

## The influence of learning management information system and service quality on the customer satisfaction of Ruangguru application

Badrudin Badrudin <sup>a\*</sup>, Universitas Islam Negeri Sunan Gunung Djati Bandung, Jawa Barat, Indonesia.  
<https://orcid.org/0000-0003-1213-1895>

Moh. Khusnuridlo <sup>b</sup>, Program Studi MPI Pascasarjana, Universitas Islam Negeri Jember, Indonesia.  
<https://orcid.org/0000-0003-3196-098X>

Muhammad Zaini El Wahyu <sup>c</sup>, Universitas Islam Negeri Sunan Gunung Djati Bandung, Jawa Barat, Indonesia.  
<https://orcid.org/0000-0002-9383-544X>

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### Abstract

This research aims to analyze the information system of learning management and the overall quality of service to the customer's satisfaction application of Ruangguru. This study employed a descriptive quantitative approach. The sampling technique was purposive sampling based on Slovin equations. Data were collected using a synchronous survey instrument with a Likert scale program. The result is that the learning management information system significantly influenced the customer satisfaction of the Ruangguru application. The result is as follows: learning management information system (X1) influences the customer satisfaction of variables (Y1). Then, the quality of service significantly affects customer satisfaction quality of service (X2) affects the variable customer satisfaction (Y1). Last, the information system of learning management and the overall quality of service affect customer satisfaction simultaneously; variables X1 and X2 have a significant influence on the variable Y1.

Keywords: LMS, Service Quality, and Customer Satisfaction;

\* ADDRESS FOR CORRESPONDENCE: Badrudin, Universitas Islam Negeri Sunan Gunung Djati Bandung, Jawa Barat, Indonesia.  
Email address: [dr.badrudin@uinsgd.ac.id](mailto:dr.badrudin@uinsgd.ac.id)

## 1. Introduction

The use of online learning platforms has significantly increased since learning activities in schools were limited due to the corona pandemic. More than 1 million students were using ruangguru. During the Covid-19 pandemic, ruangguru has issued a new program to help customers, especially teachers and students in Indonesia. The program is called the "free online school program." This program serves users with learning packages that can be accessed online. The learning package is a collection of learning videos based on the theme and level of the class, free try-outs, and a collection of questions provided by answers. This program is a part of the learning management systems (LMS) for all teachers and principals. The LMS provides effective online learning methods, methods, and formats of human resource management in schools. In this sense, the LMS function as self-regulated learning for the users (Baggetun & Wasson, 2006; Moos & Ringdal, 2012)

The number of students using the ruangguru application amounts to more than 15 million students from elementary to high school throughout Indonesia. Students who use the ruangguru application at the high school level in West Java Region I (Bandung City, Bandung Regency, and Cimahi) as of September 17, 2020, were known as many as 300 students. This learning management information system (LMIS) aims to provide information used to calculate the cost of essential services, products, and other purposes desired by management. The system also provides information that can be used in planning, controlling, evaluating, and keeping continuous improvement. Furthermore, this learning management information system (LMIS) provides decision-making information. This LMIS typically generates information to monitor performance, maintain coordination and provide information for the organization to run. Generally, LMIS retrieves data from transaction processing systems with various indicators. Indicators in this LMIS include software, hardware, database, procedure, and brain ware (Ismawati & Anggia, 2021; Seprilia et al., 2017). Furthermore, the quality of education is commonly referred to as "total quality education," whose indicators include continuous improvement, quality assurance, change of culture, upside-down organization, and keeping close to the customer.

The preliminary study results showed that there is still homework (HW) for the ruangguru team. The HW is mainly in learning management (LMIS) and the quality of service (SQ). For example, there is a complaint from a ruangguru user when a user account appears the word "not available" which allows the user to report to the education department. The process continues where a consultant will provide a solution after asking the technical constraints of the team of engineers. This pattern is considered ineffective by users because there are many complaints from users about solving a problem by ruangguru. User satisfaction (students) is the main priority of service in ruangguru. This is reflected in the vision of ruangguru. Ruangguru seeks to shake up the broader market in line with this vision. Fifteen million students have been enrolled in ruangguru from 50 million students throughout Indonesia. It means that ruangguru still targets 35 million more students. The researchers believe the opportunity will be realized if the quality of service and customer satisfaction in ruangguru run to the maximum point. Based on the study, researchers believe that what happens in the case of ruangguru is a phenomenon, and therefore, this study is a type of phenomenological research (Bramastia, 2021; Kusuma, 2019).

