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THE INFLUENCE OF SYSTEM QUALITY, INFORMATION QUALITY, AND SERVICE QUALITY ON USER SATISFACTION OF THE RUANGGURU APPLICATION IN WEST JAKARTA

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ABSTRACT

The development of technology in the field of the internet has had an impact on innovation in education. The technological changes are increasingly favored because they are perceived as easier, time-saving, and can serve as an alternative to improving the quality of learning, knowledge, and academic achievement. The growing digitalization and widespread use of technology and the internet among the public have encouraged many people to use e-learning. Therefore, tutoring services have adapted to these changes, transitioning from traditional face-to-face sessions to online tutoring. However, despite the growing interest in online tutoring, it does not guarantee success for users compared to similar competitors. This study analyzes the factors influencing user satisfaction with tutoring services and their implications for net profit. The research tests three hypotheses using the structural equation model with a total of 150 respondents.

Keywords: *System quality, information quality, service quality, user satisfaction, net gain*

1. INTRODUCTION

The population growth in Indonesia experiences an increase every year. In 2019, the population in Indonesia reached 266.91 million (bisnis.tempo.co, 2020), with 134 million males and 132.98 million females. The total population of Indonesia aged 15-64 years is 68 percent, 24.8 percent aged 0-14 years, 68.7 percent aged 15-64 years, and the rest aged 65 years and above 6.51 percent (databoks.katadata.co.id, 2019). Population growth in 2020 will increase from 266.91 million to 269.6 million (kompas.com, 2020). The male population in Indonesia will be 135.34 million, and the female population will be 134.27 million. The population growth for the age group 0-14 years will increase to 66.07 million, for the age group 15-64 years to 185.34 million, and for the non-productive age group to 18.2 million (databoks.katadata.co.id, 2019). The majority of population growth in Indonesia is concentrated on the island of Java compared to other islands (kompas.com, 2020). Population growth in Java is most prominent in West Java with a total population of 49.9 million, followed by East Java with 39.8 million, and then Central Java with 34.9 million. After Java, the highest population growth is in North Sumatra, South Sulawesi, South Sumatra, and Lampung (databoks.katadata.co.id, 2019).

Based on the data above, the majority of the Indonesian population is of productive age, or above 15 years old. Additionally, the second-largest demographic group in Indonesia is children aged 0-14 years. This indicates that most of the Indonesian population are students or pupils (mediaindonesia.com, 2020). With the increasing productive age in Indonesia, it can have a positive impact on the education level in the country. The higher the number of young or student-aged population, the higher the number of students in Indonesia (glints.com, 2018).

According to a survey of ASEAN countries in 2019, Indonesia ranked sixth for the Global Talent Competitiveness Index (GTCI) or sixth in inter-country competitiveness (tirto.id, 2019). Factors covered by the GTCI include the ability and talent of human resources, including education levels and information technology infrastructure. The ranking also assesses the level of education in society, such as formal education aspects, literacy rates, student scientific journals, and other education-related factors (medcom.id, 2019).

According to the Director-General of Primary and Secondary Education of the Ministry of Education and Culture, Hamid Muhammad, the reason for the increase in the number of students attending school is the existence of the Smart Indonesia Card or KIP, which is government funding to help people attend school for free. With the introduction of KIP, the number of students attending school has increased from 17.9 million to 18.7 million (pikiran-rakyat.com, 2020). The evolution of time necessitates the demand for new innovations. This condition also occurs in the field of education (kompas.com, 2018). The globalization condition requires everyone to understand the internet, which applies to all age groups from young people to the elderly. This situation provides opportunities and new innovations for the education sector, especially for tutoring. There are 150 million Indonesian people using the internet (boc.web.id, 2019), and from that figure, the percentage of time spent by individuals using the internet for social media, watching TV, and others can be observed. Most people spend their time using social media (boc.web.id, 2019).

