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by Arta Sundjaja

Infusing functionality of social media as a transformative higher education teaching and learning process into social learning system

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Abstract: In Web 2.0 era, social media are increasingly receiving attention in many sectors, including higher education institution. It provides extensive learning support in line with social learning concept. A large volume of content is generated and diffused by online users. In social learning environment, there is an urgent requirement to infuse functionality of social media into teaching and learning activity in the higher education institution. The objective of this study is to identify the adoption of the functionality of social networks in higher education to increase learning performance. The methodology used in this study is conjoint analysis to map social media features into social media functionality based on student preferences. The result obtained in this study is the mapping of the functionality of social media for higher education to build social learning systems, so it can build intimacy and immediacy to increase learning process

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1 Introduction

In today's society, social media took apart in popularity as a new communication channel (Gu et al., 2016). The emergence of internet-based social media has allowed participants to connect and socialise using social media with many people, which can be accessed anytime, anywhere (Hayaati et al., 2014). In addition, the advent of mobile devices technology drives users to interact with social media platforms anytime and anywhere (Bernabé-moreno et al., 2015). The introduction of social media technologies into organisational context continues a long trend of making various aspects (Leonardi, 2015). Although the most implementations of social media are primarily to enhance social communication, it can be collaborated as an appropriate tool to support teaching and learning purposes, mainly to enhance interaction between instructor and learners (Elnasr et al., 2016; Dyson et al., 2014). For higher education institution, it brings teaching and

learning to be more interesting with the interactivity, interdisciplinary, social interaction, a cultural perspective, and a certain kind of experience (Rodrigues et al., 2011).

There are many challenges that are related with e-learning platform. For example, problems about how to increase students focus on learning process and it is difficult to retain the student attention during learning (Ramakrisnan et al., 2012). To ensure high quality teaching and learning, many higher education institutions are discovering that new patterns of teaching and learning are required to fulfil the needs of a generation of learners who seek active interaction as well as opportunities for social learning. Traditional teaching and learning approaches are typically based on rigid learning materials, fixed deadlines, and assessment tasks and criteria defined by teachers. Otherwise, the reality, today's students demand greater control of their own learning and the inclusion of technologies in ways that meet their needs and preferences (McLoughlin and Lee, 2008; Rodrigues et al., 2011). From students' perspective as learner who directly interacts with the learning process, higher education institution must consider the changing nature of students as key stakeholders in the educational process. They absorb information quickly, in images, video, text format, from multiple sources simultaneously. Moreover, they prefer random 'on-demand' access to media; in order to get constant communication with their friends and ease of access to the creation of their own media (Duffy, 2008). According to an US study on teen content creators, 57% of online teens create contents for the internet, such as create a blog, work on personal web-page, create webpage for school, share original content, such as artwork, photos, stories; remix content, etc. (Lenhart and Madden, 2005). They can self-study from other people using their social networking tool. This fact needs more than an adaption to accommodate digital learning style. Moreover, it is the placing of the control of learning experience itself into the hands of the learners and instructors as a key of transformation of learning process. Higher education as education institution that runs the learning process should provide for students an unprecedented way to learning platform, socialise, and co-create. While some regard social media as a distraction, effective use of social media technologies enables learners to create their own learning and social communities (Mathew and Practice, 2014). Instructors have the role to filter the distraction during the learning process, so teaching and learning can run according to the learning outcome. Social media has been recommended as a convenient online resource tool for learning (Hong et al., 2016). Therefore, this study wants to consolidate social media features into higher education teaching and learning platform. Since most of the students used social media and the learning process is shifting into social learning platform which collaborates with social media feature either implicitly or explicitly. We believe that embedding the functionality of social media can become an important platform to encourage student learning, students' participation, fostering educational success, stimulating knowledge sharing and reflection, and developing and expanding the educational system toward social learning systems. With adopting social media in the learning process, learners have the choice of when, what, and how long to study. These self-directed patterns of learning play an important implication in the effectiveness of the user's learning efforts, which in turn can enhance learner's interest (Hong et al., 2016).

There is a growing research in social media focused on the implementation of social media application to improve communication and collaboration (Sallot et al., 2004; Liu, 2010; Taylor and Kent, 2010; Toledano, 2010; Reitz, 2012). Therefore, there is a need to identify how social learning could enhance learning experience using social media platform, which has a tremendous potential to enhance teaching and learning. Most of

previous research describe how social media have a significance impact in education institution, but the social media implemented in a separate platform with learning environment, as a result there are many pros and cons according to this situation because all this time social media seen as entertainment media so if higher education institution use this media will be a problem for the continuation of the learning process. Therefore, this study will build learning platform as integrated platform with social media. In addition, study has focused on how social media supporting organisation's strategy (Briones et al., 2011; Fisher et al., 2011; Reitz, 2012). In term of measurement, this study focuses on identifying social media preferences from student perspective and social media functionality features that can be integrated into learning environment to enhance teaching and learning with the current learning system. The idea to map the features of social media into social media's functionality based on the previous study that measures relationship among social network features for friendship and learning (Ibrahim and Leong, 2012), which describe social media categories and identify websites, which involve both making friends and engage in learning. This research needs to strive how the functionality supports the learning platform, that is, the institution can define social media's features to be integrated together as one learning platform. The development of this study will build social learning platform which able to create the learning environment for a higher education institution, which can take place both in class and while learners are away from the classroom, thus creating a learning community that is not only dependent on the class and forum activity, which are expected to increase students participation during the learning process, improve performance of students, then foster engagement both instructors and students.

2   Theoretical background

For this research, some theories can be the background, namely the following.

2.1   Social media

As social media tools become mainstream in every aspect of the business, organisations must update their strategies and tactics to use social media in their daily activities (Briones et al., 2011). The concept of social media is top of the agenda for many business perspectives today (Schejter and Tirosh, 2015). Social media identifies to a group of internet-based applications that build on the ideological and technological foundations of Web 2.0 and that allow the creation and exchange user-generated content (Zhang et al., 2015). They target primarily to personal need (e.g., they allow users to store their pictures, bookmarks, video, photo, etc.) and facilitate one to one or one to many interactions. Indeed, the adoption of social media tremendously touches every human aspect (Ali-hassan et al., 2015).

Developing social media has now become significant for both local and international institution (Lake, 2014). Based on this fact, most institution tries to identify which one can support organisation such as Wikipedia, YouTube, Facebook, Second Life, and Twitter (Kaplan and Haenlein, 2010). Social media platform provides the foundation for various forms of applications, such as collaborative content (e.g., Wikipedia), social networking (e.g., Facebook, Twitter, LinkedIn, LINE), and multimedia content (e.g.,

YouTube and Flickr), thus, bringing new opportunities to support educational institution (Akman and Turhan, 2015). Moreover, the use of social media created an opportunity for interaction, opportunities for collaboration, and allowed students to engage in content creation and communication using social media (Gikas and Grant, 2013). The mix influences of social media use into higher education institution have many positive impacts. According to this fact, many kinds of research have explored the implementation of social media in the higher education institution.

The power of social media needs an institution to build strategies how to engage with this platform. Consequently, institutions regularly ignore or mismanage the functionality of social media. Recent research has implemented traditional functional analysis approach to determine social motivations and psychological to use social media. However, only limited research has been conducted on what preferences functionality of social media that can influence users. Organisations have social needs and psychological, but not yet implementing a functional approach to determine the functions social media offer the system to engage in the social media environment (Reitz, 2012). To prevent the gap in knowledge of functionality (Kietzmann et al., 2011) have proposed the honeycomb social media framework to help identify the functionality of social media, which consists of:

- Identity block

  This block represents the extent to which the user reveals the identity in the social media environment. This functional block can include various types of data, such as gender, age, location, and additional information that describe the user. During the presentation of identity, users often represent self-disclosure information such as thoughts or feelings (Kaplan and Haenlein, 2010).

- Conversations block

  This block represents the communication process in social media between participants. The primary objective of social media is to help the communication among individuals and groups, so this block may seem to be the most unambiguous element (Kastelic, 2007).

- Sharing block

  This functionality block describes how a user can share, distribute, and receive many kinds of object, such as text, video, picture, sound, link, location, etc.

- Presence block

  This block represents status users. It shows which user is reachable and accessible on social media platforms. Intimacy and immediacy of the medium influence social media presence (Kastelic, 2007).

- Relationship block

  This block represents how users are connected that often determines what and how the information exchange happened. There is a strong connection between identity and relationship, the higher the identity is valued by a social media community, the higher the relationship is valued (Kastelic, 2007).

