The effect of IS SERVQUAL and user information satisfaction (UIS) adoption on user satisfaction

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CHRONICLE	ABSTRACT
	Information systems are essential resources for business organizations. Besides, user information satisfaction will have an impact on service quality. This research used a Myerscough study, which combined user information satisfaction and SERVQUAL instruments, which was to measure the quality of information system services and investigated the correlation between the quality of information system service and user satisfaction. The survey was conducted on traditional Batik and textile artisans in Central Java, Indonesia. The results of this research reported a model that is slightly in accordance with previous studies. The only variable, which influenced the quality of information system services through SERVQUAL was empathy. However, information system user satisfaction was proven to be affected by the quality of information system services. This study also recommends further research on better instruments for assessing the quality of information system services.

1. Introduction

The current paradigm regarding company strategy is not only how to defeat the competitors but also how to build satisfaction of customers (Alegre, 2013; Vu, 2014; Blank, 2014; O, Malley, 2014; Shao, 2016; Escrig, 2018; Putri, Udin, & Djastuti, 2019). With the creation of customers' satisfaction, it will encourage them always to use the product or the services again. In general, every company believes in one of concept or philosophy marketing, which become the basis of every activity in satisfying the needs and desires of customers, including in the market place (e-commerce), which has begun to become a business platform. With the broader acceptance of smartphone and tablets in people lifestyle, mobile shopping has become increasingly popular in recent years (Gandhi, 2016; Kanaanm, 2017; Ferdinand, 2002). Shopping services via mobile devices using wireless facilities allow shopping to be done everywhere and provide consumers convenience in shopping. As a result, mobile commerce is a behavior of using mobile technology as well as consuming behavior. The importance of mobile commerce increases, and it broadens the power of consumers in shopping. Different with traditional electronic commerce, cellular trading allows the emergence of shopping everywhere through various mobile devices, such as smartphones, tablets, notebook computers, etc. The mobile device eliminates the time and location limits for shopping. Consumers can easily get the latest product information/promotions for their shopping needs and, of course, save time shopping in accordance with

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their lifestyle. However, the literature to view mobile commerce behavior in the perspective of consumer behavior is still limited (Agrebi dan Jallais, 2015; Faqih dan Jaradat, 2014). Besides, not all perceived usefullness motives all group of mobile shopping service users (Shangand Wu, 2017; Park *et al*., 2019; Choe, 2018). The perspective of consumer behavior, consumer users, and user satisfaction are the concern in mobile commerce (Ardiansah, Chariri, Rahardja, & Udin, 2020). In this case, the success model of information system (IS) shows the importance of system and user satisfaction in achieving user benefits. To explore the impact of usage and user satisfaction on mobile shopping platforms, therefore, this study conducted an empirical survey based on the success model of information system (IS).

Many studies have been accomplished to measure service quality and information system user satisfaction. Instruments for measurement have also been extensively studied. Ives et al. (1983) researched to measure the satisfaction of information system users. The instrument was called UIS (User Information Satisfaction). They conducted an exploratory factor analysis of the variables affecting the quality of information system services. Besides, many other scientists researched service quality in the field of marketing called SERVQUAL (e.g. Parasuraman, Zeithaml, Berry, 1988; Pitt, Kavan, & Watson, 1995; Becker & Pizzutti, 2017; Burns et al., 1992; Babacus & Mangold, 1992). In this study, it can be said that SERVQUAL met the requirements to be used as an instrument to measure the quality of information system services. Also, Kettinger and Lee (1995) tried to use SERVQUAL as an instrument to measure the quality of information system services. In their research, the tangible dimension is a dimension that is not suitable to be applied, but the other four dimensions are scientifically proven to be suitable for use. Moreover, Kettinger and Lee (1994) also suggested that SERVQUAL can be combined with User Information Satisfaction (UIS) as an instrument to measure the quality of information system services.