The development of the internet can provide opportunities in various industrial sectors, including the education sector (jurnal.id, 2019). The significant use of time for internet use will undoubtedly provide opportunities for the education sector, one of which is the emergence of education technology, such as online tutoring and e-learning (CNN Indonesia, 2019). According to Forbes, the education technology industry will grow globally to reach $325 billion (kompas.com, 2019). The users of education technology in Asia are mostly in China, followed by India, Japan, the Philippines, and Indonesia. Compared to other ASEAN countries, Indonesia is the fastest-growing country in education technology (arenalte.com, 2018). The growth of education technology in Indonesia in 2019 reached more than 25 percent compared to other Southeast Asian countries (kompas.com, 2019). Internet users in Indonesia are estimated to experience an average growth rate of 10.2% from 2018 to 2023. In 2019, internet users in Indonesia were projected to grow by 12.6% compared to 2018, reaching 107.2 million users as shown in figure 1.1 (Databoks, 2019). A survey conducted by APJII in the period of March to April 2019 showed that the number of internet users in Indonesia is 171.17 million people or about 64.8% of the total population of 264 million people (Pratomo, 2019). The penetration of internet users in Indonesia ranks third in the Asia region, below China and India, reaching 829 million and 560 million, respectively, as shown in figure 1.2 (Databoks, 2019).

The growth of Internet usage in Indonesia indirectly will have a significant impact on Indonesian society in terms of communication, lifestyle, and information retrieval methods (arenalte.com, 2017). This can be an indicator of the large potential market for the internet in Indonesia, leading to the emergence of new innovations such as web-based buying and selling services, online news portals, e-learning, social media, messaging platforms, and many platforms offering video and music streaming services (arenalte.com, 2017).

One aspect that supports education is the existence of tutoring institutions. Ruangguru is one of the tutoring institutions in Indonesia. The Ruangguru application is a company engaged in online tutoring. Ruangguru was first established in 2013 by Iman Usman and Belva Devara

(Freischlad, 2016). Ruangguru is the largest technology company in Indonesia focused on the education industry. Currently, Ruangguru has 15 million users and a total of 300,000 teachers. Ruangguru also offers 100 subject areas from elementary to high school. The services available on the application include virtual classes, online exam platforms, learning videos, both private and non-private (ruangguru.com, 2019). Since its establishment in 2013, Ruangguru has received awards both domestically and internationally, such as the UNICEF Innovation to Watch, ITU Global Industry Award, Forbes 30 under 30, and others. Ruangguru continues to improve its services to reach all students in Indonesia with better quality teachers. Additionally, Ruangguru hopes to help students, teachers, and parents become more effective in the learning system (ruangguru.com, 2019).

According to the Director-General of Primary and Secondary Education of the Ministry of Education and Culture, Hamid Muhammad, the reason for the increase in the number of students attending school is the existence of the Smart Indonesia Card or KIP, which is government funding to help people attend school for free. With the introduction of KIP, the number of students attending school has increased from 17.9 million to 18.7 million (pikiran-rakyat.com, 2020). The large population and the government's willingness to support education through various programs have not been able to uplift education in Indonesia. This phenomenon can be seen from the low Gross Enrollment Ratios. Gross Enrollment Ratios represent the total ratio of the number of students with the education level shown in Indonesia, which is still low. Examples include reading, writing, basic mathematics, and others (kompas.com, 2019). Compared to other countries in Southeast Asia, Indonesia still ranks among the bottom four in terms of education levels. Additionally, according to data from UNESCO, Indonesia experienced a decrease in student enrollment in schools, although the number of students in Indonesia increased in 2017-2018 (data.worldbank.org, 2019).

According to Bailey and Pearson (1983), system quality encompasses accuracy, comfort, efficiency, flexibility, usability, and responsiveness to users. According to Srinivasan (1985), system quality refers to systems aimed at facilitating a process. Kim et al. (2008) defines system quality in e-learning as the ability or function of a system to provide many services that facilitate users, such as face-to-face interaction. Seddon (1997) states that system quality is a crucial factor in the successful implementation of data. Grover and Segars (1993) define system quality as the quality of a service based on consumers' expectations of the service from the brand, whether perceived directly, such as physically, or consumer feelings like the ideal expectation of the service. DeLone and Mclean (2003) suggest that system quality is the alignment between the stability of a device and the reliability of a system containing supporting information.

According to Wang and Strong (1996), information quality refers to the quality of information provided and the impact after users read the information. Bovee (2004) defines information quality as easily accessible information with accuracy and completeness. DeLone and McLean (2003) suggest that information quality can influence the quality of services within a system. Petter (2012) asserts that information quality is one of the determining factors of system quality. The better the quality of information, the more beneficial it is to the surrounding community and becomes one of the essential components in determining user satisfaction with a system. According to Cigdem and Topcu (2016), information quality must be complete, consistent, relevant, and up-to-date. Gao, Zhang, Ba, and Wang (2012) argue that information quality should be useful to users. Niehhm (2009) suggests that information quality measures whether the system has a positive impact on users and assesses the quality of information from a system, whether a website or application.