- Reputation block

  This functional block represents to which users can define the standing of the other, which includes them, in social media platform. There are several metrics in connection with this block, which are: strength, sentiment, passion, and reach (Kastelic, 2007).

- Group block

  This block describes to which users can form groups and sub-groups based on their preferences.

According to the objective of this research which is to adopt social media into higher education institution teaching and learning process, the authors try to identify the functionality of social media to support teaching and learning for a higher education institution that can be collaborated into the learning platform. With the functionality of social media, it appears that higher education institution should accommodate this opportunity to enhance the learning experience. Therefore, this research focuses on infusing social media functionality into learning platform based on student's preferences. When the authors examine social media technology, it becomes clear that many sites have struck a careful balance among the different functional block of the honeycomb. Some only focus on sharing, some more on the presence, etc. None of today's major social media functionality focuses solely on just one block (Kietzmann et al., 2011). According to the framework, we can identify and classify social media functionality to build social learning environment.

2.2 Social learning

Learning observed in many research is a process of shaping human behaviour. The concept of learning is classified into two approaches, which are individual learning and social learning. Individual learning (or asocial) learning using trial and error and insight refers to learning that occurs independently of any social influences. On the other hand, social learning involves the transmission of traits or behaviours through interaction with other individuals (Tamura et al., 2015). Social learning concept has a long story in education field although there is much different meaning to it. From social networking, it grows to new concept; merge with education; e-learning and create new phenomena in education environment, it well known as social learning (Othman et al., 2012; Chan, 2002; Bandura, 1977). The social learning concept presumes that individuals actively learn from decisions and experiences of their neighbours and society (Gallo, 2014). In social learning, an individual learns from another individual independently of the presence of social relation. According to this situation, the institution usually builds an environment to represent the structure of these different types. Many higher education institutions are promoting the integration of online technologies to support learning process as an attempt to provide a flexible environment, to diversify the profile of students accessing higher education institution, and to facilitate the development of life-long learning (Holland and Judge, 2013). In the midst of yet another social revolution stimulated by the interaction between the human desire for connectivity and technology, social media already changed how people interact and communicate, which represent a context that differs in important ways from traditional and other digital ways of

interacting and communicating. As a result, social media is a relatively unexamined type of context that may affect the cognition and behaviour of the individual in a learning process (Mcfarland and Ployhart, 2015). On the other perspective, impacted from a new learning places emphasis on social learning and the implementation of soc program such as blog, wikis, podcast, etc. (Qwaider, 2014b). This phenomenon has used online social networks to enhance the learning communities on learning process.

Technically, the immediate predecessors of the learning environment which is known as managed learning environments (MLE) which morphed into virtual learning environment (VLE) and later is known as learning platform before becoming personal learning network (PLN). The latest form of these platforms is web-based systems that follow the classroom by providing online access to innovative collaboration tool in addition to traditional teaching tools. With the popularity of social media, the trend evolved into an online social environment where student and teachers can communicate using online dialogue in a safe and secure environment. When using traditional learning management systems tools, the learning space is only left under the control of the institution and instructors. As a result, this leaves little room for learners to arrange their digital learning space and facilitate their activities. Therefore, many research proposes that a social learning platform which be used to support teaching and learning activities from an institutional e-learning system, composed of communication and collaboration between learners and instructors using social media platform (Raspopovi et al., 2016; Iahad et al., 2012; Väljataga et al., 2011).

The e-Learning 2.0 approach is a new terminology in the education environment that came from Web 2.0 era. According to the concept of e-Learning 2.0, currently, conventional e-learning, which uses many assignments and evaluation process only by the teaching begin to shift in education concept. Whereas, a new perspective arises from a new e-learning concept which emphasis on social learning and the use of social programs, such as blogs, wikis, and podcasts and virtual world such as Second Live. e-Learning 2.0 by contrast to the e-learning systems is not only based on knowledge by understanding, but knowledge was defined as a social act. Learning can take place via a conversation about interaction and content to solve the problems. Social learning is the best practice to learn something from other (Qwaider, 2014a). Although social learning platform is seen as tools to enhance learning activity, they are often used within the higher education institution (Wallace, 2013). The social learning concept by Bandura (1977) defines how learning performs using social media environment. Moreover, Bandura further reiterates that a combination of environmental and psychological factors allows social learning to realise. Information technology and internet have an important role in the exchange of knowledge in the social learning environment. People get their knowledge or understanding from outside world based on their own experiences with other (Qwaider, 2014b). Presently many kinds of research are only to identify the usefulness of social media in the learning environment. The major findings about social media implementation for support education field recently concluded that all the implementation has positive outcome to institution (Fergie et al., 2016; Legaree et al., 2015; Williams and Whiting, 2016; Elnasr et al., 2016; Dyson et al., 2014). However, it still lacks on how to empirically collaborate social media features into learning platform to enhance pedagogy (Legaree et al., 2015). Only several research that explores the collaboration features of social media into one platform of e-learning, such as LearnLand (Ebner et al., 2007), Cloudworks (Conole and Culver, 2010), Plebox (Rodriguez, 2011),

Edmodo (Balakrishnan et al., 2014). The following are the description of each social learning application that already conducted from the previous research:

- LearnLand operations since October 2006 at Graz University of Technology. This system can be accessed by every learners and instructor in the higher education institution. This application is built based on the open source software ELGG, which is social software offering a high degree of choice, flexibility, and openness and is considered as a system that places people at the hub of the activities. The features in LearnLand include weblog, data pool, community building, personal information, keyword tagging, RSS-Reader, and personal information (Ebner et al., 2007).

- Cloudworks works as an acronym for collaborative learning design at The Open University. The features in Cloudworks consist of social features, user profile, tagging, initial content population of the site, no private content, and low barrier to entry (Conole and Culver, 2010).

- Plebox is used as a combination of modules using social features characteristics, such as it connects the network of friends or the other friends of friends, communication directly, and it stimulate a critical student sense (Rodriguez, 2011).

- Edmodo is a social learning platform to be the most popular LMS for social media users because it interfaces adopt Facebook, but Edmodo lacks many of the function required for a typical LMS (e.g., streaming, grading, etc.) (Balakrishnan et al., 2014).

According to the previous research, the social learning systems are not based on student's preferences, but only institutional initiatives. Moreover, each of previous research proposes integrating technology with modern and psychological principles. Besides, current trend indicates that the prevalence of social media technology can increase, but it is not possible for an institution to have many kinds of social media accounts, so it becomes important to understand what preferences of social media features can effectively enhance the learning process. This technology cannot be ignored by higher education in this digital age (Legaree et al., 2015). Therefore, this research identifies what students' social media preferences to be adopted in the social learning environment. Even though the implementation of social learning is not easily being adopted in a learning environment. There are pros and cons of social learning usage in a higher education environment. It has been argued that instructor would be benefited from implementation learning in Web 2.0 technology (Greenhow and Burton, 2011). Others perspective argue that small proportion of people use social learning in sophisticated ways that educators might values (Eynon and Malmberg, 2011). Although some of Web 2.0 are generation Y, who are familiar using new technology; but to adopt the social technologies in class needs consideration for some aspects, such as diversity experiences, familiarity, attitudes and expectation of the students towards online technologies (Falahah and Rosmala, 2012). Despite the pros and cons, some of the social learning has exceeded their functionality, from non-formal learning into formal learning (Greenhow and Lewin, 2015).

3   Research methodology

This research combines theoretical background of social media, social learning with the practical observations. This research focuses on implementing social media functionality for higher education to build social learning systems as a result. The methodology used in this research consists of data collection and analysis, instrumentation, and research design. It was adopted to achieve the objectives of this research, which are to investigate the role of social media functionality to infuse electronic learning process in the higher education institution. During this research, the authors use the quantitative approach to identify the adoption model of social media.

3.1   Research phases

This research comprised three major phases, which can be seen in Figure 1. In the first phase, the authors identify social media preferences to determine which social media tools that can be adopted in the higher education institution. The social media preferences describe in descriptive analysis. A common approach for measuring social media adoption in higher education institution is using an open survey to the students, who have active use of social media in their daily activity (Falalah and Rosmala, 2012; Oktavia et al., 2016).This research originates from the view that students have many channels of social media, in turn, those social media channel can be adopted into learning platform because social media introduce substantial changes to collaborate with person, communities, and organisation.