This study tries to investigate the effect of service quality on user satisfaction. The instrument used was an instrument developed by Myerscough (2002), which was a combination of UIS and SERVQUAL instruments as tools to measure service quality. Further, the question of global quality assessment from UIS would be used as an instrument to measure user satisfaction. The dependent variable was the overall quality, which would be measured using UIS and SERVQUAL indicators, while the independent variable was user satisfaction. In the overall quality variable as an unobserved variable, UIS indicators were grouped into three dimensions; namely knowledge and involvement, product quality information, and attitude of EDP staff and services, whereas indicators for SERVQUAL would only use two dimensions, namely: reliability and empathy.

2. Literature Review and Hypotheses Development

2.1 Management of information systems

Information management can be defined as the activity of obtaining information, using it as effectively as possible and discarding it when appropriate. O'Brien (1999) divided the information system area into five major parts, namely: management of information systems, development of information systems, application of information systems, the technology of information systems, and foundation concepts of information systems. Thus, information systems are a combination of organizing people, hardware, software, communication networks, and data sources, where information is called, transformed, and distributed within an organization (Avgerou, 2000; Maguire, 2000; DeLone, 2003; Gupta et al., 2019). In addition, data is a collection of unprocessed facts and figures that are relatively meaningless to the user. Meanwhile, information is data that has been managed and processed so that it has a particular meaning for the user. The system itself is a collection of integrated elements with the same intention to achieve the goal (McLeod, 1995). However, concerning computer-based information systems, two knowledge is needed, namely: knowledge of computers and information literacy (O'Brien, 1999). Both of these knowledges are different information for each domain. Knowledge of information in the field

of construction companies is undoubtedly different from information knowledge in the medical field. For this reason, we need expertise from each party to develop information system.

2.2 User information satisfaction (UIS)

Information systems can be used as one of the competitive advantages in a strategic organization. The decision to install an information system is an option to determine whether an information system is indeed needed, and after that, the system must function properly. The UIS is described where system users believe that the available information system can be used to meet their information needs. This instrument was developed by Ives et al. (1983). They tried to examine the difference between using two and four question items in one variable without reducing validity based on the results of Pearson's research. It aimed to reduce the number of indicator items in the Pearson model, which reached to 39 items. The method used was the exploratory factor analysis. From the results of Ives et al. (1983), it was found that the validity and reliability of the data was not affected by measurements using two items per scale. Nevertheless, this instrument was still considered for years. For this reason, the selection of genuinely relevant indicators without reducing validity and reliability was needed. Some less meaningful indicators were excluded from the indicators. As a result, 22 indicator items are still maintained. The results of this simplification are often referred to as short-form UIS (UIS Short Form) (Ives et al., 1983; Groß, 2015).

2.3 IS SERVQUAL

Consumer perceptions of service quality levels have been the focus of research in marketing (Myerscough, 2002; Carr, 2002; Senthil, 2017). Parasuraman et al. (1988) found that service quality is determined by the comparison between what customers feel about what should be offered/provided with what has been offered/provided. The perception of service quality is seen from the level and direction of the difference between customer perceptions and expectations. There is a difference between service quality and customer satisfaction, where the perception of service quality is a global assessment or behavior related to service superiority. In contrast, satisfaction is related to specific transactions. In their research, Parasuraman et al. (1988) used a model that included ten dimensions, namely: tangibles, reliability, responsiveness, communication, credibility, security, competence, courtesy, understanding/knowing the customer, and access. Measurements were made using 97 question items. The final results of the study prove that only tangibles, reliability, responsiveness, assurance, and empathy had validity to the quality of service. As for measurement instruments, it used 22 question items.

a. *Tangibles* are the appearance of physical facilities, including equipment, personal, and means of communication.
b. *Reliability* is the company's ability to keep and fulfill promises given to customers convincingly.
c. *Responsiveness* is quickly responsive in reading and serving the desires or needs of consumers.
d. *Assurance*, namely knowledge, reliability, and courtesy of employees which can be trusted and confident.
e. *Empathy* is personal care and attention given by personal/individuals in the company to consumers.

