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Social Media Success Model for Knowledge Sharing (Scale Development and Validation)

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Abstract

This study aimed to evaluate the success of social media as a means of sharing knowledge among scholars in Indonesia. By using Information System Success Model (DeLone and McLean), this study develops a research model that will be used to investigate what factors are contributing to the success of social media as tool for sharing knowledge among academics. This article would focus on the discussion of instrument development and validation process. The method for development and validation the research instrument was refers to the framework proposed by McKanzie et al. This study resulted in a validated instrument, the instrument could use by researchers who are interested in study social media success for knowledge sharing.

Keywords*: Social Media, Knowledge Sharing, Academics, Scale Development, Scale Validation*

1. Introduction

The research community is one of important element in creating top and high quality researchers in universities. This is because community has main role as the place when researchers can sharing their knowledge and create new knowledge. By create a research community, the members could take benefit in develop their skill and knowledge in conduct high quality research. However, not many universities in Indonesia have resources to develop and maintain ace the research community. Nowadays, many universities in Indonesia has faced with various problems that obstruct them in create a high quality researcher; furthermore their mission to be world class universities could be inhibited. Some problem were related with the small number of experienced researchers, lack of expert in some research fields and followed by the uneven distribution of their experienced researchers on college which can affect the reliable researchers only been on a few major colleges and famous only. Universities in Indonesia spread from Sabang to Marauke with most colleges have faculty member with qualifications lower than doctorate level. With all the conditions as above resulted in a remarkable gap, among educational institutions in Indonesia. This resulted in a slowdown in creating the high quality researchers in Indonesia.

Currently, the development of information technology has provided many new opportunities so that the exchange of knowledge can be accomplished even if constrained by distance, time and place [1]. Through a variety of applications and new technologies of information technology can be used as a solution for the above problems. One promising technology is by using social media facilities. With all its social media can be utilized as much as a virtual tool that can help in communication, interaction, and collaboration or virtually [2-4]. Features such as chat feature, Facebook wall, sharing documents, and video conferencing are some of the facilities that can be utilized in the sharing of knowledge among members of a group in social media. Not only in terms of features, the amount of use of a large social media is also a tremendous potential [2]. Users showed great appreciation of this technology and convenient to use it. Knowledge sharing is the main activity in knowledge management activities. Knowledge sharing allows individuals in an organization to work together to exchange information, ideas, suggestions, ideas and experience in the end creating the formation of a new knowledge.Knowledge sharing is a mechanism of the spread of knowledge of the organization to all members of an organization. One of the leading theories relating to knowledge creation comes from Nonaka [14]. In theory, Nonaka argues that knowledge is created only through

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interaction between people or between organizations. Barthol et al [5] suggested that knowledge sharing as sharing expertise, information, advice, and ideas between individual to individual within an organization. Research in the field of social media and knowledge management that has done this time includes conceptual models, case studies, empirical studies (e.g., [6-12]) One of the studies related to the social media and knowledge management by Razmerita et al [13]. They argue that there are principles in common between social media and knowledge management [10]. Social Media has shown a positive role in knowledge management. Some researchers have successfully identified the benefits obtained through the use of social media in knowledge management [14]. However, although the principle believed social media synergy with knowledge management but researchers also found the constraints faced in the implementation of social media in knowledge management [15]. Knowledge management in social media can be achieved through a variety of tools that allows for creating, codify, organize, and share knowledge, but also to socialize and improve personal network and collaborate in order to organize and create new knowledge [10].

By using social media people have opportunities to develop their network and their communities. Network and communities would help them in sharing experience and knowledge. The exchange of knowledge is one of the keys in creating beings who have the skills and competencies reliable. Nonaka in the study stated that the exchange of knowledge can only come through interaction and collaboration activities [16]. Through interaction and collaboration then the exchange of knowledge between experts and talent can be done. Further Nonaka argues that new knowledge is only created through interaction and collaboration [16]. World-class companies have a lot to prove that the transfer of knowledge is one of the most effective activities in creating beings who are competent and have high skill [1]. We can see how Honda through brain storming activity can create their concept of city car is now widely adopted by other automotive companies [17]. With its internship program is able to create a tool that can generate delicious chefs cooking in a famous hotel. Thus we can conclude that the interaction and collaboration is key to the creation of powerful beings that are competent. Institutions in Indonesia are faced with obstacles the lack of opportunity among professors to interact and collaborate with experts and researchers in other universities. The lack of interaction is due to the absence of experts in their colleges, where specialists are minimal and the unavailability of information about expert presence which is needed [16].