Figure 1   Research phase (see online version for colours)
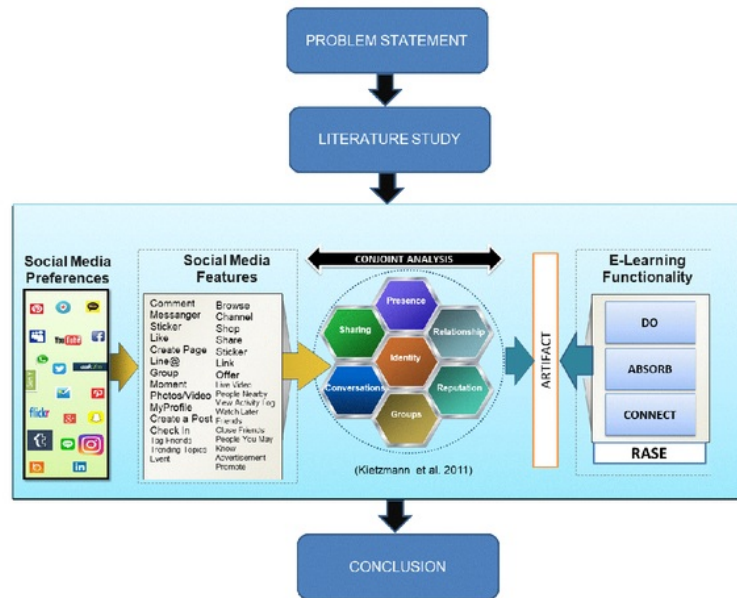
In the second phase, the authors demonstrate the social media features preferences. Regarding exploring social model features preferences from student's perspective to be adopted into higher education institution; this study tries to extend the Kietzmann's honeycomb framework (Kietzmann et al., 2011) to identify student's preferences. The authors use Kietzmann's honeycomb framework because this framework almost certainly the most widely used and well-established framework. It has been practically adopted and used in the literature to conceptualise the functionality of social media (Killian and Mcmanus, 2015; Stamati et al., 2015; Bharati et al., 2015). Kietzmann's framework consists of seven functional building blocks, which are: presence block, conversations block, sharing block, identity block, relationships block, reputation block, and groups functionality block. Every block allows to identify and to classify component of social media, user experience and the implication in organisations. These functional blocks are mutually support social media activity.

The third phase, the authors build artefact social learning using design application methodology, which combines between e-learning functionality which already identified from previous research (Anggraini et al., 2017) and social media features based on the functionality model. Figure 2 shows the research model to map between social media features and *e-learning* functionality in this research.

Figure 2 Research model to map social media functionality and e-learning functionality (see online version for colours)
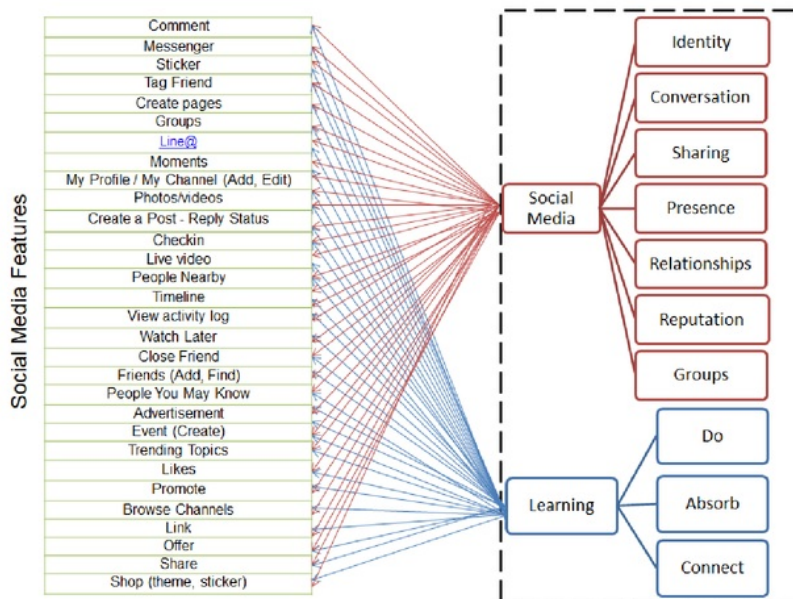
Note: Red: social media functionality; blue: learning functionality.

3.2   Sampling and data collection

Initially, respondents in this study are encouraged to participate actively in any social media channel and the focus of this study use Indonesia as one of the top five social media markets in the world (Lake, 2014), then there is no platform social learning exclusively developed in Indonesia. According to this fact, this study wants to explore higher education students' preferences in Indonesia, this study consists of two sampling phases, which are:

- Phase 1, in this phase the authors identify student preferences of social media channel. Sampling technique used is snowball sampling method, which uses a chain referral. This method involves seeding participants via a convenience sample from the relevant population because the authors cannot identify exactly how many social media users in higher education institution, so the authors recruit participant like a rolling snowball. In other words, snowball sampling method is based on referrals from initial subjects to generate additional subjects. Therefore, when using this method member of the sample group are recruited via referral (Dudovskiy, 2017). The survey used online Google form for one month, the number participants involved is 1152 students.

- Phase 2, in this phase the authors focus on top three social media preferences, then authors identify features of social media that will be mapped into social media functionality framework. The sampling method based on Slovin's method combined with stratified random sampling. The population of this phase refers to higher education institutions which have achieved 'A' accreditation and focus in Kopertis 3 (Jakarta, Bogor, Tangerang, Depok Area) then the institution already implemented e-learning to support their daily learning process. The authors focus on this population because if the higher education institution has achieved 'A' accreditation, they already have a proper business process in education, whether platform or infrastructure. According to this situation, the authors filter the higher education institution with some criteria. The result show 13 institutions involved in this research, namely:

  1   Sekolah Tinggi Ilmu Ekonomi Trisakti
  2   Sekolah Tinggi Pariwisata Pelita Harapan
  3   Universitas Bina Nusantara
  4   Universitas Gunadarma
  5   Universitas Indonesia
  6   Universitas Islam Negeri Syarif Hidayatullah Jakarta
  7   Universitas Katolik Indonesia Atma Jaya
  8   Universitas Mercu Buana
  9   Universitas Multimedia Nusantara
  10 Universitas Nasional
  11 Universitas Negeri Jakarta
  12 Universitas Tarumanagara
  13 Universitas Trisakti.

The total numbers of students from these institutions are 207,952 (https://forlap.ristekdikti.go.id/, 26 December 2017). With this number of population, the authors calculate the target number of sample using Slovin's with 95% standard deviation, the result is 414. To calculate the proportional number of sample will be targeted as sample respondents for this research, the authors divide the number of respondents with the population number: 414 / 207,952 = 0.2%. The result is 0.2%, and then the authors count with the number of population for each higher education institution in Kopertis 3. Table 1 shown the result target of sample for this research.

- Phase 3, in this phase the authors combine learning functionality in the previous research with social media features preferences. The combination of two will be represented in a model application of social learning. The authors use UML diagram to describe the model application of social learning systems.

Table 1 Target of sample

Higher education institution	Type	Number of students	Population	Stratified sample
Sekolah Tinggi Ilmu Ekonomi Trisakti	Social	2,722	2,722	6
Sekolah Tinggi Pariwisata Pelita Harapan	Social	1,075	1,075	3
Universitas Bina Nusantara	Exact	7,431	19,480	15
	Social	12,049		25
Universitas Gunadarma	Exact	15,793	36,285	32
	Social	20,492		41
Universitas Indonesia	Exact	13,583	30,327	28
	Social	16,744		34
Universitas Islam Negeri Syarif Hidayatullah Jakarta	Exact	4,482	18,141	9
	Social	13,659		28
Universitas Katolik Indonesia Atma Jaya	Exact	2,468	10,421	5
	Social	7,953		16
Universitas Mercu Buana	Exact	10,642	27,901	22
	Social	17,259		35
Universitas Multimedia Nusantara	Exact	1,212	6,905	3
	Social	5,693		12
Universitas Nasional	Exact	2,993	6,931	6
	Social	3,938		8
Universitas Negeri Jakarta	Exact	3,497	16,625	7
	Social	13,128		27
Universitas Tarumanagara	Exact	4,200	13,161	9
	Social	8,961		18
Universitas Trisakti	Exact	6,876	17,978	14
	Social	11,102		23
Total			207,952	426