Information systems researchers often face the risk of incorrect measurement of the effectiveness of information systems, because they often ignore the quality of information system services (Pitt et al., 1995; Maguire, 2000; Chrisanthi, 2000). Pitt et al. (1995) suggest the use of SERVQUAL as an instrument to measure the quality of information system services. It is because the information systems department provides broader services, where previously, they only acted as developers and operations managers as service providers. The effectiveness of information systems is a multi-dimensional construct. Virtually, all tangible products have intangible attributes, and all services have tangible

values (Pitt et al., 1995; Fawcett, 2011). In some cases, the product is only a bridge to get services. For example, personal computer users do not just want a computer machine. They also expect installation services, training in the use of software, technical support, and so on. Goods and services are not things that can be clearly separated. They exist in the tangibility spectrum, ranging from pure products to services as a whole, with a combination somewhere near the midpoint. Frequent measurements are focused on the final spectrum in terms of tangibility. Pitt et al. (1995) argued that service quality, as a spectrum on the reverse side, needs to be considered as an additional measure of information system success. There are two possible units for analyzing the quality of information system services, which are the Department of Information Technology and Information Systems itself (Fawcett, 2011; Hummel, 2015; Hoda, 2016; Hoda, 2017). When a user only interacts with one system (for example, a salesclerk who serves customers via the telephone), the user's impression of the quality of service is limited to that one system. In this case, the unit of analysis is the information system itself. On the other hand, if the user interacts with various systems (e.g., personnel managers) that uses human resource information systems, word processors, spreadsheets, etc., the unit of analysis can be either the system itself or the information systems department. However, the separation of multi-system users is irrelevant. For example, a user who has difficulty getting repair services, then attention is not directed to the existing system, but the services of the information systems department. Although the quality of the system and the information quality are often associated with specific software products, it does not always mean the quality of service. Regardless of whether users interact with one or many systems, service quality can affect user usage and satisfaction (Hoda 2016; Hoda 2017). The difference between the service expected and received is the gap. Parasuraman et al. (1988) operated a conceptual model of service quality through gap measurement as a measurement of marketing constructs. The measurement uses two statements, where one statement is to measure expectations, and one statement is to measure perception.

2.4 Service-dominant logic (SDL)

Dominant Logic Service theory tries to revise various theories, including SERVQUAL, which has long been used by researchers. The service industry is a pillar of the current global economy; thus, the concept of service-dominant logic does not separate between the goods-dominant logic and service-dominant logic. Service-dominant logic plays a key role in the intangible role, namely, service excellence in matters related to intangible marketing programs, such as values, co-creation, how to provide satisfaction to customers, how to focus on customers, and so on. When a company fails to provide satisfaction to its customers, it requires hard efforts to improve it (Cheung & To, 2016; Aryanto et al., 2018; Soliha et al., 2019; Sekaran, 2006; Wong et al., 2012). Wu et al. (2018) examined the relationship between co-creation values that are part of the service-dominant logic and the customer-centric concept. S-D logic is expanded into an exchange relationship between a company and its customers formed from the perspective of an ecosystem that integrates corporate resources and the co-creation values of customers (Lusch & Vargo, 2014; Grönroos, 1991; Kaplan, 1991; Van Dyke et al., 1997, 1999). S-D logic is essentially not universally adopted by service marketers. Co-creation values are created because of interactions with customers. Value is defined as value-in-use (value of benefits) in the universal sense. At the same time, the understanding of S-D logic emphasizes that value is created dynamically between the company and its customers by combining value-in-use with value-in-context (value is created due to a specific context). As mentioned above, value-ini-use (customer-centric) and value-exchange (supplier centric) are the main components in the value-in-context of an embodiment of the co-creation network. According to the review of literature and previous research, the researcher developed the conceptual framework in this study, as follows:

Based on the construct above, *the hypotheses proposed were:*

H1: Knowledge and involvement affect user information satisfaction.
H2: Quality of information product affects user information satisfaction.
H3: Attitude toward EDP staff and service affect. user information satisfaction.