There have been several previous studies reporting on the application of ruangguru by different researchers. First, Cahyani (2016) reported the results of his research with the topic "Analysis of the acceptance of ruangguru application as a medium of fulfillment of academic information of MA students in Surabaya based on the UTAUT2 model." This research explains that the utilization of **ruangguru** application can be reviewed with the UTAUT2 (Unified Theory of Acceptance and Use of Technology) model put forward by Venkatesh et al. (2012). Second, Langi & Londa (2019) reported the

research topic "Influence of Online Media Communication of ruangguru Application PT: Ruang Raya Indonesia on Improving Student Learning Achievement of SMA Negeri 1 Manado." This research describes ruangguru as a media platform. The results showed that the presence of ruangguru as an online learning medium had influenced the learning achievements of students at SMAN 1 Manado (Langi et al., 2018). Third, Shoumi (2019) reported on his research entitled "The Role of Multimedia in Education in ruangguru Application." This research explains that ruangguru comes as one of the online learning mentor alternatives that can be easily accessed through smartphones, laptops, or tablets. The three research reports show what has been studied related to ruangguru and what other researchers have not done (Shoumi, 2019).

Therefore, this research was conducted to meet the research gaps by Cahyani (2016), which explains the acceptance of ruangguru application by users through the UTAUT2 (Unified Theory of Acceptance and Use of Technology) model. In particular, this study focused on accepting ruangguru application according to the Technology Acceptance Model (TAM) by Davis (1986). Thus the difference between this study is the acceptance of the ruangguru application reviewed with TAM because it has previously been researched with the UTAUT2 model.

This research has differentiation in variables X1 and X2, namely learning management information system and service quality. Based on the description above, the researchers conducted a study titled "The Influence of Learning management information system and Service Quality on Customer Satisfaction of ruangguru Application."

## **2. Theoretical framework**

### *2.1. E-learning learning management information system*

A learning management information system (LMIS) is a set of combined procedures that collect and produce reliable, relevant, and organized data. Therefore, with good results of this system will support the decision-making process of an organization. In short, LMIS is a group of processes in which data is obtained, analyzed, and displayed in a way that is useful for decision-making purposes (Marcel, 2019). LMIS is a set of interconnected components, collecting or obtaining, processing, storing, and distributing information to support decision making and supervision within the organization. The components include accounting information integrated with a system that works harmoniously in order to produce reliable information by users. In the concept of learning management information systems, all related elements and sub-elements must be integrated to form a quality learning management information system (LMIS). The LMIS itself regulates the utilization of human resources, technology, procedures, and data to produce information for an institution or organization. Some researchers report the benefits and essential roles of the application, underline the critical role of learning management information systems as follows (Dinis Sousa et al., 2020; Irawati & Jonatan, 2020; Prakoso et al., 2020; Shofa, 2019).

### *2.2. Optimizing the operational activities of an educational organization*

A management information system (MIS) can reduce operational costs, reduce errors, and improve work performance. The goal of LMIS in education is to support management functions; planning, organizing, staffing, directing, evaluating, coordinating (POSDEC), and budgeting to support the achievement of goals and objectives of operational functions in educational organizations. With the LMIS in education, it is expected to facilitate the preparation of management information of schools to be well structured (Rokhayati Rosa, 2020; Turban et al., 2014; Zagoumenov, 2020). Furthermore, the information can help describe the state of the school both in terms of physical and human resources that participated in it.

### *2.3. Make it easier to make decisions by educators to managers.*

One of the essential tasks of education leaders is decision-making related to the educational institution. Leaders can use the LMIS as a decision-making tool. LMIS is not only a material for decision-making in certain stages but can also be a raw material for decision-makers in the next stage. In theory, the role of learning management information system (LMIS) in educational activities can be a reliable system in management activities to make management decisions, both in the form of decisions on regular activities and strategic decisions.

