jointly investigate network content, share their experience and build up a relationship for different purposes, e.g., social or educational	Jiao et al., (2015)
5	Social media refers to Internet-based services that allow individuals to create, share and seek content, as well as to communicate and collaborate	Kim et al., (2010)
6	Social media can be defined as a web platform that enables an individual to create and maintain a public or semi-public profile.	Bélanger et al., (2014).
7	Social media is a term that is broadly used to describe any number of technological systems related to collaboration and community	Joosten (2012)
8	"Social media" is an evolving term that refers both to dynamic and often mobile-based technological platforms like Facebook and Twitter as well as the distinctively interactive pattern of information exchange they inspire.	Jerry (2012)
9	Social media refers to a wide range of applications enabling users to create, share, comment, and discuss digital content. They are also depicted as 'dynamic', 'interactive', 'democratic', 'people-centric', 'volatile', 'social' and 'adaptive'.	Brown (2012)
10	Often social media is referred to by channel characteristics, either identifying the directionality of messages	Kent (2010)
11	(a) The information infrastructure and tools used to produce and distribute content; (b) the content that takes the digital form of personal messages, news, ideas, and cultural products; and (c) the people, organizations, and industries that produce and consume digital content.	Howard & Parks (2012)
12	By definition, all social media services and applications rely on openly shared content that is authored, curated, critiqued, and reconfigured by a mass of users.	Selwyn & Stirling (2016)
13	"The means of interactions between people in which they create, share, and exchange knowledge and ideas within virtual communities and networks".	Zeng and Gerritsen (2014)

No	Definition	Reference
14	A website that allows individual scientists to construct a public or semi-public profile within a limited system, list and share information with others within the system, and collaborate with others within the System	Bullinger et al. (2011)
15	Internet-based, detrained, and persistent channels of mass personal communication facilitate perceptions of interactions among users, deriving value primarily from user-generated content.	Carr & Hayes (2015)
16	The landscape of open access web tools and services that support social activities and learning.	Väljataga et al. (2011)
17	"Social media are technologies that facilitate social interaction, make possible collaboration, and enable deliberation across stakeholders. These technologies include blogs, wikis, media, sharing tools, networking platforms (including Facebook), and virtual worlds."	Bryer & Zavatarro (2011)
18	"An online community of Internet users wishing to communicate on mutual interest areas with other users."	Helou & Rahim (2014)

2. Systematic Literature Review

In any study from the IS discipline, it is important to consider the fundamental structure and techniques for carrying out a viable literature review (Bandara *et al.,* 2011). A review of the existing literature is an important stage in every study. Thus, the systematic literature review approach is utilized in this research to provide clear answers to the research questions of this study. SLR refers to the identification, evaluation, and interpretation of all research questions, the field of research, and the growing incidence of interest (Kitchenham and Charters, 2007). In this section, the researcher conducted an SLR to effectively achieve the best result from every publication.

2.1 Review Protocol

For the researcher to obtain a comprehensive and accurate literature review, an effective method of review is needed. The current study employs the Kitchenham and Charters (2007) approach, which indicates an SLR consists of three phases. The first phase is planning the review. The second phase is conducting the review. The third phase is reporting the review. At all stages, there are predefined activities including (i) identification of research questions, (ii) developing review protocol, (iii) specify inclusion and exclusion, (iv) study selection process and search strategy (v) performing quality assessment (vi) data extraction and analysis. The research review protocol used for this study is shown in Figure. 1.

2.2 Inclusion and Exclusion Criteria

To ensure the related research articles are included in this review, both inclusion and exclusion were spotted as per guidelines (Wang and Zhang, 2012; Shanmugam and Jusoh, 2014). The criteria used in this review are illustrated in Table 3.