H4: Reliability affects IS SERVQUAL.
H5: Empathy affects IS SERVQUAL.
H6: User information satisfaction affects the overall quality.
H7: IS SERVQUAL affects the overall quality.
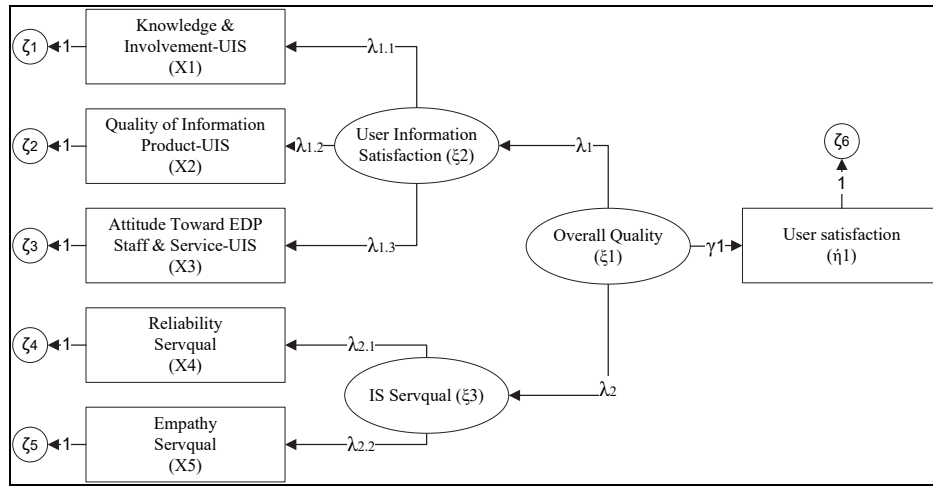*H8: Overall quality affects user satisfaction.*

Fig. 1. Research Framework

3. Research Methods

The population in this study were all traditional Batik and Textile artisans in Klaten, Central Java, Indonesia. The number of samples in this study was 260 people. Then, the data were processed employing structural equation modeling (SEM) analysis with Amos 19 software.

Table 1
Hypotheses Testing

			Estimate	S.E.	C.R.	P
IS SERVQUAL	←	Overall Quality	.842	.111	7.569	***
UIS	←	Overall Quality	1.000			
Kn & In-UIS	←	UIS	1.000			
QIP-UIS	←	UIS	.925	.099	9.354	***
AESS-UIS	←	UIS	.485	.076	6.344	***
Rel-SQ	←	IS SERVQUAL	1.000			
Emp-SQ	←	IS SERVQUAL	1.311	.149	8.824	***
User Satisfaction	←	Overall Quality	1.492	.161	9.289	***
UIS3	←	Kn & In-UIS	1.000			
UIS4	←	Kn & In-UIS	.807	.077	10.527	***
UIS5	←	Kn & In-UIS	.682	.067	10.164	***
UIS7	←	QIP-UIS	1.000			
UIS8	←	QIP-UIS	1.036	.069	14.924	***
UIS9	←	QIP-UIS	.951	.074	12.877	***
UIS10	←	QIP-UIS	1.326	.098	13.515	***
UIS6	←	AESS-UIS	1.000			
UIS11	←	AESS-UIS	.502	.105	4.790	***
SQ1	←	Rel-SQ	1.000			
SQ3	←	Rel-SQ	1.553	.130	11.922	***
SQ4	←	Rel-SQ	1.540	.130	11.866	***
SQ14	←	Emp-SQ	1.000			
SQ16	←	Emp-SQ	1.081	.100	10.808	***
SQ17	←	Emp-SQ	1.096	.105	10.469	***
SQ18	←	Emp-SQ	.884	.140	6.334	***
E1	←	UserSatisfaction	1.000			
E2	←	UserSatisfaction	1.050	.084	12.465	***
E3	←	UserSatisfaction	1.021	.054	18.839	***
E4	←	UserSatisfaction	1.029	.084	12.197	***

Furthermore, Table 2 shows the result of calculations on the goodness of fit criteria in the AMOS 19 program. It indicated that confirmatory factor analysis and structural equation modeling in this study could be accepted according to the model fit (Table 2). Based on this fit model, the hypotheses proposed in this study could be examined.