However, in Indonesia especially in academic environment, we do not know yet how effective and success the using of social media for knowledge sharing. Through this study we would like to investigate and develop an instrument that could apply in evaluated the successful of social media utilization in the exchange of knowledge among researchers in Indonesia. This study uses the IS Success Model of DeLone and McLean [18] as the basic concept. Using IS Success model we developed a research model with consider some other related aspects such as knowledge sharing aspect, user characteristic and social media.

2. The Proposed Model

2.1 Theoretical Framework and Model Development

The use of information systems in an organization is expected to have a positive impact. In order to ensure that any implementation of the information system is a success, then knowing the elements that influence the success of information systems becomes very attractive to researchers. Measurement of the success of an information system has received wide public attention from researchers since long. DeLone and McLean [18] has developed a model that can be used as a guide in order to successfully implement the IS organization. They propose six elements related to IS success is: "quality system", "information quality", "quality services", "use", "user satisfaction" and the "net benefit". In 2003 DeLone and McLean merevisit successful model for the implementation of IS. The model is tested on E-commerce applications. And found that the model of IS success was successfully tested in the context of e-commerce [18].

In this research we would like to asses the successfull Social Media as Knowledge Sharing tools by evaluate it using IS Success Model. To conduct the evaluation we develop a research model and apply IS Success model as basic theory. Our Model was develop with consider one related factors with Knowledge Sharing and Social Media. In our previous study we have conduct content validation for this model [19]. Researchers in the field of knowledge

management and social media have succeeded in identifying the factors that influence success in knowledge sharing activities [14, 20-22]. Significant issues related to the use of Social Media Sharing knowledge are related with: *User characteristic;* Users become the main actors in the use of social media applications. In contrast to the use of information systems in an organization that binds the user should adhere to a mechanism of information systems they build, then the social media applications users are not tied to specific rules, so that utilization would be very influence by characteristic of user. In research relating to the success model information systems , DeLone and McLean [23] found that the role of the user characteristics was affecting the pattern of information system success. In referring to IS Success Model [24] and our literature review result, we develop the research model as follow. This concept is further explained in Figure 1.