User satisfaction, according to Spreng and Mackoy (1996), is the emotional action of consumers based on their experience using services in a system. According to Pollicino (1996), user satisfaction is an individual's perception after using a website or application, whether it provides satisfaction and security in its use. According to Ives, Olson, and Baroudi (1983), user satisfaction is the satisfaction of users after using a website or application. Cheung and Lee (2005) argue that user satisfaction is satisfaction with the quality and speed of access to the system. The higher the quality and speed of access, the higher the user satisfaction. According to Delon and Mclean (1992), user satisfaction is satisfaction with the quality of a website or application. Halkos and Bousinakis (2010) state that user satisfaction is satisfaction with the impact felt after using an application or website. According to Jay et al. (2017), user satisfaction is the method used by companies to retain users to use the company's website or application. When consumers are satisfied with the system, they tend to recommend it to others for use. Meanwhile, Reichheld and Teal (2001), Kim et al. (2016) state that user satisfaction provides benefits and profits to the company. The more satisfied consumers feel, the more likely they are to continue using the system. Oliver (1997) argues that user satisfaction is consumers' assessment of whether a website or application has provided benefits or not.

Net profit, according to Cameron (1981), is the perceived benefits evaluated by users of a system. According to Delone and McLean (2003), net profit is the benefit to users after using a system. The more the system influences or benefits, the higher the user satisfaction with the system. According to Lin (2007), net profit is the result of what has been used, whether the end result is positive or negative, based on the benefits obtained after using the system, whether a website or application. The better the perceived benefits, the greater the net profit or the benefits of using it. According to Gilbert et al. (2004), net profit is the benefit perceived by users after using a system. When a system provides benefits, users automatically use the system in their lives.

Laumer et al. (2017) concluded that there is an influence of service quality on user satisfaction, a relationship between system quality and user satisfaction, and a relationship between information quality and user satisfaction. Cheng (2017) found a relationship between service quality and user satisfaction. Almarashdeh (2016) concluded that there is a relationship between system quality and user satisfaction, a relationship between information quality and user satisfaction, and a relationship between service quality and user satisfaction. Raspopovic (2014) concluded that there is a relationship between service quality and user satisfaction. Wang and Chen (2013) concluded that there is a relationship between system quality, information quality, service quality, and user satisfaction, and a relationship between user satisfaction and net profit.

Lee et al. (2018) concluded that there is a relationship between system quality, information quality, service quality, and user satisfaction. Kafaji (2013) concluded that there is a relationship between information quality and user satisfaction. Yakubu and Dasuki (2018) concluded that there is a relationship between system quality, information quality, service quality, and user satisfaction. Chi et al. (2020) concluded that there is a relationship between information quality, service quality, and user satisfaction. Amin et al. (2014) concluded that there is a relationship between perceived usefulness and user satisfaction. Yu and Qian (2018) concluded that there is a relationship between system quality and information quality, and user satisfaction, and a relationship between user satisfaction and net profit. Dehghan (2018) concluded that there is a relationship between service quality and user satisfaction. Setiawan and Sayuti (2017) concluded that there is a relationship between service quality and

user satisfaction. Sachan et al. (2018) concluded that there is a relationship between perceived usefulness and user satisfaction. Calisir (2004) concluded that there is an influence of perceived usefulness on user satisfaction. Kim and Lee (2014) concluded that there is an influence of perceived usefulness on user satisfaction. Wang et al. (2015) concluded that there is an influence of perceived usefulness on user satisfaction. Stefanovic et al. (2016) concluded that there is a relationship between user satisfaction and net profit. Haddad (2018) concluded that there is an influence of user satisfaction on net profit.

Based on the above review, the author formulates three hypotheses in this study:
H1: System quality has an influence on user satisfaction with the Ruangguru application in Jakarta.
H2: Information quality has an influence on user satisfaction with the Ruangguru application in Jakarta.
H3: User satisfaction has an influence on net profit for users of the Ruangguru application in Jakarta.

2. RESEARCH METHOD

The population in this study comprises all Ruangguru application users in Jakarta. The sampling technique is a nonprobability sampling, specifically convenience sampling, with a total of 150 respondents. Data collection is conducted through a questionnaire distributed digitally to respondents who meet pre-established criteria.