Table 2

Goodness o Fit Index

Goodness of Fit Index	Cut-off Value	Results	Evaluation
Chi-Square	P=5% df=98 Chi-Square ≤ 124.342	573.675	Marginal
Probability	≥ 0.05	0.000	Marginal
CMIN/DF	≤ 2.00	5.845	Marginal
GFI	≥ 0.90	0.781	Marginal
AGFI	≥ 0.90	0.696	Marginal
TLI	≥ 0.95	0.762	Marginal
CFI	≥ 0.95	0.806	Marginal
RMSEA	≤ 0.08	0.140	Marginal

The overall model feasibility test was carried out using the Structural Equation Model (SEM) analysis, which was also used to analyze the proposed hypotheses (Ghozali, 2004). The results of testing the model through SEM are as shown in Fig. 2 as follows:
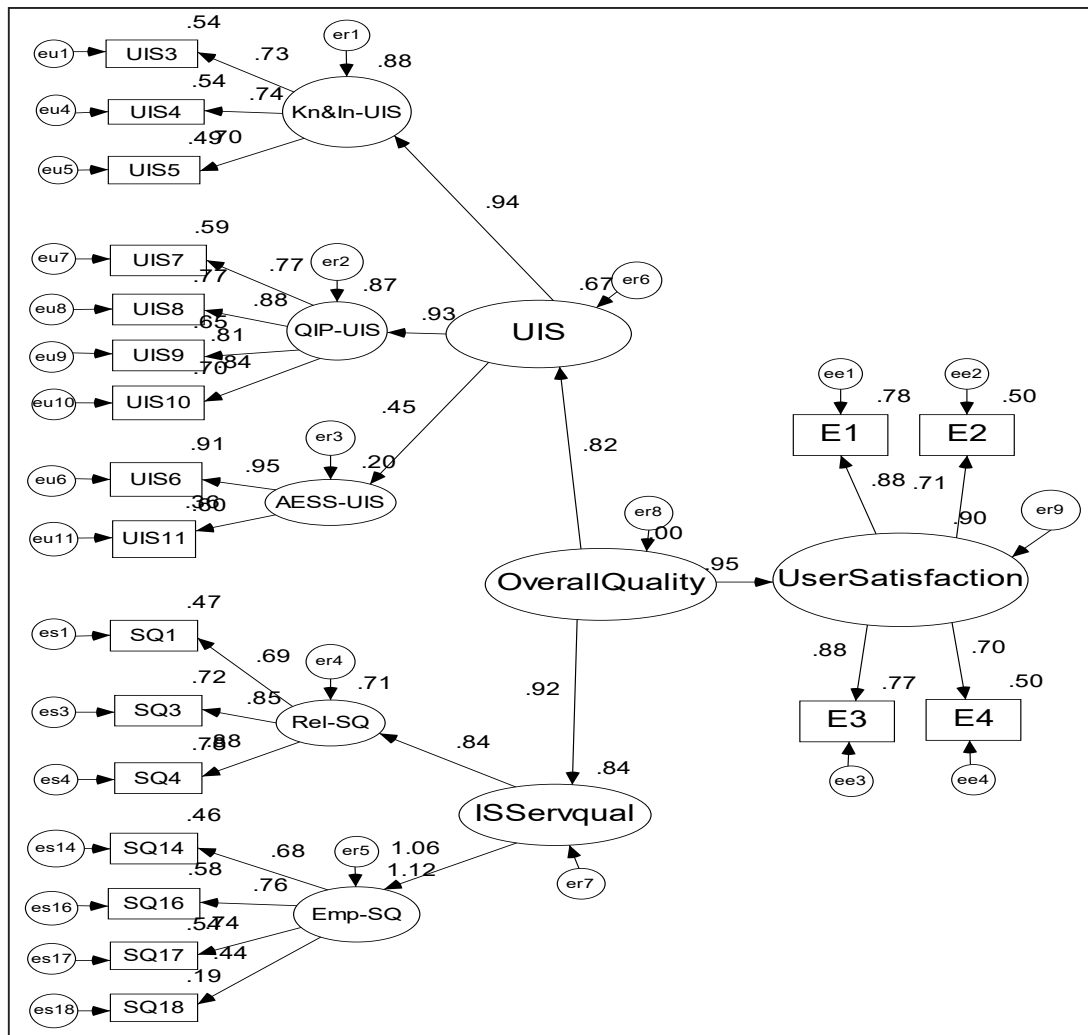