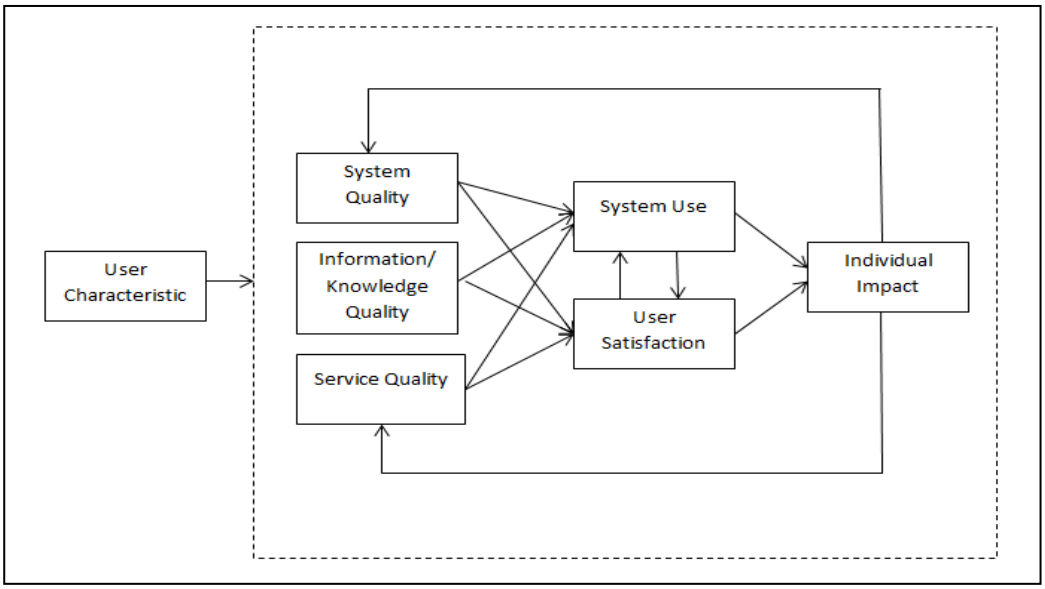

Figure 1. Research Model

3. Research Method

Researchers in the field of information systems have developed some techniques / procedures used to develop and validate the research instrument [25]. Procedure that develop by Gefen et al [26] Mckenzie et al [27] are the most adopted technique apply by researchers in information system area. In this study, we apply method from Mckenzie et all. Our research method consist of six processes, (1) *Conceptualization;* this phase we do conceptualization in order to clear limitation of the definition of all the constructs to be used in research (2) *Development of measuring instruments.* After all contract clearly defined then the next we determine the indicator that will be used to measure these constructs. (3) *Validating content;* our next activity is conduct the content validation is to measure the reflection level of each indicator of the content of a construct that is defined. [27]; *(4) Designing research; model,* In this step we evaluate the correlation between indicators designed to construct; (5) *Collect data and do the pretest;* When the research model has been completed, our next stage is the collection of data from respondents to evaluate the phsycomoteric property and evaluate convergent, discriminant, and nomological validity; *(6) Completion of the research instrument;* When instrument has been validated the result is the instrument which is ready to use in real survey.

4. Results and Analysis

4.1 Variable Conceptualization and Indicators Research Development

This study developed an instrument based on the model of research that has been made [19]. To measure each construct in this research model is developed measuring instrument which is reflected in each indicator on each construct to exist.

Table 1. Variable Operational Definition

Variable	Definition	Sources
System Quality	Desirable characteristics of an Information System quality.	[28]
Knowledge/Information Quality	Desirable characteristics of the system outputs (knowledge or information)	[29]
Services Quality	Quality of the service or support that system users receive from the IS organization and IT Support personnel in general or for a specific	[24]
System Use	Degree and manner in which staff and customers utilize the capabilities of an IS.	[30]
User Satisfaction	Users' level of satisfaction with the IS.	[24]
Individual Impact	Extent to which IS are contributing to the success of individuals	[28]
User Characteristic	The characteristics of user who using the system. Understand the user characteristic would help guide decision about the functionality, design and content to include on the system.	[23]

In this study, the indicator used is the indicator in the adoption of previous research (see Table 1). Where indicators are modified according to the research context, in this case is used as a means of evaluating the success of social media as a medium to share knowledge between academics in Indonesia. All constructs contained in the research model is measured by a number of indicators. The indicators used in this study are described in Table 2 below:

Table 2. Variable and indicators

Variable	Indicators	Sources
System Quality	SMQ1: Social media application should be easy to use (Ease of Use)	[28]
	SMQ2: Social media application should be easy to learn (Ease of learning)	[28]
	SMQ3: Social media should be easily accessible application (Access)	[28]
	SMQ4: Social media application should be able to meet the needs of users (User Requirement)	[28]
	SMQ5: Social media application must have features that support information sharing activity (System Feature)	[28]
	SMQ6: Social media application must be supported by a system that is accurate (System Accuracy)	[28]
	SMQ7: Social media application should be accessible on various devices (Flexibility)	[28]
	Social media should be reliable application (Reliability)	[28]
	SMQ8: Social media application should be efficient when used (Efficiency)	[28]
	SMQ9: Social media application should be effective when used (Effective)	[28]
	SMQ10: Social media application should be able to satisfy user (Sophistication)	[28]
	SMQ11: Social media application must be integrated with other applications that support (Integration)	[28]
	SMQ12: Social media application should be customized (Customization)	[29]
Knowledge/Information Quality	KI1: Information / knowledge is delivered in social media must be reliable (Believability)	[29]
	KI2: Information / knowledge is delivered in social media must be objective (Objectivity)	[29]
	KI3: Information / knowledge is delivered in social media should be accurate (Accuracy)	[29]
	KI4: Information/knowledge presented in social media should be reputable (Reputation)	[29]
	KI5: Information/knowledge presented in social media should have the value of benefits (Value-added)	[29]
	KI6: Information/knowledge presented in social media should be relevant (Relevancy)	[29]
	KI7: Information/knowledge presented in social media should be on schedule needs (Timelines)	[29]