2.4 Search Strategy

The search strategy is an important phase of this study, and it includes two phases: automatic and manual phase. In the automatic phase, well-known online databases are used to search for publications related to social media for informal learning. This study used the following online databases: ACM Digital Library, Engineering Village, IEEE Explorer, ISI Web of Knowledge, Science Direct Scopus, Springer, Thomas Reuters Web of Science, and AIS e-Library. The keywords used for searching the relevant publications were: "Social Media", "Social Network", "Informal Learning", "Formal Learning" and "Academic Researcher". The second phase is the manual search. To track the citations of selected studies, this study utilized a backward-forward search method (Levy and Ellis, 2006). The well-known search engine, Google Scholar, was used for a forward search and for finding the publications that were cited in the originally selected publications.

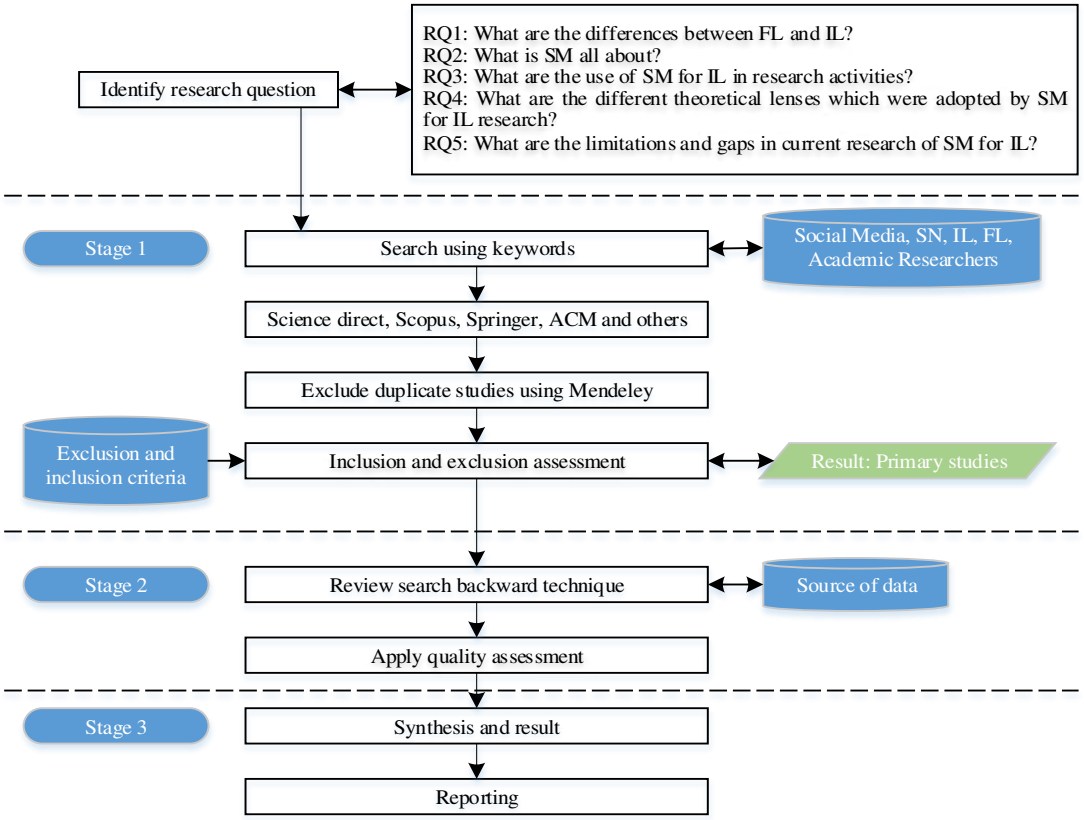
2.5 Study Selection Process

This process aims to identify the significant work required for the SLR questions in this review. Initially, 229 studies resulted from the automatic search by using predefined keywords. 211 studies remained after removing duplications using Mendeley. The inclusion and exclusion criteria were then applied to the abstract and conclusions of each study. In this phase, 86 were ignored due to their irrelevance based on both of their abstracts and conclusions. This exclusion of the irrelevant studies to the review subject was a phase recommended (Kitchenham and Charters, 2007). The exclusion criteria also included full-text scans for the remaining studies.