Fig. 2. Results of Analysis Using SEM

4. Discussion

From the analysis results, a positive and significant relationship was found between the quality of information system services and user satisfaction. From these results, it can be seen that a successful information system is not enough only to provide adequate hardware, software, or networks (Blank, 2014; O, Malley, 2014; Shao, 2016; Escrig, 2018). Users will not be satisfied with only being provided with the most sophisticated software, hardware, or networks, without getting an adequate quality of service. In this case, the role of the information system officer is crucial in providing adequate quality of service (Gupta et al., 2019).

In terms of service quality, from the model, the overall quality of the service information systems, which was measured through the UIS variable and the IS SERVQUAL variable, can be seen. From the analysis, it can be seen that hypothesis six, namely user information satisfaction, did not affect the quality of information system services (overall quality). As for hypothesis seven, IS SERVQUAL affected the quality of information system services (overall quality) positively and significantly. It shows that the factors contained in the variable UIS (knowledge and involvement, quality of information products, and attitudes of service personnel) did not affect the overall quality of information system services (overall quality). Meanwhile, the IS SERVQUAL variable was positively and significantly proven to affect the overall quality of information system services.

The UIS variable was actually measured through the variables of knowledge and involvement, the quality of information products, and the attitude of officers in providing services. Regardless of the UIS variable was not significant and did not affect overall service quality, it is essential to note that of three variables, only the variables quality of information products and the attitude of officers which served positively and significantly affected the UIS variable.

Besides the UIS variable, overall service quality was measured through the IS SERVQUAL variable. The IS SERVQUAL variable consisted of two measurement variables, namely reliability and empathy. However, the reliability variable proved to affect the IS SERVQUAL variable significantly. Thus, it made the factor of empathy played an essential role in the overall quality of information system services. In providing services, information services, information system officers are expected to offer more personal and adequate service. It will greatly affect user satisfaction. Users can realize that the information systems are not machines that can work continuously without interruption and can meet all the user's information needs. However, by empathizing with the user's need and being able to understand the importance of the information system in the user's daily activities, the information system officer can provide the best service and satisfy the information system user.

Empirically, the results of the study are indeed in accordance with existing conditions in batik and textile artisans in Klaten. The majority of information systems users were not people who had good knowledge of information systems. Generally, they used information systems to enter data (data entry). They did not know the product system outside the system they used every day. They also did not feel the need to be involved or have knowledge about of information systems. They generally also did not really care about the quality of the information available. These factors might cause the UIS variable not to affect the quality of information system services significantly. Cultural factors that are not too demanding in Javanese society might cause the reliability factor to be insignificant. They generally could accept and assumed that it was natural if there was a delay regarding services. It was considered reasonable and was something that could be tolerated. It is different from Western societies, which demand more punctuality. Whereas, the empathy factor was one thing considered important in Javanese culture, so it caused the empathy factor to be crucial in service quality.

As for the differences in the results of this study with previous research, there have been theories that can explain this phenomenon. Several studies show that the exploration results of the use of information

systems indicating that several dimensions of IT users and performance in different approaches will produce unequal levels of acceptance (Jia et al., 2018).

Starting from Kettinger et al. (1995), they conducted a study to prove that the SERVQUAL information system (IS SERVQUAL) is a valid instrument for measuring the quality of information system services. They researched in four countries, namely the United States, the Netherlands, Korea, and Hong Kong. The results of research in Hong Kong and Korea showed that the model studied was not fit. Whereas, in the Netherlands revealed a marginal fit. They found that a valid and reliable research design in the United States (USA) was not valid to be used in all countries. There is one factor, called the "Asian Factor", which was suspected as a distinguishing factor from the "Western Factor". Possible reasons are cultural differences in the maturity and/or evolution of information systems (Au et al., 2008; Canevello, 2010; Jia, 2018).