In this research, the collected respondent data is analyzed using Partial Least Square (PLS), a method of data analysis employing Structural Equation Modeling (SEM). PLS-SEM involves two separate assessment steps: evaluation of the measurement model (outer model) and the structural model (inner model). The first step involves specifying the measurement model as formative or reflective. If the measurement model test is adequate, the second step involves further analysis of the structural model to examine the relationships between variables. The outer model is assessed for validity through convergent validity (AVE) and discriminant validity (cross-loading) tests, while reliability is tested through internal consistency (composite reliability) and indicator reliability (loading factor) assessments.

For the structural model test, coefficients of determination (R^2) and predictive relevance (Q^2) are examined. Hypothesis testing is conducted through path analysis (path coefficients), effect size (f^2), and significance tests (t-test and p-value).

3. RESULTS AND DISCUSSIONS

In this study, there were 150 respondents who completed all the statements provided by the researcher, all of whom are users of the Ruangguru application domiciled in Jakarta.

The outer model testing in this study was conducted using the structural equation modeling (SEM) technique, which includes validity and reliability analyses. The validity analysis itself is divided into two parts: convergent and discriminant validity. Discriminant validity uses the average variance extracted (AVE) approach, which yielded results indicating that the variables used in this study met the criteria. The loading factor approach also showed that all indicators used to measure all variables in this study met the predetermined criteria, which is above 0.7 (>0.7). The AVE values for system quality, information quality, user satisfaction, and net profit were 0.724, 0.768, 0.720, and 0.745 respectively.

Reliability analysis in this study used the composite reliability analysis approach, showing that all variables used in this study were reliable and dependable. In the inner model testing, which includes data analysis in this study, multicollinearity analysis was conducted, yielding results that showed no multicollinearity among the independent variables used in this study.

For data analysis, the coefficient of determination (R2) analysis was used, showing moderate results with a value of 0.776 for the variable, indicating that 77.6% of the net profit variable can be explained by the system quality, information quality, and user satisfaction variables. The remaining 22.4% is explained by other variables not used in this study. Furthermore, the effect size (f2) analysis yielded varied results, ranging from moderate effects for system quality (0.193) and information quality (0.255) to a significant effect for user satisfaction (3.459).

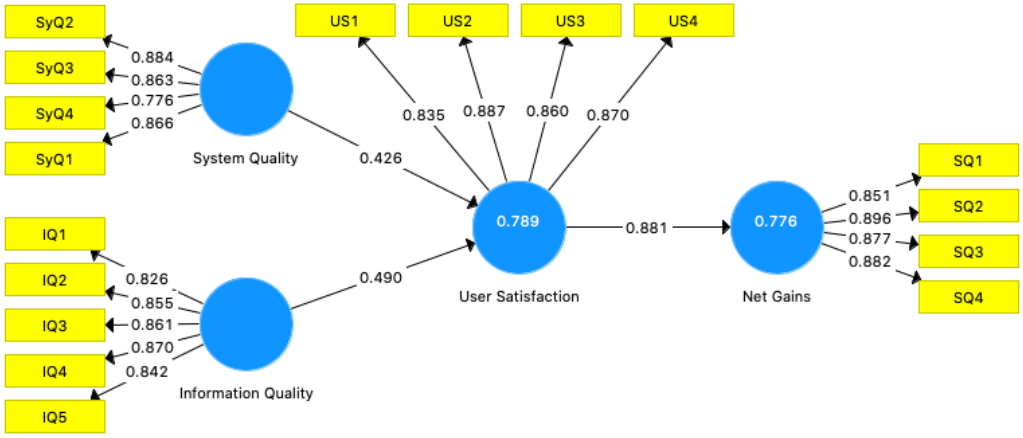

Figure 1. Path Coefficient Analysis

Based on the results of the first hypothesis test, it was found that system quality has a positive influence with a path coefficient value of 0.490, which is significant with a p-value of 0.000 (<0.05). System quality also has an f-square value of 0.193, indicating a moderate effect on net profit. Therefore, it can be concluded that H1 is supported. This finding is consistent with the research conducted by Wang and Chen (2013), which concluded that there is a relationship between system quality, information quality, service quality, user satisfaction, and net profit.

Moving on to the second hypothesis test, it was found that information quality has a positive influence with a path coefficient value of 0.426, which is significant with a p-value of 0.000 (<0.05). Furthermore, it has an f-square value of 0.255, indicating a moderate effect on net profit. Thus, it can be concluded that H2 is supported. This finding aligns with the opinion of Amin et al. (2014), who concluded that there is an influence of perceived usefulness on user satisfaction.