Source: https://forlap.ristekdikti.go.id/, 26 December 2017

Table 2   Research instrument

Variable	Indicator		References
	Features	Questions	
Conversation	Comment	Participants prefer to use comment on conversation functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Messenger	Participants prefer to use messenger on conversation functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Sticker	Participants prefer to use sticker on conversation functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Like	Participants prefer to use like on conversation functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
Groups	Create pages	Participants prefer to use create page on group functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Groups	Participants prefer to use grouping on group functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Line@	Participants prefer to use Line@ on group functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
Identity	Moments/history	Participants prefer to use moments/history on identity functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	My profile/my channel (add, edit)	Participants prefer to use my profile on identity functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Photos/VIDEOS	Participants prefer to use photos/videos on identity functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
Presence	Create a post – reply status	Participants prefer to use create a post on presence functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Check in	Participants prefer to use check in on presence functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Live video	Participants prefer to use live video on presence functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	People nearby	Participants prefer to use people nearby on presence functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Timeline	Participants prefer to use timeline on presence functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)

Table 2　　Research instrument (continued)

Variable	Indicator		References
	Features	Questions	
Presence	View activity log	Participants prefer to use view activity log on presence functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Watch later	Participants prefer to use watch later on presence functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
Relationships	Close friend	Participants prefer to use close friend on relationship functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Friends (add, find)	Participants prefer to use friend on relationship functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	People you may know	Participants prefer to use people you may know on relationship functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
Reputation	Tag friend	Participants prefer to use tag friend on reputation functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Promote	Participants prefer to use promote on reputation functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Advertisement	Participants prefer to use advertisement on reputation functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Event (create)	Participants prefer to use event on reputation functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Trending topics	Participants prefer to use trending topics on reputation functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
Sharing	Browse channels	Participants prefer to use browse channel on sharing functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Link	Participants prefer to use link on sharing functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Offer	Participants prefer to use offer on sharing functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Share	Participants prefer to use share on sharing functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)
	Shop (theme, sticker)	Participants prefer to use shop on sharing functionality than the other features	Stamati et al. (2015), Kietzmann et al. (2011)

3.3   Research instrument

In this research, the authors attempt to measure various kinds of a characteristic of student preferences using social media and the features. To determine the suitability of data collection as to rationalise generalisation, a survey was used in this study to learn perception of social media preferences to collaborate teaching and learning in the higher education institution. The research instrument included is the closed-ended question, which gives the respondents to answer based on their priority and preferences. Moreover, it can provide insight into factors that the current scales may have overlooked. The instrument used in this research divided into three parts, which are:

a   Part 1: instruction about how to answer the questionnaire.

b   Part 2: question about background and demographic information that consist of: social media use, gender, age, semester, year of experience in using social media.

c   Part 3: question about social media preferences (questionnaire phase 1) and social media features preferences (questionnaire phase 2), which consists: question about social media ownership, number of social media, and question about preferences features from social media, question about priority of preferences social media if these social media will be implemented into teaching and learning process. Table 2 shows the research instrument of social media features' preferences.

3.4   Conjoint analysis

According to the preferences features of social media functionality, the authors use a conjoint approach. Conjoint analysis is a statistical approach to measure user preferences of any kind of attribute. It depends on surveying subject of research with a combination of the representative set of attributes. Analysis method using a quantitative approach to build model user preferences based on the combination of the attribute.

With this conjoint analysis, a system or hypothesis can be formed by combining the level of each attribute. To determine the relative importance of different attribute levels, a relationship must be specified between the attributes' utility and the rated responses. With conjoint analysis assumes that the overall utility derived from any combination of attributes of a given good or service obtained as the sum of the separate part-worth's of the attributes. A value measure in the conjoint analysis is subjective to the unique preferences of everyone. Moreover, conjoint analysis is used to find out how the respondent's perception of an object consisting of one or many parts. To calculate the parameters of the model, this research uses statistical tool IBM SPSS 23 (conjoint analysis).

The conjoint process consists of three main steps, including:

1   The first step is observation studies conducted on social media use to support the learning process. This process begins with the categorisation of social media features contained in LINE, YouTube, Facebook to define the functionality attribute of social media, which consists of identity, groups, reputation, relationships, presence, sharing, and conversation. From this process generate preference features for each of the existing functionality. According to the result, the authors get features that represent the needs and will be mapped into the learning system.

2   The second step is choosing a representative set of attribute combinations based on social media functionality to generate orthogonal array using a partial factorial design or orthoplan. It arranged to identify each factor level main effects so that a combination of preferences can be made as an option for the respondent. The conjoint approach identifies the rank alternative attribute, even though after selecting factors or levels the total number of combinations is frequently too large for specific subjects. To solve this problem, the full profile approach uses what is defined as a fractional factorial design, which presents a suitable fraction of all possible combinations of the factor levels. In Table 3, the authors can see the classification of social media features into Kietzman's honeycomb framework functionality.

Table 3   Classification of social media features

Conversation	Group	Identity	Present	Relationship	Reputation	Sharing
Comment	LINE@	Moment	Check-in	Friend	Advertisement	Browse channel
Messenger	Create page	My profile	Create post	Close friend	Event	Link
Sticker	Group	Photos/video	Live video	People you may know	Promote	Offer
Like			People nearby		Tag friend	Share
			View activity log		Trending topics	Shop
			Watch later			
4	*3*	*3*	*6*	*3*	*5*	*5*

Once factors levels are defined, then the authors must combine it to form a different hypothetical pattern for a survey to identify preference ratings. In this research, a functionality approach was used to design social learning model. Based on the attributes and levels in Table 2, the authors calculate the combination of orthoplan using factorial design yielding 16,200 possible functionalities ($4 \times 3 \times 3 \times 6 \times 3 \times 5 \times 5 = 16,200$). Since this condition is difficult for identifying user's perspective, to evaluate social media's features, it is necessary to minimise the possibility of combination because respondents will be confused to fill the questionnaire and the answer might be bias. Therefore, in this research, the authors use the fractional factorial design to reduce the possible number of features to a possible level, while still allowing the preferences to be inferred for all of the combinations of levels and factors (Kuzmanovic et al., 2013). Regarding the use of this pattern, the 16,200 possible social media features are reduced to 49. Table 4 shows the randomised orthoplan results, which consist of 49 hypotheticals. This randomise orthoplan result is autogenerated from SPSS using orthogonal main effect plans, that reduce the number of options to be administered to a respondent. These designs can be blocked so that each individual receives a balanced subset of profiles.

Table 4   Randomise orthoplan result

Conversation	Group	Identity	Present	Relationship	Reputation	Sharing
Comment	Group	Photo/video	Live video	Close friends	Promote	Offer
Messenger	Group	Moment	Watch later	People you may know	Trending topics	Shop
Sticker	Create page	Moment	View activity log	Friends	Advertisement	Offer
Messenger	Create page	My profile	Create post	People you may know	Trending topics	Offer
Sticker	Group	Photo/video	Watch later	Friends	Promote	Share
Comment	Create page	My profile	Create post	Friends	Event	Browse channel
Messenger	Create page	Photo/video	People nearby	Close Friends	Event	Offer
Sticker	Line@	Photo/video	Live video	Friends	Trending topics	Browse channel
Messenger	Line@	My profile	Watch later	Close friends	Event	Browse channel
Messenger	Create page	Photo/video	Check-in	Friends	Advertisement	Browse channel
Comment	Line@	My profile	People nearby	People you may know	Advertisement	Shop
Comment	Create page	My profile	People nearby	Close Friends	Trending Topics	Share
Messenger	Create page	Moment	Check-in	Friends	Promote	Shop
Comment	Group	Photo/video	Create post	Friends	Tag friend	Shop
Messenger	Create page	Photo/video	Create post	People you may know	Event	Browse channel
Comment	Create page	Moment	View activity log	People you may know	Promote	Browse channel
Sticker	Create page	Moment	Live video	People you may know	Event	Shop
Sticker	Create page	Photo/video	People nearby	Friends	Event	Shop
Sticker	Line@	Moment	Create post	Close Friends	Advertisement	Browse channel
Sticker	Line@	My profile	People nearby	Friends	Promote	Browse channel
Sticker	Group	Photo/video	Create post	People you may know	Event	Link
Comment	Group	Moment	Check-in	Close friends	Trending topics	Browse channel
Comment	Create page	Photo/video	Watch later	People you may know	Advertisement	Browse channel
Sticker	Create page	My profile	Watch later	Close friends	Advertisement	Shop

Table 4   Randomise orthoplan result (continued)