### *2.4. Improving the ability of educational organizations to be superior and competitive*

One of the efforts that can be made to overcome the low quality of education services is to use the LMIS. LMIS in education is a system designed for management needs to support the functions and activities of management in an educational organization. When using information technology facilities, services in educational institutions or other institutions can be more effective and efficient. The use of information technology in the organization is expected to change the organizational structure and work process. The change fundamentally impacts the organization, including the reporting structure, supervision, substance of work, and division of work. In addition, the use of information technology can increase the productivity of managers, the quality of supervision and decrease the number of mid-level managers to simplify the flatter organizational hierarchy structure. The organizational structure is horizontal, more decentralist, more coordinated, narrower like its duties, and has a more significant professional staff ratio (Lisetskaya & Kovalishin, 2020; Marcel, 2019; Turban et al., 2014).

Good management functions cover planning, organizing, leading, acting, and controlling. They are necessarily needed for the success of activities in an organization, including in organizations in educational institutions. The success of carrying out the management function is supported by an information system that can provide the information needed by the managers (leaders) of the educational institutions. LMIS is a computer-based system that supplies information to users with similar needs. LMIS was created to ensure that education executives can carry out their duties correctly and adequately, and the leaders can make decisions quickly and appropriately (Lisetskaya & Kovalishin, 2020; Marcel, 2019; Turban et al., 2014).

### *2.5. Ruangguru Application Service Quality*

Ruangguru also has a mobile app to make it easier for students to do many tasks and communicate directly with teachers online. The teachers in ruangguru are on standby every day for 16 hours. Students can quickly shoot difficult questions, upload, chat, or call teachers online through the provided facilities. By launching a mobile application on demand, distance learning becomes intensive for students and because it is facilitated with teachers allowing students to benefit from the use of smartphones. It means that private learning with ruangguru can now be done anytime and anywhere. Related to the easiness, ruangguru.com also facilitates parents' access to monitor children's learning development through the Ruangguru-Orangtua (Parent-Users) application launched in September 2016. With this application, parents can know the personal schedule, see the learning report, rate, and give feedback to teachers to support the learning process that makes the students feel comfortable. This application has been made very interesting and easy to understand in terms of the user interface. In Figure 2.2, we can see the initial view of ruangguru, where the interfaces are straightforward for each user to understand. Users no longer need to read the manual book or application instructions and so on because every feature or icon presented in the application is equipped with a description that is easy to understand. The use of font types, colors, and layouts are also tailored to the needs and comfort of the users. Users only need to imitate the behavior according to their knowledge. In

addition, ruangguru also provides chat facilities between users and teachers (Bahaudin, 2020; Ismawati & Anggia, 2021; Maula, 2020) ruang.

### *2.6. Customer Satisfaction with Technology Acceptance Model*

The technology acceptance model or abbreviated TAM is based on the Theory of Reasoned Action (TRA) proposed by Ajzen and Fishbein (1980). TRA explains the reaction and perception of Information Technology (IT) users that will ultimately affect their acceptance of the technology. Both factors can affect the intensity of use and its consequences, namely usage behavior. TAM's main objectives are to explain: about determining the general acceptance of computers and the behavior or attitudes of users in a population. TAM's theory states that behavioral intention to use is determined by two beliefs. First, perceived usefulness is how one believes that using the system will improve its performance. Second, perceived ease of use is defined as the extent to which one believes that the use of the system is easy (Budiman, 2017).

Evaluation models often used to Measure Information System Acceptance are End-User Computing Satisfaction, Task Technology Fit, Human Organization-Technology (HOT), and Technology Acceptance Model (TAM). TAM is used to test customer acceptance satisfaction in an e-learning institution. The acceptance factor of technology can come from the user and the system itself. It can be cognitive aspects, individual character, personality, individual concerns, and technological impact on the user's part.