Regarding the third hypothesis test, it was found that user satisfaction has a positive influence with a path coefficient value of 0.881, which is significant with a p-value of 0.000 (<0.05). User satisfaction also has an f-square value of 3.459, indicating a large effect on net profit. Therefore, it can be concluded that H3 is supported. This finding is consistent with the findings of Sachan et al. (2018) and Calisir (2004), who concluded that there is a relationship

between perceived usefulness and user satisfaction, as well as the research conducted by Kim and Lee (2014), Wang et al. (2015), Stefanovic et al. (2016), and Haddad (2018), which concluded that there is a relationship between user satisfaction and net profit.

In table form, the overall conclusion of the hypothesis testing results can be seen in the table 1, the hypothesis test will explain whether the hypotheses in this study are supported or not supported. Hypotheses H1 to H3 can be supported if the path coefficients have values ranging from -1 to +1 and the values obtained from the p-value are less than 0.05 (<0.05)

Table 1. Hyphotheses Testing Result

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
Information Quality -> User Satisfaction	0.490	5.526	**0.000**
System Quality -> User Satisfaction	0.426	4.861	**0.000**
User Satisfaction -> Net Gains	0.881	34.826	**0.000**

Furthermore, the effect size (f2) testing aims to determine whether the independent variables examined in this study are weak, moderate, or strong predictors. The results of the effect size (f2) testing are displayed in the following table 2.

Table 2. Effect size (f^2)

	Information Quality	Net Gains	System Quality	User Satisfaction
Information Quality				0.255
Net Gains				
System Quality				0.193
User Satisfaction		3.459		

The Goodness of Fit (GoF) test is calculated using a formula consisting of the average variance extracted (AVE) and the coefficient of determination or R-Square (R2) values, which are done manually. Here is the calculation of Goodness of Fit (GoF):

$$GOF = \sqrt{\sqrt{AVE \times R^2} = \sqrt{0{,}7393 \times 0{,}7825} = 0{,}7606}$$

Based on the results of the Goodness of Fit (GoF) calculation conducted above, it can be concluded that the model in this study has a relatively high level of fit, specifically 0.7606, which is greater than 0.36 (GoF > 0.36) (Wetzels et al., 2009).

4. CONCLUSIONS AND SUGGESTIONS

The findings of this study indicates a consistent pattern across the three hypothesis tests. Firstly, it was found that system quality positively influences net profit, supported by significant statistical values. This aligns with prior research suggesting a link between system quality, information quality, service quality, user satisfaction, and net profit.

Secondly, information quality was also found to have a positive influence on net profit, corroborating existing literature indicating the importance of perceived usefulness on user satisfaction.

Lastly, user satisfaction emerged as a significant factor positively affecting net profit. This finding is in line with previous studies highlighting the relationship between perceived usefulness, user satisfaction, and net profit.

Overall, these findings underscore the critical role of system quality, information quality, and user satisfaction in driving net profit. They provide theoretical support for prioritizing these factors in optimizing user experience and ultimately enhancing profitability in the context of the Ruangguru application in Jakarta.

The consistent pattern observed in the theoretical summary emphasizes the interconnectedness of system quality, information quality, and user satisfaction with net profit within the Ruangguru application. Firstly, the positive influence of system quality on net profit underscores the importance of investing in robust technological infrastructure and ensuring seamless user experiences to drive profitability. This implies that allocating resources towards enhancing system functionality, reliability, and efficiency could yield significant returns by attracting and retaining satisfied users. Additionally, the confirmation of information quality's impact on net profit reaffirms the necessity of providing accurate, relevant, and accessible content to users. By prioritizing content curation and quality control measures, the company can foster trust, engagement, and loyalty among users, thereby increasing profitability.

Furthermore, the significant role of user satisfaction in driving net profit highlights the imperative of prioritizing user-centric strategies and addressing user needs effectively. Proactively engaging with users, soliciting feedback, and continuously improving the user experience can lead to heightened satisfaction levels, fostering positive word-of-mouth referrals and repeat usage. Ultimately, by recognizing the critical role of system quality, information quality, and user satisfaction, the company can strategically allocate resources and refine its operations to optimize user experience and maximize profitability in the competitive landscape of the Ruangguru application in Jakarta.

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