Table 3. Exclusion and Inclusion Criteria

Inclusion Criteria	Exclusion Criteria
Full text available.	Incomplete articles
Publication period (2010-2017).	outside the selected time.
Published in the selected database- ACM Digital Library, Engineering Village, IEEE Explorer, ISI Web of Knowledge Scopus, Springer, Science Direct, Thomas Reuters Web of Science, and AIS e-Library.	Duplicated studies
Written in the English language.	Non-English articles
Related to social media, social networks, informal learning, formal learning, and academic researchers.	Not related to the review domain

Figure 1. Review protocol (Kitchenhamand Charters 2007)



In this phase, the researcher applied for a manual search to find citations of the selected studies to find out any additional articles. The manual search resulted in an additional 12 more studies traced and removed which left only 133 studies. Finally, quality evaluation criteria were applied to the 133 studies resulted from the manual search whereby 19 studies were eliminated, while 114 articles stand out as primary study.

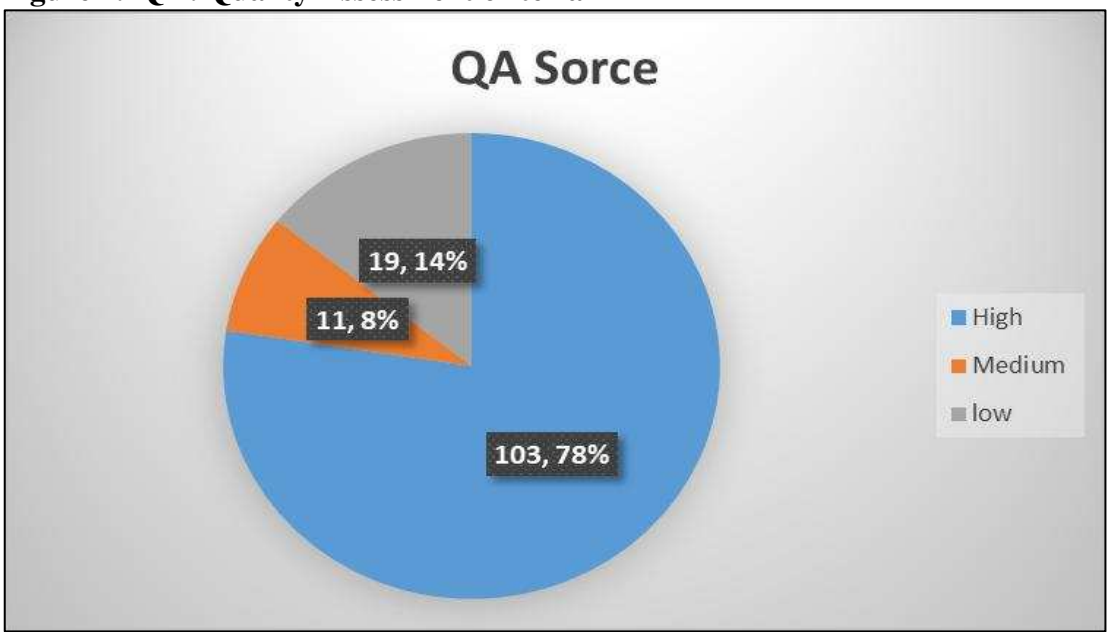
2.6 Quality Assessment (QA)

Concerning the assessment of the primary studies' quality, applying quality assessment is regarded as critical (Kitchenham and Charters, 2007). The quality assessment details are built on quality instruments. Such tools, for example, can be a checklist of factors that apply to each study (Bandara *et al*., 2011). In this respect, and aims to assess the quality of every single study, criteria for five quality evaluations were developed (Nidhra *et al*., 2013). The criteria are illustrated in the five items below:

A1. Are the topics addressed in the systematic review related to social media for informal learning?
A2. Is the context of social media for informal learning described in this review?
A3. Is the methodology of research well presented?
A4. Is the data collection approach well presented?
A5. Is the data analysis strategy presented in this review?