Meanwhile, from the system itself can be a computer network and the state of the computer. The primary purpose of TAM is to explain what factors determine the acceptance of technology that can explain the behavior of its users. The TAM model conceptualizes how users receive and use new technologies. If traced, the philosophy comes from the approach of psychological theory to explain the user that refers to the beliefs, attitudes, interests, and relationships of the user's behavior. The characteristic of the TAM's model is simple but can predict the acceptance and use of technology (Farida et al., 2019).

## **3. Methods**

### *3.1. Research Design*

This research uses a descriptive quantitative research approach. A quantifiable approach is one type of research whose specifications are systematic, planned, and structured from the beginning until the creation of the research design. In this case, the researchers look for information about the existing symptoms, clearly define the goals to be achieved, plan how to approach them, collect data as material to make a report according to the methodology by scientists (Sugiyono, 2015).

### *3.2. Research Variables*

This research variable consists of independent variables: Management Information Systems (X1) and Service Quality (X2). The dependent variable is Customer Satisfaction (Y1). Variable X1 or independent variable in this research is the learning management information system, and X2 variable is the overall quality of service. The dependent variable, or Y in this research, is the customer satisfaction application ruangguru Regional West Java I. Operational definition of variable X1 is related to learning management information systems in ruangguru application. In contrast, the X2 operational definition is the quality of service provided by ruangguru. Meanwhile, the operational definition of variable Y is the level of user satisfaction of ruangguru Regional Application of West Java I.

### 3.3. Instrument and Data Collecting

Data collecting used a questionnaire with 40 total items and a type scale Likert model. The number of questions for the X1 variable is 14 items, and the number of X2 variable questions is 12. While the number of questions variable Y is 14 items. Each variable X1, X2, and Y uses scores to calculate the statistical calculation. Data were retrieved by sending an online questionnaire to the accessible respondents. The prospective respondents were requested to fill out the questionnaire in full on the provided answer sheet separately from Google Form. After that, all respondents returned the complete questionnaire by clicking submit on the Google Form. After all the data were collected, the researchers collected all the answers to the questionnaires utilizing the software. The result was in the form of nominal and interval. Further, all data were recapped to yield raw materials that would be processed statistically. A statistical test using IBM SPSS 2020 software was taken using a simple influence test of linear regression.

Table 1. Reliability Cronbach's Alpha

No	Variable	Cronbach's Alpha	Alpha	Result	Interpretation
1	Management Information Systems (X1)	0,864	0,60	0,864 > 060	Reliable
2	Service Quality (X2)	0,760	0,60	0,760 > 060	Reliable
3	Customer Satisfaction (Y1)	0,821	0,60	0,821 > 060	Reliable

Detail data source: [https://drive.google.com/drive/folders/1pR1ySks0ymIqqLAGrvzJfLOTW4GPX\\_fv](https://drive.google.com/drive/folders/1pR1ySks0ymIqqLAGrvzJfLOTW4GPX_fv)

### 3.4. Participants

The participant is taken using the Slovin formula equation, purposive sampling. This study, therefore, follows the rule of probability sampling approach. The population in the study was 300 users of ruangguru of high school level application in 2020 in Regional I West Java, Java Province, Indonesia. In comparison, the sample was 171 respondents, female 93 respondents (54.8%) and male 78 respondents (54.2%). All participant is high school students. Most of the respondents were domiciled in schools in the city of Bandung, as many as 76 respondents (44.1%), Bandung Regency as many as 48 respondents (28.8%), and Cimahi City as many as 47 (27.1%).

### 3.5. Hypothesis

3.6. The formulated research hypothesis is as follows:

- Ho: There is no positive influence of Learning management information system (X1) on customer satisfaction of ruangguru Regional I West Java (Y)  
Ha: There is a positive influence of Learning management information system (X1) on customer satisfaction of ruangguru Regional I West Java (Y)
- Ho: There is no positive influence of the overall quality of service (X2) on customer satisfaction of ruangguru Regional I West Java (Y).  
Ha: There is a positive influence of the overall quality of service (X2) on customer satisfaction of ruangguru Regional I West Java (Y).
- Ho: There is no positive influence of Learning management information system (X1) and service quality (X2) on customer satisfaction of ruangguru Regional I West Java simultaneously (Y).  
Ha: There is a positive influence of Learning management information system (X1) and service quality (X2) on customer satisfaction of ruangguru Regional I West Java simultaneously (Y).