	Variable	Indicators	Sources
	KI8: Information/knowledge presented in social media should be intact (Completeness)	[29]	
	KI9: Information/knowledge presented in social media should be packaged in small amounts of relative data (Appropriate amount of data)	[29]	
	KI10: Information / knowledge is delivered in social media should be interpreted properly (Interpretability)	[29]	
	KI11: Information / knowledge is delivered in social media should be easily understood (Ease of Understanding)	[29]	
	KI12: Information / knowledge is delivered in social media should be presented consistently (Representational consistency)	[29]	
	KI13: Information / knowledge is delivered in social media should be exposed briefly (Concise Representation)	[28]	
Individual Impact	II1: Social Media is one of my forums in learning (Learning)	[28]	
	II2: Social Media increases my awareness on certain issues (Awareness/ Recall)	[28]	
	II3: Utilizing social media to make decisions which I take to be more effective in working (Decision Effectiveness)	[28]	
	II4: Utilizing social media makes me productive at work (Individual Productivity)	[24]	
Services Quality	SQ1: Social media application should have a fast response when used (Responsiveness)	[24]	
	SQ2: Social media applications should have good accuracy (Accuracy)	[24]	
	SQ3: Social media application is always running and operate properly while in use (Reliability)	[24]	
	SQ4: Social media application developers should be supported by a competent team (Technical Competence)	[24]	
	SQ5: Social media application developers should be supported by staff who empathize with the user (Empathy of personal Staff)	[30]	
User Satisfaction	US1: I am satisfied with the Social media application that I use (general satisfaction)	[23]	
	US2: I am satisfied with the knowledge and information I got (knowledge/information satisfaction)	[23]	
	US3: I am satisfied with the features available on Social media application (System feature satisfaction)	[23]	
System of Use	SU1: I use social media to communicate knowledge and information (Communicate Knowledge and Information)	[30]	
	SU2: I use social media to share knowledge and general information (Share General Knowledge and Information)	[30]	
	SU3: I will use social media to share specific knowledge and information; (Share Specific Knowledge and Information)	[30]	
User Characteristic	UC1: I find the use of Social media application is the right choice (Attitude Toward Technology)	[23]	
	UC2: I feel enjoy utilizing Social Media (Enjoyment)	[23]	
	UC3: I believe the Social media application that I use (Trust)	[23]	
	UC4: Social media application that I use meet my expectations (User Expectation)	[23]	

4.2 Content Validity

Content validity activity is one of the activities which is carried out by observing all item (indicator) contained in the instruments that have been developed are indicators that created has represented and relevant to the topic of the research activities of this validation is generally suitable for the research development of a new instrument to be applied to research [31]. Content Validation can be carried out through the evaluation conducted by a team of experts to the instrument that has been developed. Here is a method that can be selected in carrying out an activity content validation: Using the average value calculated from the value of relevance score level indicator in the instrument assessed by expert teams [32]; Using alpha coefficient value to measure the suitability of an indicator of the level of relevance with variables; In calculating the value covariate of kappa coefficient [31]