Figure. 2 illustrates the quality assessment (QA) of the studies used in this research.

Figure 2. QA: Quality Assessment criteria



Note: *High - scored ratings of greater than or equal to 6; medium – score rating is 5; Low – Score rating below 5)*

2.7 Data Extraction and Synthesis

To record the information appropriately, the researcher created a form for data extraction. The extraction items include student ID, author, date of publication, study title, research method and methodology, source, theory, and topic addressed, and research theme. Based on the research objectives and questions, such features were identified. Table 4. Report the results of each item.

Table 4. Data Extraction Items

Extraction Items	Explanation
Student ID	Unique Number assigned to each student.
Author	Author names
Study Title	Title of the research article
Publication Date	Date of publication: (2010-2017)
Source	Types of articles, journals, book chapters, conference proceedings.
Methodology	Qualitative, Quantitative, or mixed method.
Research Theme	Themes related to social media, informal learning
Theory	theory adopted by the researcher. e.g TAM3, Constructivism
Outcome Measures	Outcomes related to behavioural intention, acceptance, and adoption.
Data Collection Strategy	Observation and case study. the survey, experiment, etc.

2. Results

2.1 Publication Sources Overview

Figure 3. Provide proof, as established earlier, that most of the studies used in this research come from well-known journals and top conferences in the field of information systems. The validity of the findings is further supported by the review processes this research adopts. Looking at the type of studies used, it appears that (87) eighty-seven are journal articles and seventeen (17) were conference papers. The rest of these publications were book chapters.

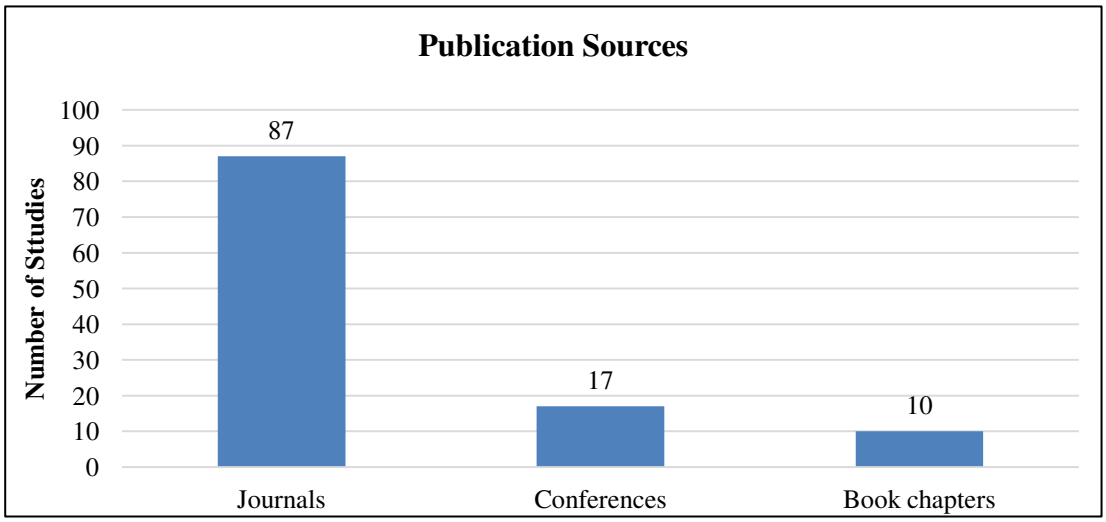


Figure 3. Published Sources

The pie chart is in Figure 4. Presents the spread of the reviewed literature among formal learning, informal learning, and social media. As can be seen, 61% of the studies were from the social media domain, 26% from informal learning, while 13% from formal learning. This shows a very good spread of the literature following the objective of the present study.

3.2 Temporal Overview

Figure 5 illustrates the publication year of every study used in this review. Figure 5 also indicates that there was a noticeable increase in these publications from the years 2010 to 2017 where the highest number of studies in the area of social media for informal learning was published in 2016 with 23 studies.