#### 4. Results and Discussions

This study tries to answer three problem research questions or hypotheses, and therefore the following are the test results.

##### 4.1. Effect of the learning management information system on the customer satisfaction

Hypothesis 1 is testing whether there is a positive influence of the learning management information system on the customer satisfaction application of ruangguru regional West Java I. To test the hypothesis, the researchers use a simple regression test. A simple regression test is used to find the influence between one free variable against a dependent variable. In addition, there is a linear relationship between free variables against bound variables, so that the analysis uses linear regression analysis. Data is processed using IBM SPSS Statistic Version 25 program. Here is a summary of the simple regression test results between variables X1 and Y as follows:

Table 2. Simple Regression Analysis (X1-Y)

Model	Coefficients			t	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
Yes	.386	.066	.396	5.864	.000
QUALITY OF SERVICE	.602	.080	.509	7.530	.000

a. Dependent Variable: CUSTOMER SATISFACTION

Based on the table above results, a calculated t value of 5,864 with a significance value of 0.000. Thus the researchers concluded that Ho was rejected and Ha was accepted. It means that the learning management information system (LMIS) variable has a significant impact on the customer satisfaction of the ruangguru application. The results of hypothesis test 1 show that the LMIS significantly affects customer satisfaction (CS). This is evidenced by the results of the t-test, where the researchers obtained a calculated t value of 5,864. The researchers concluded that the CS of ruangguru application was influenced by LMIS by 74.5%. The ideal LMIS provides CS, and conversely, a low LMIS can have implications for the lack of satisfaction levels for ruangguru application customers.

Seen from the results of the research show that the LMIS has a significant influence on CS. It is logical as the LMIS is very concerned with customers' satisfaction. Therefore, complete data or information is needed to create optimal customer satisfaction. A person will be satisfied with the information provided if the information is complete and has the correct target value. Therefore, good management of information systems strongly supports the services provided. In addition, the software used in this system must be following what information the system will be given. The technology and broad power scope challenge developing this learning management information system (Atmaja & Azis, 2019; Shofa, 2019).

##### 4.2. Effect of Service Quality on Customer Satisfaction

The test of hypothesis 2 is whether there is a positive influence of service quality on the customer satisfaction of ruangguru regional application in West Java I. The researchers use a simple regression test to answer the hypothesis. A simple regression test is used to find the influence between one free variable against a bound variable.

In addition, there is a linear relationship between free variables against bound variables, so that the analysis uses linear regression analysis. Data is processed using IBM SPSS Statistic Version 25 program. Here is a summary of the simple regression test results between X2 and Y variables as follows:

Table 3. Simple Regression Analysis (X2-Y)

Model	Coefficients		Standardized Coefficients Beta	t	Sig.
	Unstandardized Coefficients				
	B	Std. Error			
(Constant)	5.805	2.284		2.542	.012
Yes	.386	.066	.396	5.864	.000
QUALITY OF SERVICE	.602	.080	.509	7.530	.000

a. Dependent Variable: CUSTOMER SATISFACTION

Based on the table above, the researchers obtained the calculated value of the service quality variable (X2) 7,530 with a significance value of 0.000. It can be concluded that Ho was rejected and Ha was accepted. Thus, the variable quality of service has a significant impact on the customer satisfaction of the ruangguru application.

Based on the results of hypothesis test 2, it is known that there is a quality of service to the customer satisfaction of ruangguru application. By looking at the results of hypothesis test 2, it is known that the quality of ruangguru service has a significant effect on the customer satisfaction indicated by the t-test result the calculated t value of 7,530. It means that the quality of service influences customer satisfaction by 69.4%. The research results showed that the quality of service significantly influences customer satisfaction. The ideal quality of service provides customer satisfaction, and conversely, low service quality can affect customers' lack of satisfaction.