In this activity, we have a method that is quite a lot has been adopted by previous researchers. This method is a method to calculate the average value of the assessment team of

experts (method no. 1). In this method a few people will be designated as a member of the expert team. The expert team is a person who has knowledge relevant to the research topic and has good skills in similar research. The research instrument then collated by listing all the questions of the research instrument along with the column values that represent the level of relevance of indicators (represented by the question as / statement) and the measured variables. In this study, the team invited three experts to evaluate the indicators in each variable in the instrument that has been developed. A matrix was developed as a means for experts to pass rating against indicators that have been created for each variable. As a reference in a four-point rating is used by adopting Linkert scale ratings as follows: point 1 = Very irrelevant; point 2 = not relevant; 3 = relevant points; 4 = very relevant points. After a team of experts to validate, then performed statistical analysis activities using the ACP (Beck and Gable) [31]. The results of the calculation of the value is from the analysis using method ACP then showed that of the 43 indicators derived from seven variables, the 37 ACP indicator has a value of 100%, and 6 indicators has a value of ACP 90%. Referring to the opinion of Polit and Beck [30]. The indicator that has a value of at least 90% will be declared acceptable. It can be concluded that all indicators were 42 declared acceptable and can be used for the validation process further.

4.3 Data Collection and Pretest

In this process of data collection and pretest activities carried out by conducting pilot studies. Pilot study is an activity carried out before an instrument that is designed to be used for data retrieval in a study. This activity is believed to be beneficial in improving the reliability and validity of a research instrument [33]. In this study, a pilot study was performed involving 50 lecturers who work at STIKOM Dinamika Bangsa campus. This evaluation is intended to ensure that each construct the indicators used to measure it proved to be reliable and valid. To ensure the achievement of the two standards, this study did two tests, the test reliability and validity test. Reliability tests performed by conducting internal checks on the reliability of indicators, this is done by looking at the value of alpha Cronbach. The results of data analysis showed that the Cronbach alpha value of each construct is above the value of 0.8 [34, 35] which indicates the level of reliability that is pretty good. Table 3 below shows the information relating to test the reliability and validity of the instrument. The next step is to make sure that the value of the reliability of each construct good; it can be ascertained by looking at the value of Composite Reliability (CR) and Average Variance Extract (AVE). Values CR and AVE were eligible if CR above 0.7 and above 0.5 AVE. Table 5 below shows that all constructs have a value above 0.8 CR and AVE values (Table 3) above 0.6 means that all constructs have fulfilled the criteria specified.

Table 3. Validity of Variables

	AVE	CR	Cronb Alpha
Individual Impact	0.8163	0.9302	0.8896
Information/ Knowledge Quality	0.6842	0.8962	0.8457
Services Quality	0.7577	0.9035	0.8402
System Quality	0.6055	0.9432	0.9331
System Use	0.991	0.9955	0.9909
User Characteristic	0.6162	0.8651	0.8055
User Satisfaction	0.729	0.8894	0.8221

Then confirmatory factor analysis conducted to test the adequacy of validity, this is done by checking the convergent validity and discriminant validity. The first step is to ensure that meet the standards of convergent validity, when if the loading factor on each indicator in the construct is above 0.6[34, 35]. After testing, it was found several indicators which have a value of loading factor is below 0.6, namely SMQ 12, KI 4,5,6,7,9,10,11,12,13, II 4, SQ 4.5, and SU 3. Due to the loading factor has a value below 0.6, we conclude these indicators do not qualify as an item in this research instrument. This indicator is then dropped and is not included in the next testing phase.

The next step is to conduct repeated testing to ensure the convergent validity, where indicators are not eligible are excluded. After the second testing the final results could show in Table 4. Table 4 shows that the value of the lowest indicators of each indicator construct is 0.6 so that all indicators in this study met the criteria specified. The next step is to ensure that every indicator is part of the variable; it can be evaluated through the value of cross loading factor. Table 4 also shows how the value of cross loading factor between one variable with another variable. It can be concluded that the indicators that have been determined to be measuring what should be measured at predetermined variables