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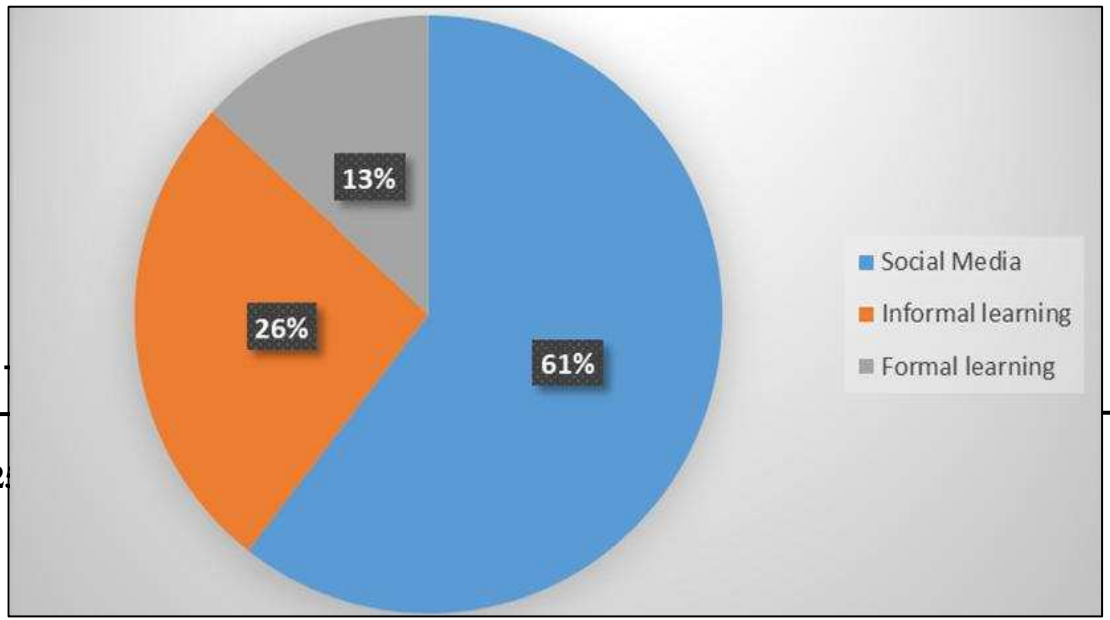


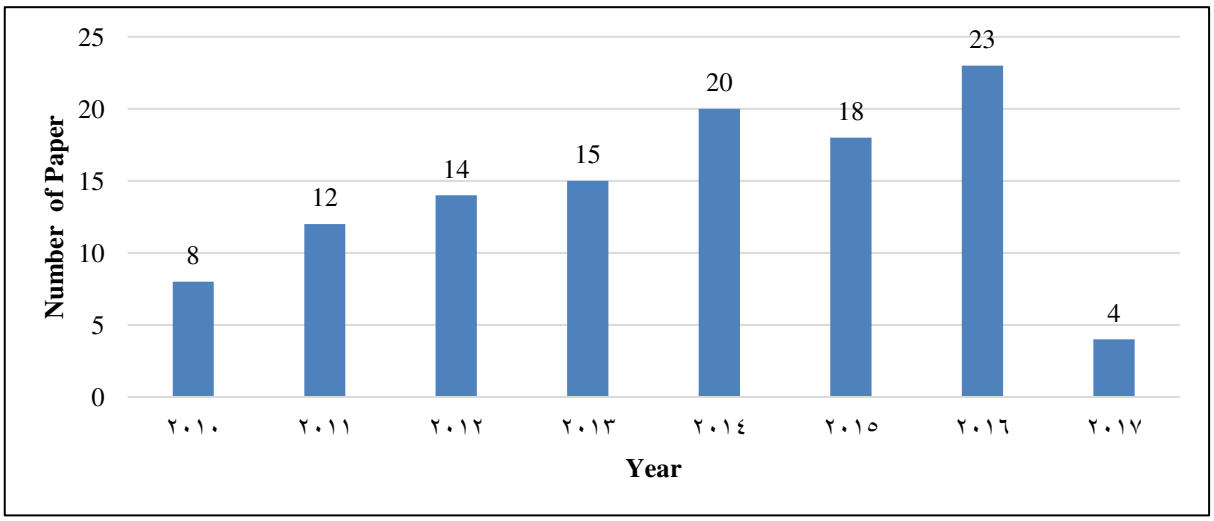
Figure 4. Percentage distribution of reviewed studies