Conversation	Group	Identity	Present	Relationship	Reputation	Sharing
Comment	Group	My profile	Create post	Friends	Advertisement	Offer
Sticker	Line@	My profile	Check-in	People you may know	Tag friend	Offer
Messenger	Line@	My profile	Create post	People you may know	Promote	Link
Comment	Line@	Moment	Live video	Close friends	Event	Link
Like	Create page	Photo/video	Check-in	Close friends	Advertisement	Link
Sticker	Group	My profile	Create post	Close friends	Advertisement	Browse channel
Like	Line@	Photo/video	Create post	Friends	Trending Topics	Shop
Sticker	Create page	My profile	View activity log	Friends	Trending topics	Link
Like	Line@	Moment	Watch later	Friends	Event	Offer
Comment	Create page	My profile	Watch later	Friends	Tag friend	Link
Messenger	Group	Moment	People nearby	Friends	Advertisement	Link
Sticker	Group	My profile	Check-in	People you may know	Event	Share
Comment	Line@	Photo/video	View activity log	People you may know	Advertisement	Shop
Like	Group	Moment	People nearby	People you may know	Tag friend	Browse channel
Messenger	Group	My profile	View activity log	Close friends	Event	Shop
Like	Group	My profile	View activity log	Friends	Event	Browse Channel
Messenger	Create page	My profile	Live video	Friends	Tag friend	Browse channel
Messenger	Group	My profile	Live video	Friends	Advertisement	Shop
Messenger	Line@	Photo/video	View activity log	Close friends	Tag friend	Share
Comment	Line@	My profile	Check-in	Friends	Event	Shop
Like	Create page	My profile	Create post	Close friends	Promote	Shop
Messenger	Line@	Moment	Create post	Friends	Advertisement	Share
Like	Create page	My profile	Live video	People you may know	Advertisement	Share
Comment	Create page	Moment	Create post	Friends	Event	Share
Sticker	Create page	Moment	Create post	Close friends	Tag friend	Shop

3   Conducting a conjoint process, consists of:

   a   Create a basic model of conjoint testing, which can be decomposed into multiple regression equations with the alleged equations.

   b   Estimate the basic model of the conjoint equation using the smallest quadratic regression analysis.

   c   Determine the importance of factors.

   d   Analyse and interpret the results of the conjoint analysis on the preference data at the aggregate level.

   e   Assessment of the reliability and validity of the model obtained with the value of R2 (coefficient of double determination) Pearson and Tau's Kendall.

4   Result and discussion

The result consists of two parts, which are: identify social media's features preferences and designing social learning systems.

4.1   Social media's feature preferences

In order to build a model of social learning which integrate social media features and learning activity in accordance with the characteristics of social media feature, the first step in this study is to conduct a preliminary survey to see the preferences of social media use among students, to identify the characteristics of social media which is suitable for implementation in higher education. The preliminary process of the survey was conducted using snowball sampling, which the target and the selection of the respondents were carried out spreading, such as the reference chain referring to convenience sampling. Preliminary dissemination of the survey was conducted by using an online questionnaire through the web, so that the number of respondents can spread with the origin of the various higher educations. From the preliminary results of the survey conducted for one month from November 2015 to December 2015, obtained the number of respondents involved in the preliminary survey as many as 1,593 students from different higher education institutions in Kopertis 3 area. Based on the survey, the top three social media preferences from the student perspective are Line (882 participants), YouTube (792 participants), and Facebook (726 participants).

Facebook is one of the most common sites for people of all age range, which have over 750 million users. Many researches show that Facebook is common used in the learning platform (Legaree et al., 2015). Initially, this website is designed for college students, open to everyone, with half of all subscribers logging-in once a day (McAndrew and Johnston, 2012). It is not only as a social network site but also as an online team-based pedagogically sound learning platform that is fast becoming recognised in the education community. Facebook has a tremendous potential application to enhance teaching and learning for higher education, student-centred pedagogy, authentic learning and interactive learning communities (Rasiah, 2014). Figure 3 shows the Facebook application.

Figure 3 Facebook (see online version for colours)

LINE is a freeware app for instant communication on electronic devices, such as smartphones, tablet computers, personal computers, which allow us to make voice calls and send messages wherever and whenever for free. LINE users exchange text, picture, video, and audio and conduct free VoIP conversations and video conferences. Figure 4 shows LINE application.

Figure 4 LINE (see online version for colours)
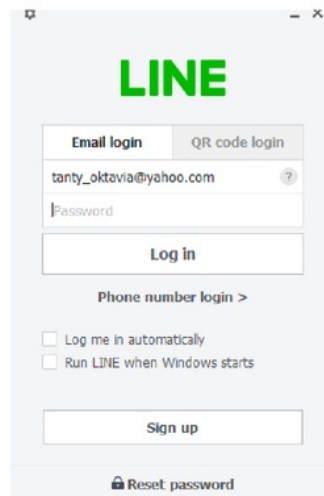
YouTube is a Web 2.0 website, founded in 1977 which have facilitated to upload videos in any kind of formats and share among members (McAndrew and Johnston, 2012). For addition, every user can give comments and set a rating to the watched video, but the

video cannot be downloaded only be embedded on an external website. YouTube has revolutionised the phenomena of sharing video because prior to YouTube there was difficulty in sharing videos. However, today, YouTube allows anyone to upload their content easily (Rodriguez, 2011). Figure 5 shows YouTube application.

Figure 5   YouTube (see online version for colours)
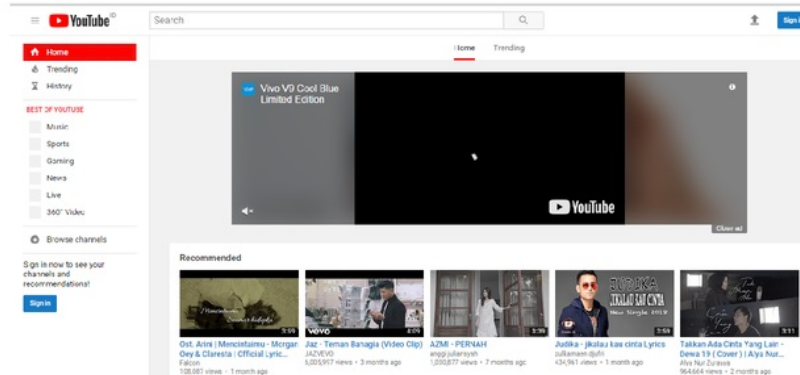
After the authors identify social media preferences, then continue to check features preferences of social media, the authors did a survey in December 2017 that involved 426 participants based on stratified random sampling from Universities in Kopertis 3 which have predicate 'A' and the higher education institution must have implemented e-learning platform to support their daily learning process. The following is the demographic of participants that involved in survey social media's features preference, which can be seen in Table 5.

Table 5   Demographic respondent survey social media preferences

Variable	Category	N respondents	Percentage
Gender	Male	231	54.23%
	Female	195	45.77%
Age	17	4	0.94%
	18	90	21.13%
	19	109	25.59%
	20	129	30.28%
	21	57	13.38%
	22	26	6.10%
	23	7	1.64%
	24	3	0.70%
	25	1	0.23%

Table 5 Demographic respondent survey social media preferences (continued)

Variable	Category	N respondents	Percentage
Higher education institution	Sekolah Tinggi Pariwisata Pelita Harapan	3	0.70%
	STIE Trisakti	6	1.41%
	Universitas Bina Nusantara	40	9.39%
	Universitas Gunadarma	73	17.14%
	Universitas Indonesia	62	14.55%
	Universitas Islam Negeri Syarif Hidayatullah Jakarta	37	8.69%
	Universitas Katolik Atmajaya	21	4.93%
	Universitas Mercubuana	57	13.38%
	Universitas Multimedia Nusantara	15	3.52%
	Universitas Nasional	14	3.29%
	Universitas Negeri Jakarta	34	7.98%
	Universitas Tarumanagara	27	6.34%
	Universitas Trisakti	37	8.69%
Study program	Science	150	35%
	Social	276	65%
Year	2012 (year 7)	1	0.23%
	2013 (year 6)	1	0.23%
	2014 (year 5)	69	16.20%
	2015 (year 4)	26	6.10%
	2016 (year 3)	185	43.43%
	2017 (year 2)	141	33.10%
	2018 (year 1)	3	0.70%

Social media tools can be effectively implemented into both online environment and face to face. In term of pedagogy that capitalised on the capabilities of social media tools, either fully online or blended so that students can engage with peers, instructors, and the community in sharing and collaborating ideas, producing images and video, tagging, and reading the contents available through social media tools. The connectivism pedagogy model is particularly suitable in the context of Web 2.0. Connectivism describes learning as a process of creating a network of personal knowledge, all supported by technology. To achieve this goal, higher education institution need to identify the concept of teaching and learning in millennial era, which have to engage meaningfully with the world in which students live and strive to integrate technologies in today's networked society (McLoughlin and Lee, 2008). Therefore, this study will identify social media features to enable the development of dynamic communities of learning trough participation, communication, and connectivity.