The research shows that the quality of service significantly influences the customers' satisfaction. The leading indicator to know the quality of service of an agency or company is customer satisfaction. Good service from an agency or company will prove that the agency or company is of good quality. Understanding what consumers want and expect from the quality of services provided will obtain an exceptional added value for the company. The quality of service needs to get significant attention from the company because the quality of service directly relates to the ability to compete and the company's level of profit (Panjaitan & Yuliati, 2016).

#### 4.3. Effect of learning management information system (LMIS) and service quality (SQ) to the Customer Satisfaction (CS)

The test of Hypothesis 3 is to test whether there is a positive influence between the learning management information system (X1) and the service quality (X2) on the customer satisfaction of ruangguru Regional West Java I (Y) application. Test hypothesis 3 it is used a double regression test. Double regression tests predict how two or more free variables affect bound variables. The data is processed using IBM SPSS Statistic Version 25 program. Here is a summary of the results of the double regression of 2 predictors between X1 and X2 against Y.

Table 4. Double Regression Test



ANOVA <sup>a</sup>						
	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4752.358	2	2376.179	24.625	.000 <sup>b</sup>
	Residual	1621.058	168	9.649		
	Total	6373.415	170			

a. Dependent Variable: CUSTOMER SATISFACTION

b. Predictors: (Constant), QUALITY OF SERVICE AND LMIS

The significance test in this study aims to find out the level of meaning of the variable learning management information system (LMIS) and the quality of service (SQ) to customer satisfaction (CS). The significance test is using test-F. F test result obtained calculated F value of 24,625 with a significant rate of 5%. This can be concluded that Ho is rejected, which means that the LMIS and SQ have a positive and significant influence on the CS.

Based on the results of the hypothesis 3 test, it is obtained that the learning management information system (LMIS) and service quality (SQ) have a positive and significant influence on customer satisfaction (CS), as evidenced by the F test. While the effective contribution of both variables together to customer satisfaction (CS) is 74.6% influenced by the LMIS and SQ. However, it is also known that the other influence or the rest of 25.4% is influenced by other variables such as marketing, strategy design, human resource management, and leadership.

From the observations of researchers, in this case, it was obtained that the factors of LMIS and SQ support each other in improving the CS in the application of ruangguru regional West Java I. A high LMIS and SQ will have a high tendency of customer satisfaction (CS) because the customer will undoubtedly choose the one that suits his needs and desires. In addition, the customers are also looking for what can make them feel satisfied before deciding to continue buying the product. One person's buying interest decisions are influenced by assessing the quality of the product. Customers tend to love products that offer the best quality or quality, performance, or innovative features. Quality has a very close relationship with customer satisfaction.

## 5. Conclusions

Considering the results of data analysis concerning the information system of learning management (LMIS), quality of service (SQ), and customer satisfaction (CS) of The ruangguru Regional Application of West Java I, it can be concluded as follows. The learning management information system has not reached 75% of the expected target with a score of  $t=5,864$ . The service quality has not reached 65% of the expected target with a score of  $t=7,530$ . The customer satisfaction (CS) of application ruangguru Regional West Java I has not reached 70% of the expected target with a score of  $t=2,542$ . The learning management information system (LMIS) significantly affects the customer satisfaction of ruangguru Regional West Java application I. The score  $R^2= 0.811$ , which means the influence of the learning management information system on the customer satisfaction of ruangguru Regional West Java I by 81.00% of users. Thus, the higher the learning management information system, the higher the customer satisfaction. The quality of service (SQ) significantly affects the customer satisfaction (CS) of ruangguru Regional West Java application I. The score  $R^2= 0.833$ , which means that the influence of academic performance on customer satisfaction of ruangguru Regional West Java I by 83.30% of the users. Therefore, the higher the quality of service, the higher the customer satisfaction. Learning management information system (LMIS) and service quality (SQ) affect customer satisfaction of ruangguru Regional West Java application I. The score  $R^2= 0.864$ , which

means that the influence of management information system and service quality on the customer satisfaction (CS) of ruangguru Regional West Java I is by 86.40% of users. Thus, the higher the information system of learning management and the quality of service, the higher the customer satisfaction will be.

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