Figure 5: A Temporal View of Primary Studies

4. Results of Research questions

4.1. What are the differences between Informal learning and formal learning? (RQ1)

The difference between formal learning and informal learning is well established in the literature. While formal learning is formal and very structured, informal learning is considered less structured, which is normally started by the learner. Another feature of informal learning is that students and researchers do it unconsciously without setting objectives while formal learning is the opposite.



Formal learning is considered deficient to address learners' demands, especially in an academic research environment where learning is expected to bring about new insights and ideas that would solve several problems found in literature. The activities of researchers are all informal within formal learning settings. In the sense that academic researchers search for literature and informally derive results. Implying that, there is no specific structure or organization of a control body or an institution. This has resulted in massive academic findings and discoveries that could not have been a reality if the academic researcher is restricted only to the formal learning environment. Therefore, informal learning is the panacea to the present-day academic researcher. Informal learning from an academic researcher's point of view is those academic and learning activities carried out in a less structured or controlled

way. Researchers do much of their work using informal learning (Galanis et al., 2016; Song and Bonk, 2016: Bennett, 2012).

4.2. What is social media all about? (RQ2)

Social media, such as Facebook, Twitter, and YouTube usage is growing at an astonishing rate, with 2.5 billion people using the internet, about 0.8 billion of that population interact in social media (Bozanta and Mardikyan, 2017). Social media consists of many applications that enable users to communicate electronically, its widely used means of interaction, for people, and is social and adaptive (Brown, 2012; Manca and Ranieri, 2016). With the help of social media academic researchers' can interactively collaborate and engage with their peers (Bercovici, 2010). The integration of social media for learning in higher educational institutions has drawn widespread interest from researchers and practitioners (Kelly, 2012; Procter et al., 2010; Dumpit and Fernandez, 2017). Academic scholars either as an individual or for their courses create a Facebook page primarily to communicate and interact with their students for learning purposes (Zhu and Procter, 2015). Java et al. (2007) mentioned that Twitter is considered the most prevalent public micro-blog that could consist of very short messages. This message is referred to as . (Zhu and Procter, 2015; Veletsianos and Kimmons, 2013). The social media tool YouTube is mainly used by international students to view certain videos for lectures in other universities around the world to expand their knowledge on a particular subject (Balakrishnan, 2014; Bataineh et al.,2015).

4.3. What are the uses of social media for informal learning in research activities? (RQ3)

Academic researchers are paying more attention to the usage of social media technologies for informal learning to enhance research activities. For instance, academic researchers use social media for several purposes such as starting new relations, information exchange, collaborating or communicating, with other scholars and colleagues for professional purposes (Chen and Bryer, 2012; Gruzd et al., 2012). Scholars use the services and tools provided by social media for their professional work and helps in enabling a direct connection between them to exciting new research ideas (Collins and Hide, 2010; Gu and Widén-Wulff, 2011). Several types of research indicate ways of utilizing social media for educational activities (Klomsri et al., 2013; Hamid et al., 2011). Furthermore, social media, especially Facebook, can act as informal learning channels for researchers of all kinds. Through the rise of social media, academic researchers are now connected on a global scale and can interact, participate, share information and ideas, and collaborate with people from all over the world, potentially anytime, anywhere (Ito et al., 2013; Alhazmi and Rahman, 2013). There is growing interest in how to integrate social media in educational settings as a result of its rapid proliferation and increased collaborations (Veletianos and Navarrete, 2012). Instant interactions, which is one of the reasons for an academic researcher's use of social media in their interactions and information search, more research is needed to create an efficient mechanism to deploy social media for learning activities (Ractham and Firpo, 2011;

Burbules, 2016). Figure 6. Shows how academic researchers share research findings and collaborate.