The results of measures the social media's student preferences show that for Facebook application, the students prefer to use group, messenger, and create post. Then for LINE application, the students prefer to use chat, group, and photos/video, and for YouTube application, they prefer to use the browse channel, subscription, and trending topics to elaborate with learning platform in higher education institutions. Table 6 shows the social media features preferences based on student perspectives.

Table 6   Social media features ranks preferences

	Facebook			LINE			YouTube		
	Features	*Frequency*	*Percentage*	*Features*	*Frequency*	*Percentage*	*Features*	*Frequency*	*Percentage*
	Group	230	11.87%	Chat	364	15.37%	Browse channel	278	21.25%
	Messenger	220	11.35%	Group	284	11.99%	Subscription	242	18.50%
	Create post	200	10.32%	Photos/video	282	11.90%	Trending topics	224	17.13%
	News feed	165	8.51%	Link	269	11.36%	Comment	132	10.09%
	Event	140	7.22%	Timeline	264	11.14%	My channel	116	8.87%
	Live video	129	6.66%	Friends	196	8.27%	Watch later	113	8.64%
	Friend	115	5.93%	Share	193	8.15%	History	98	7.49%
	Create page	107	5.52%	Line@	163	6.88%	Like	60	4.59%
	Likes	70	3.61%	Comment	122	5.15%	Tag friends	16	1.22%
	View activity log	56	2.89%	Likes	56	2.36%	Live video	15	1.15%
	Photo/video	55	2.84%	Sticker	43	1.82%	Share	14	1.07%
	Tag friends	52	2.68%	My profile	41	1.73%	*Total*	*1,308*	*100.00%*
	Promote	49	2.53%	People nearby	28	1.18%			
	Advertisement	47	2.43%	Create a post	15	0.63%			
	People you may know	44	2.27%	Check in	12	0.51%			
	My profile	41	2.12%	View activity log	10	0.42%			
	Shop	36	1.86%	People you may know	10	0.42%			
	Sticker	35	1.81%	Tag friend	8	0.34%			
	Close friend	33	1.70%	Trending topics	5	0.21%			
	Offer	22	1.14%	Shop (theme, sticker)	4	0.17%			
	People nearby	20	1.03%	*Total*	*2,369*	*100.00%*			
	Check-in	20	1.03%						
	Moments	15	0.77%						
	Comment	14	0.72%						
	Trending topics	12	0.62%						
	Share	11	0.57%						
	Total	*1,938*	*100.00%*						

According to the result, the authors try to identify features that have the same functionality between LINE, Facebook, and YouTube to measure the functional preferences features and eliminate the same function of social media features. In Table 7, we can see the process of classification social media feature based on the similarity features.

Table 7   The result of social media preferences features mapping

Features	*Functionality*	*Facebook*	*LINE*	*YouTube*
Comment	Conversation (Kietzmann et al., 2011)	√	√	√
Messenger		√	√	
Sticker		√	√	
Like		√	√	√
Create pages	Groups (Kietzmann et al., 2011)	√		
Groups		√	√	
Line@		√	√	
Moments/history	Identity (Kietzmann et al., 2011)	√		√
My profile/my channel (add, edit)		√	√	√
Photos/videos		√	√	
Create a post – reply status	Presence (Kietzmann et al., 2011)	√	√	
Check in		√	√	
Live video		√		
People nearby		√	√	
Timeline/news feed		√	√	
View activity log		√	√	
Watch later				√
Close friend	Relationships (Kietzmann et al., 2011)	√		
Friends (add, find)		√	√	
People you may know		√	√	
Tag friend	Reputation (Kietzmann et al., 2011)	√	√	√
Promote		√		
Advertisement		√		
Event		√		
Trending topics		√	√	√
Browse channels	Sharing (Kietzmann et al., 2011)			√
Link			√	
Offer		√		
Share		√	√	√
Shop (theme, sticker)		√	√	

After the authors classify each social media feature, the next step is to prepare for conjoint analysis. A study uses conjoint approach to choose representative attribute combination between social media functionalities and social media features (Figure 6), classifying those to a specific subject, and analysing the rankings or scores recorded by

the respondents. In conjoint analysis, attributes are referred to as factors, and attribute values are called levels.

Figure 6   Conjoint model (see online version for colours)
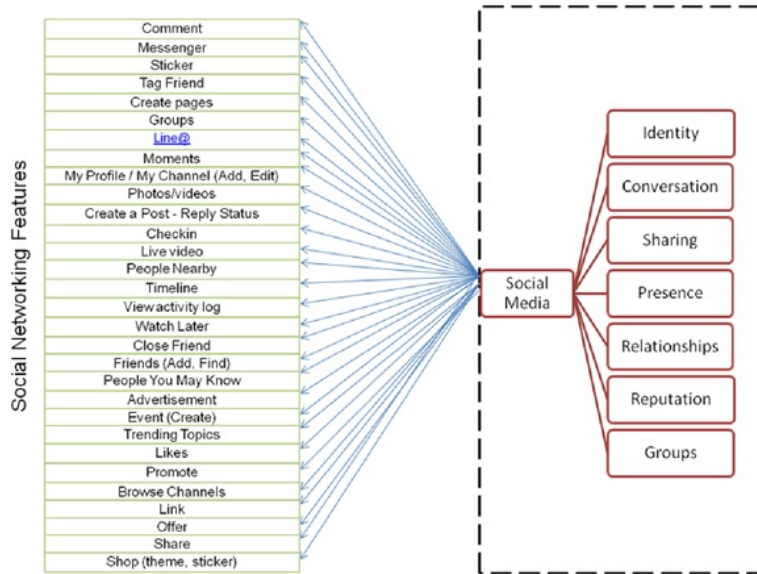
After we have the final mapping of functionality, then the authors analyse the data using conjoint approach to identify preferences features if these features will be implemented into the learning process. The following is the result of a conjoint analysis, which can be seen in Table 8.

Table 8   The preferences social media features result

Functionality	Features	Importance value	Utility estimate
Conversation	*Sticker*	*13.268*	−0.076
	Messenger		−0.558
	Comment		0.374
	Like		0.260
Groups	*Create page*	*9.573*	−0.007
	Groups		0.416
	Line@		−0.409
Identity	My profile	9.312	0.061
	Moments		−0.492
	Photos/video		0.432

Table 8   The preferences social media features result (continued)

Functionality	Features	Importance value	Utility estimate
Presence	*Timeline*	*23.367*	*−0.574*
	Check-in		*−0.587*
	Live video		0.722
	People nearby		*−0.950*
	Create a post		0.575
	View activity log		*−0.274*
	Watch later		1.088
Relationship	*People you may know*	*9.529*	*−0.062*
	Close Friends		*−0.045*
	Friends		0.107
Reputation	Event	17.138	0.021
	Advertisement		0.041
	Tag friend		*−0.288*
	Trending topics		0.503
	Promote		*−0.277*
Sharing	*Offer*	*17.813*	*−0.708*
	Shop		*−0.230*
	Link		*−0.012*
	Browse channel		0.213
	Share		0.737
	(Constant)		25.163
Correlations		*Value*	*Sig.*
	Pearson's R	.693	.000
Fuctionality	*Features*	*Important value*	*Utility estimate*
	Kendall's tau	.496	.000

Based on the results of the overall analysis of the attributes of social media functionality in Table 7, it can be concluded that the most functionality the students want to be implemented is Presence with the importance value of 23.367, Sharing with the importance value of 17,813, and Reputation with the importance value of 17,138. Whereas, the other features have importance value below the average, such as conversation with the importance value of 13,268, group with the importance value of 9,573, Relationship with the importance value of 9,529, and identity with the importance value of 9,312.

Moreover, for the social media features preferences, the results based on utility estimate are as follows:

1   Conversation factors based on statistical test results of respondents prefer to use comment and like feature. This can be seen from the value of utility that shows positive results with the acquisition of the number 0.374 for comment feature and 0.260 for like feature. The result is different with sticker feature and messenger feature with the utility values −0.076 for sticker and −0.558 for messenger feature.