Table 4. Cross Loading Value

	IND IMP	INFO/ KNOW QUAL	SERV QUAL	SYSTE QUAL	SYST USE	USER CAR	USER SAT
II1	0.9025	0.3391	0.3468	0.562	0.1339	0.092	0.3279
II2	0.9318	0.3313	0.4105	0.5466	0.251	0.155	0.3749
II3	0.8752	0.1586	0.3469	0.6672	0.2161	0.148	0.2201
KI1	0.2791	0.8369	0.3058	0.4507	0.1523	0.488	0.5228
KI2	0.2471	0.8575	0.3549	0.2802	0.1788	0.4786	0.5459
KI3	0.189	0.8678	0.3591	0.3099	0.1566	0.6187	0.577
KI8	0.3331	0.7402	0.8896	0.2739	0.4062	0.5629	0.6695
SM1	0.6235	0.2992	0.2804	0.8476	0.1653	0.2519	0.2693
SM10	0.3339	0.321	0.3398	0.7936	0.1349	0.186	0.1112
SM11	0.3386	0.0662	0.0584	0.5096	0.1183	0.1714	0.1101
SM2	0.5779	0.3364	0.3151	0.8971	0.2353	0.265	0.2439
SM3	0.3919	0.3607	0.2481	0.8199	0.0107	0.1965	0.0923
SM4	0.5339	0.3245	0.3628	0.7758	0.2546	0.2145	0.2111
SM5	0.5695	0.2545	0.294	0.7752	0.2065	0.2094	0.1689
SM6	0.4336	0.3357	0.389	0.8091	0.3266	0.2556	0.253
SM7	0.4497	0.4245	0.367	0.8003	0.0466	0.2785	0.1794
SM8	0.6554	0.2663	0.4458	0.7877	0.1967	0.1261	0.2753
SM9	0.4326	0.3985	0.3231	0.676	-0.0217	0.2437	0.1212
SQ1	0.3775	0.4689	0.9053	0.4501	0.4085	0.4949	0.4972
SQ2	0.2048	0.3659	0.8818	0.2206	0.3137	0.4466	0.4569
SQ3	0.4568	0.7103	0.8221	0.3804	0.4583	0.4581	0.6256
SU1	0.2403	0.3051	0.4774	0.2377	0.9954	0.5777	0.5921
SU2	0.2084	0.2596	0.4403	0.2083	0.9954	0.5355	0.552
UC1	0.2096	0.5936	0.4215	0.4079	0.4946	0.776	0.6538
UC2	0.0467	0.5838	0.5542	0.2663	0.3274	0.8083	0.591
UC3	0.0918	0.2697	0.2718	0.078	0.4788	0.7453	0.4985
UC4	0.093	0.4891	0.3395	-0.009	0.5104	0.8085	0.6566
US1	0.2743	0.5795	0.638	0.2012	0.4311	0.5078	0.7889
US2	0.3534	0.6603	0.5136	0.2494	0.4602	0.7164	0.9075
US3	0.2743	0.5802	0.4245	0.205	0.5804	0.7539	0.8608

4.4 The Completion of Research Instrument

After going through all the stages in the process development and validation of research instruments, then get the final result of the variables and indicators which are ready for use on the actual survey. Table 5 describes the variables and indicators that have undergone a process of validation.

Table 5. List of Final Variables and Indicators

No	Variable	First	End	Instrument Indicator
1	System Quality	12	11	SMQ1,2,3,4,5,6,7,8,9,10,11
2	Knowledge/Information Quality	13	4	KI1,2,3,8
3	Individual Impact	4	3	II1,2,3
4	Services Quality	5	3	SQ1,2,3
5	System Use	3	2	SU1,2
6	User Satisfaction	3	3	US1,2,3
7	User Characteristic	4	4	UC1,2,3,4

5. Conclusion

Provide The results of this study are validated instrument. The instrument will used to evaluate the success of social media as a means of sharing knowledge between academics in higher education in Indonesia. The resulting instrument has been through a validation process and fulfilling aspects that require validated instrument. Subsequent research will use this instrument and conduct a survey with a larger number of samples. The survey will be done online, using a particular application. By conducting online surveys, it is expected to reach the distribution of questionnaires that will be broader.

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