4.4. What are the diverse conceptual lenses for informal learning research adopted by social media? (RQ4)

As it has been presented, theories serve as lenses for the research to identify a suitable approach to solving a problem. Table 5. shows the summary of IS theories used in the present study. Despite social media's popularity in research activities, a thorough literature review revealed the lack of theoretical basis in most studies. The usage of social media as a collaboration technology among researchers depends on their willingness; their capability to convince team members inside or outside their university's institutional facilitating condition, which supports the usage of a special platform by providing free access .After exploring the literature and extensively reviewing the various theories and models, the researchers found that the Technology Acceptance Model 3 (TAM3), Theory of Constructivism, would help in providing the lens to develop a model integrating technological and learning features into a single model representing the study's focus. The theories mentioned in Table 5. will be explored in detail in the discussion sections.

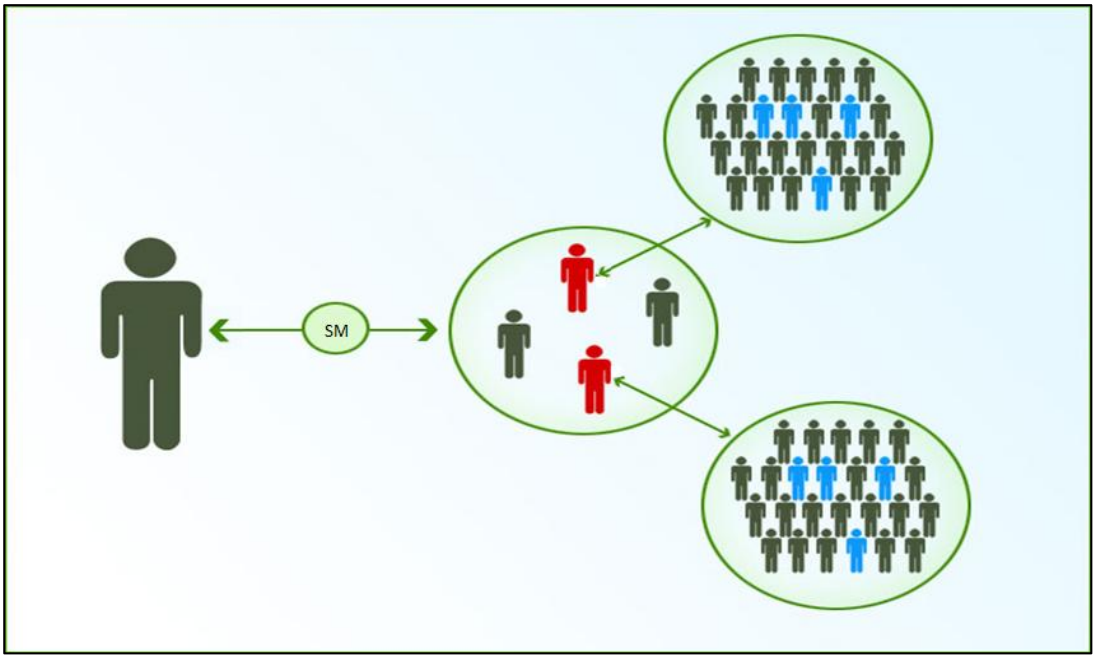


Figure.6 Academic Researcher Uses Social Media for Informal Learning

Table 5: The Usage of IS Theories in Social Media for Informal Learning

No	Theory	Researcher (s)	Context
1	Technology Acceptance Model 3	Thongmak (2014)	Uses TAM3 to investigate students' intention to adopt Facebook in the learning process.
		Balakrishnan and Gan (2016)	This study uses TAM3 to elicit key factors influencing social media