2   For group factor shows respondent's tendency to groups feature to be collaborated into teaching and learning system. This is indicated by the utility value obtained for 0.416 for group feature. Whereas create pages and Line@ features obtain the utility value –0.007 for create pages feature and –0.409 for Line@.

3   For identity factor can be concluded from the statistical test feature My profile and photos/video have a positive value with the utility value of 0.061 for My profile feature and 0.432 for photos/video. Whereas moments profile gets negatives tendency with the utility value –0.492.

4   For presence factor can be concluded from the statistical test results live video, create a post, and watch later have a positive value with the utility value of 0.722 for live video, 0.575 for create a post feature, and 1.088 for watch later feature. While timeline (–0.574), check-in (–0.587), people nearby (–0.950), and view activity log (–0.274) get negatives utility values.

5   For relationship factors can be concluded from the statistical test that friends feature has a positive value with the acquisition of utility values of 0.107 for the feature friends. Whereas people you may know and close friends feature has a negative tendency with the utility value –0.062 for people you may know features and –0.045 for close friends features.

6   For reputation factors can be inferred from the results of statistical tests feature events, advertisement, and trending topics features has a positive value with the acquisition of utility value of 0.021 for event feature, 0.041 for advertisement feature, and 0.503 for trending topics feature. While the tag friends and promote have negative utility values with –0.288 for tag friends and –0.277 for promote features.

7   For sharing factors can be inferred from the results of the statistical test for browse channel and share feature has a positive utility value, which is 0.213 for browse channel feature, and 0.737 for share feature. Whereas offer, shop, and link feature get negative utility value which is –0.708 for offer feature, –0.230 for shop feature, and –0.012 for link feature.

4.2   Hypothesis testing of conjoint analysis of social media preferences features

There is predictive accuracy using Pearson's R correlation of 0.693 with a significance level of 0.000 and Kendall's Tau correlation shows a value of 0.496 with a significance level of 0.000. From this result, the authors want to know whether the results can represent the actual condition.

H0   The sampling results have a different perspective on the actual results.

H1   The sampling results do not have a different perspective on the actual results.

This shows the correlation between the estimated-part-worth and the actual opinion of each respondent's preference for factors in social media functionality divided into seven blocks, namely conversation, identity, groups, presence, relationship, reputation, and sharing. Based on these results, it can be concluded $0.000 < 0.05$, then the result of the hypothesis test is H0 rejected and H1 accepted. The result of this conjoint analysis shows that estimates of part-worth opinions do not differ much from the actual respondents'

opinions on the stimuli process. It can be concluded that the sampling from this research can be represented the actual condition of preferences student as general. From seven functionalities of social media, the result describes that presence, sharing, and reputation functionality have the most preferable to be adopted in the learning environment.

4.3　Social learning systems

The proposed social learning systems combine the learning functionality and social media functionality. For social media functionality, the authors use open API from social media to integrate into one social learning system. The architectures propose can be seen in Figure 7.

Figure 7　Social learning architecture (see online version for colours)
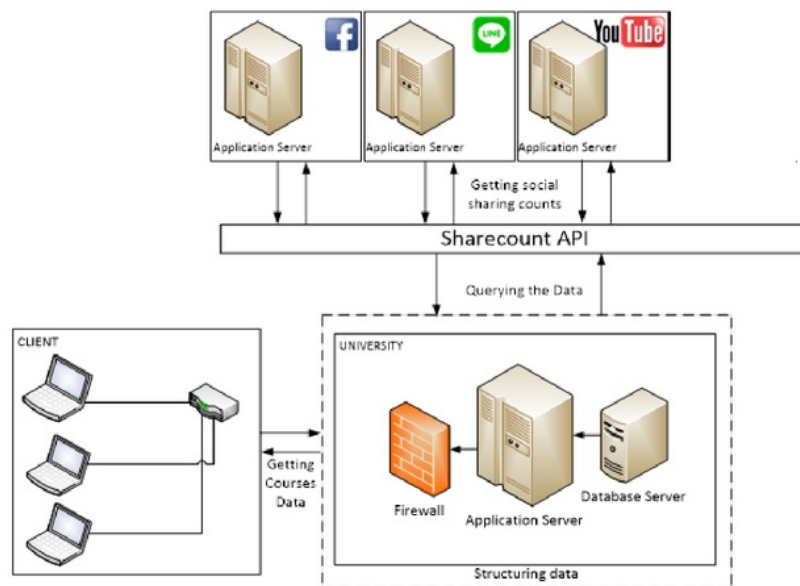
Figure 7 describes how the social learning systems will be implemented in the higher education institution. Every client will connect to the application server in an institution to response the request of a client. Learning data will be saved in the database server in the university. However, for social media data will be kept by social media itself connect with university's application using API.

To map learning functionality and social learning features, the authors combine it into social learning application. Basically, social learning systems have a general component functionality of learning, such as enrol course, manage profile, create additional material, manage forum, manage quiz, generate grade, create event, etc. Figure 8 shows the use case integration between learning activity and social media functionality. Learning activities from the previous study consists of:

- Absorb activities which enable motivated students to obtain the information they need to do learning, such as access material, video, wiki, or supporting activities using another tool.

- Do activities which put students in action, such as assignment, online test, video quiz, and wiki edits.

- Connect activities which prepare students to apply learning, such as forum discussion, e-mail, face to face study meet up.

Figure 8   Use case social learning systems (see online version for colours)
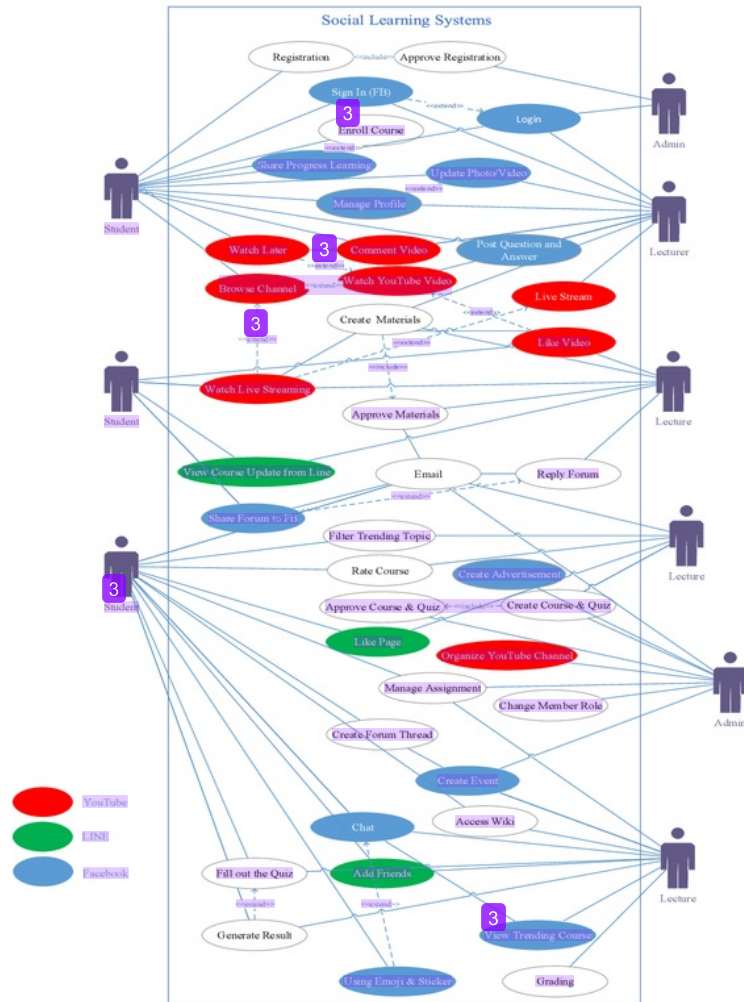
To map learning activity and social media functionality, authors build social learning systems that combined two of these functionalities (learning and social media). The aim of business model for this social learning environment begins with registration. If the student already registered, they can login into the system using their social learning account or using their Facebook account, so student's Facebook profile can be shared into social learning systems. In the home page, users can click like to join Facebook's Fan Page of the institution to get update information from the institution, then users also can view fan page institution and user can follow the institution's YouTube channel to show update video from the institution channel. Moreover, students can be an institution LINE friend, so they can see how many people already joined the group, so they can interact with each other. Otherwise, the student also can update their profile and upload the latest photos/videos into this system directly or using Facebook account.