No	Theory	Researcher (s)	Context
			adoption in learning.
		Agudo-Peregrina *et al*. (2014)	The adequacy of applying TAM3-based models in educational contexts.
		Lim *et al*. (2013)	This study validates the application of TAM 3 in the context of social media usage with two country data in the learning environment.
		Al-Gahtani (2016)	TAM3 to determine the factors that influence the learners' intention to use social media.
2	Theory of Constructivism	Whitty and Anane (2014)	Proposed an informal learning framework based on Facebook that supports knowledge construction by learners
		Al-Rahmi *et al*., (2015)	The study explores factors that contribute to the enhancement of collaborative learning and engagement through social media.
		Churcher (2014)	The study explores knowledge building through classroom social media use.
		Schrader (2015)	The study considers the interaction of constructivism and learning in the social media age.
		Console and Alevizou (2010)	The study examines the extent to which Web 2.0 affordances of social media are successfully promoting the sharing of ideas, as well as scholarly reflections, on learning and teaching.

4.5. What are the gaps and limitations in existing social media research for informal learning? (RQ5)

As noted in the above-mentioned studies, there is still a gap in the behavioral intent of the academic researcher for accepting social media for informal learning when doing the research, despite the convenient environment provided to academics by social media. Due to the major advantages of social media in an academic context, scholars have started examining the use of social media for informal learning. Despite numerous studies that have shown the importance and efficacy of social media for informal learning, researchers still lack enthusiasm toward using social media for informal learning (Balakrishnan, 2017; Islam and Rabbi,2016; Whitty and Anane, 2014; Al-Asmari and Khan, 2014; Gruzd and Goertzen, 2013; Al-Hojailan, 2013). There has also been minimal attention paid to the study of social media for informal learning (Song and Lee, 2014; Yakin and Gencel, 2013; Rosmala, 2012). Additionally, few empirical studies investigate factors that influence the use of social media for informal learning (Song and Bonk, 2016;

Manasijević *et al.,*2016; Sharma *et al*., 2016; Sánchez *et al*.,2014; Lei *et al*., 2012; Alloway and Alloway,2012). Most of the researchers happen to fear the quality of information, and the lack of encouragement with associated threats to their research work, thereby resulting in less usage of social media (Sulaiman *et al*., 2016; Ashraf and Haneefa, 2016; Al-Aufi and Fultio,2015). Existing studies on informal learning focus on individual and organizational factors, thereby neglecting the technology aspect (Madjar and Cohen-Malayev, 2013; Merriam *et al*., 2012; Manuti *et al.,*2015, Noe *et al.,*2014; Haan and Caputo,201٣) as well as the interactive aspect.

5. Discussion and Conclusions

This systematic literature review provides the basic concept of social media for informal learning studies and a clear comprehensive concept of the existing research that follows informal learning with the help of social media. It also identifies the three main activities of social media applications that consist of information contribution, information search, and social interactivity. In addition, the results of this SLR indicate that numerous significant contributors for social media for information sharing studies are categorized according to the business range, disaster management, education services, common professional services, health services, and other services. The selected studies are classified into four groups according to the research themes or topics. These groups include users' behaviour, utilization benefits and utilization, privacy concerns, and tools and platforms. Findings from the SLR show that most of the studies are based on the behaviour of users according to the usage of social media, benefit, platform, and tools while information sharing. Moreover, the Technology Acceptance Model-3 (TAM-3) theory, the Constructivism Theory (CT), and other aspects from the literature are most applied in social media for informal learning implementation, previously. It shows that researchers want to observe the influence of users' behaviour and intentions on informal learning through social media applications while using social media. Research into the use of social media in informal learning is still in its infancy, and more publications will follow. This will raise awareness in the research area of social media in informal learning for active researchers, especially in applications. Further, this SLR expansively examines the various models and theories, which are used in social media for informal learning. SLR outcomes provide research positions and good basics for further research to researchers and practitioners for future research in the area of informal learning on social media.

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