For the learning process, the instructor can set an appropriate YouTube channel for this course, so the student can follow and access all the videos to support their learning process. Students can check whether the topics are on the list of trending topic or not. If users (student or instructor) like the video they have watched, they can click the like button, and they can give comments about the video or participate in the discussion with others in the comment section. The comment and like features automatically update into the YouTube channel itself. Additionally, the user can set the video to watch later if the user wants to pending play the video. During the learning process, the student can communicate with other students or instructor using forum, e-mail, and chat features. For chat feature, students can express their feeling using emoticon or sticker. In addition, if students want to communicate or collaborate with other users in their social media's account, they can click Share to Facebook/LINE, so the topics will be posted into their timeline, and other users from their Facebook/LINE friend can join to give the feedback regarding the topics. Moreover, students can share their learning progress into their Facebook's timeline so that the other user can see the learning progress/achievement. This system also accommodates live stream for the learning process connects with YouTube, so if the students want to get more explanation from their instructor, they can use live stream features to interact with their instructor live.

In the evaluation process, students can participate in the quiz and do their assignment that already arranged by instructor/admin. Students have one week for doing their assignment and quiz. If they are late in submitting their assignment/quiz, so this assignment/quiz will be failed. After the students doing the assignment, the lecture will check and entry the grade as a result. The result can be generated directly in this system by students. Moreover, students can give a rating for every course they have taken. If the students satisfied with the course, they could give the five stars rating; otherwise, they can reduce their rating if the course does not meet their expectation.

This system will be managed by admin to help to administer this social learning platform. The activities that can be accessed by admin are upload advertisement/promo into the system, and also posted into institution's Facebook fan page, YouTube channel, LINE official; manage course and additional materials, setting quiz, administering registration and user role, and also create event if institution want to invite users to come in particular event.

For event features, this feature connects with the Facebook calendar, so the invitation can also be seen in users Facebook calendar and it can show how many persons will be participated in this event or how many persons cannot attend this event. Besides, the

Facebook will send the notification as a reminder for users that have confirmed to attend the event, and then show all the comment from the inviting persons.

The result shows that integration learning platform and social medias can be the true revolution in Web 2.0. This phenomenon has been indicated from the previous study of social learning platform of LearnLand, Cloudworks, Plebox, and Edmodo, which each of the platform integrate with functionality of social media. This study focuses to design social learning application framework based on sociality. According to Bouman et al. (2008), sociality cannot be designed but only designed for. The social learning system needs to accommodate the use social software system that resembles their daily routines. Therefore, this study drilling social media preferences from student to create facilities that enable to support interaction within social group during the learning process.

5   Conclusions

The widespread invention of social media has fundamentally transformed people lives, business operations, and relational interactions within communities tremendously (Ngai et al., 2015). According to the popularity of social media, user familiarity with the interfaces and workflows can be advantageous in a learning context (Güler, 2015). It has changed the psychology of learning for the student in a higher education institution. The new generation of students has a different pattern of work, attention, and learning preferences. Due to the development of communication technologies, higher education should think the best way to accommodate this happen (Vassileva, 2008). Research over the last 30 years has shown a positive correlation between technology use and student engagement (Williams and Whiting, 2016; Junco, 2010).

According to this fact, higher education could maximise the opportunity that social media provide to engage the students by increasing learning experience using this platform. However, the numerous information and boundless communication technologies should be considered regardless of the specific functionality of social media. Higher education institution that approaches online student engagement from a flexible and responsive perspective and utilises evolving platforms as they emerge will position them to engage. Therefore, it is significant for higher education to evaluate the implementation of social media to support the learning process.

Referring to the result in this research, if higher education institution has a strategic plan to implement social media into social learning environment, they can use some of this feature as a foundation, which are: comment, like, group, my profile, live video, create a post, watch later, friends, event, advertisement, trending topics, browse channel, and share. Despite the fact that most users are familiar with these features, consideration should be given to how learning process can be integrated with these features. The contribution of this research is divided into two perspectives, which are for theories and practices.

5.1   Implications for theory

This research has a contribution to a theory which is the functionality of social learning framework for higher education institution more concern in presence, sharing, and reputation functionality. This fact can be concluded that a social media community for higher education institution students would relish a way to use these functionalities. For

additional, this implication enables to enhance learning activity. Figure 9 shows social learning framework based on the result of the conjoint analysis.

Figure 9 Social learning framework (see online version for colours)
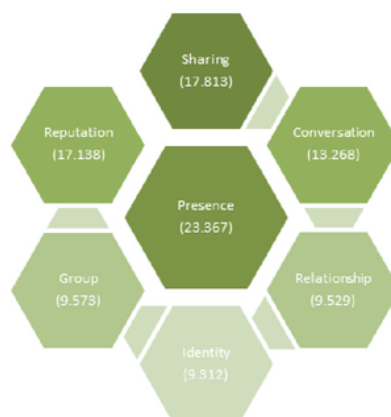
The framework building block 'presence' dominates this social learning framework. This block is to identify the accessible status of users. For this research, we can use live video, create a post, and watch later features to notify their existence to the other. Presence implies that higher education institution needs to concern with the importance of participants' location and availability. For the same implementation, it needs to be decided social learning environment should interact and engage synchronously. Another implication of presence block is that it is linked to the other honeycomb functional blocks, including conversation and relationship. Higher education institution should have realised that 'presence' functionality depends on the intimacy of 'relationship' or 'conversation'. In this research, 'relationship' can use friend feature that can help the student to identify their friend circles, while 'conversation' can be represented by comment and like features.

Sharing functionality is a way of interacting in the social learning environment. In this research, for social learning, sharing can lead student in higher educations to do converse build relationships with each other using browse channel and share features.

The identity represents to which users reveal their personal identities in a social learning platform using my profile and photos/video features. Generally, users have serious concerns about how they reveal the identity. In fact, higher education institution should protect students' privacy so that it can increase the reputation building block. The reputation building block in this research can be implemented in events, advertisement, and trending topics features.

For group represents how users can create communities and sub-communities. The direct implication for this feature is that social learning can help to group its users.

All these features support higher education institution to transform how teaching and learning will be done. The successful implementation requires not only adoption by enthusiastic social media features but also strategies and policies which implement a

flexible academic platform to support the sustainability and mainstreaming social learning environment.

5.2 *Implications for practical*

The development of the informational society and the widespread diffusion of information technology give rise to new opportunities for learning and it challenges established view and practices regarding how teaching and learning process should be organised (Chitiba, 2012). Social learning concept offers the prospect of a radical new approach especially for the higher education institution process focuses on enhancing traditional learning system for those who want to learn actively. The findings suggest that higher education institution should adopt social media for support learning process. It means that social media can support for effective learning process.

The implication of this research can mainly impact the student to support their learning activity, or as a complementary channel to communicate and collaborate with another student and instructor, so they can interact wherever and whenever with whoever using limitless social media tools. Learning has been considered a social activity (Kind and Evans, 2015). This concept can be complementary with the functionality of social media application, which can be thought as the content shared and interchangeably with social networking. The shifting understanding of students' role and new participatory culture can improve the design of learning activities using social media channel.

Most the students already use social media tool to interact with the other. The public has increasingly relied on social media to obtain and share information (Lin et al., 2016). The preferable social media to be adopted in the learning platform are Facebook, LINE, and YouTube. With those social media tool can support their learning activity using presence, sharing, and reputation functionality. Students will get more information from many sources regarding the content of the course. Besides, students can use their social media account to join in the learning activity, so they can interactively support the successfulness of learning activity.

Moreover, this research can support collaboration between instructor as mediator and student as participator more intensively in the learning activity. It might support learning environment to educate higher education students, who actively use social media in their communication circle. For instance, the instructor can use this social learning environment to enrich their learning activity in many aspects, such as multimedia content, links with other users to share content, customised personal profiles, interfaces with other web services, etc. Web 2.0 and social media has revolutionised the knowledge exchange process within and between the organisation (Pawlowski and Pirkkalainen, 2012; Scott et al., 2016).

The structure of proposed social learning application pushed online spaces to build community with people with shared preferences and interest, with whom they can share information, opinion, and experiences with. They are used in various organisational sectors for several purposes (El et al., 2016). So, that the expected system can contribute to increase students participation, performance, and improve engagement from the participants.

Future research is also likely to focus on the impact of implementation social media functionality into learning process at higher education. Besides, there is likely to be closer evaluation of this model into the pedagogy of learning process as well as greater

interest in exploring new social media that can be used effectively for processes and as a communication channel within the higher education institution.

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