5. Conclusion

The results of this study support the research of Kettinger and Lee (1994,1995,1997,1999) that the empathy dimension had a vital position in Asia. In contrast, the reliability dimension had no or less effect. The dimensions mentioned above also explained why the factors of knowledge and involvement were also less influential in this study. The results of this study raised the suspicion that there were still other factors influencing the quality of information system services that have not been covered in this study. These factors may be more specific and local, according to the situation in Indonesia. In addition, it increases the opportunities for further researchers to conduct exploratory factor analysis research on these factors. Kettinger and Lee (1999) also suggested that the development of local versions of measurement instruments could be studied to cover the natural conditions of perceptions of information systems services abroad.

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References

Agrebi, S., & Jallais, J. (2015). Explain the intention to use smartphones for mobile shopping. *Journal of retailing and consumer services*, *22*, 16-23.

Ardiansah, M. N., Chariri, A., Rahardja, S., & Udin, U. (2020). The effect of electronic payments security on e-commerce consumer perception: An extended model of technology acceptance. *Management Science Letters, 10*(7), 1473-1480.

Au, N., Ngai, E.W.T., & Cheng, T.C.E. (2008). Extending the understanding of end user information systems satisfaction formation: an equitable needs fulfillment model approach. *MIS Quarterly, 32*(1), 43-66.

Aryanto, V.D.W., Wismantoro, Y., & Widyatmoko, K. (2018). Implementing eco-innovation by using internet to enhance firm's marketing performance: Study of green batik small and medium enterprises. *International Journal of e-Business Research, 1*(8), 10-28.

Babacus, E. & Mangold, W. G. (1992). *Adapting The Servqual Scale to Hospital Services: An Empirical Investigation. Health Science Research*

Becker, L.C., & Pizzutti, C. (2017). C2C value creation: social anxiety and retail environment. *Journal of Research in Interactive Marketing, 11*(4), 398-415.

Burns, J. M., Couger, D., Ma, L. (1992). *Motivating IT Profesionals: The Hong Kong Chalange. Information & Management.*

Canevello, A., & Crocker, J. (2010), Creating good relationships: responsiveness, relationship quality, and interpersonal goals. *Journal of Personality and Social Psychology, 99*(1), 78-106.

Carr, C. L. (2002). A psychometric evaluation of the expectations, perceptions, and difference-scores generated by the IS-adapted SERVQUAL instrument. *Decision Sciences*, *33*(2), 281-296.

Chrisanthi, A. (2000). IT and organizational change: an institutionalist perspective. *Information Technology & People, 13*(4), 234 – 262.

Cheung, F. Y. M., & To, W. M. (2016). A customer-dominant logic on service recovery and customer satisfaction. *Management Decision*, *54*(10), 2524-2543.

Delone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. *Journal of Management Information Systems*, *19*(4), 9-30.

Faqih, K. M., & Jaradat, M. I. R. M. (2015). Assessing the moderating effect of gender differences and individualism-collectivism at individual-level on the adoption of mobile commerce technology: TAM3 perspective. *Journal of Retailing and Consumer Services*, *22*, 37-52.

Fawcett, S. E., Wallin, C., Allred, C., Fawcett, A. M., & Magnan, G. M. (2011). Information technology as an enabler of supply chain collaboration: a dynamic-capabilities perspective. *Journal of Supply Chain Management*, *47*(1), 38-59.

Ferdinand, A. (2002). Structural equation modeling dalam penelitian manajemen. *Semarang: Badan Penerbit Universitas Diponegoro*.

Gandhi, S. K. (2016). India's Jumbo Jump from E-Commerce to Mobile Enabled Services (MES): A Review. *Productivity*, *56*(4), 326-331.

Ghozali, I. (2004), Model Persamaan Struktural: Konsep & Aplikasi Dengan Program AMOS 16.0. Badan Penerbit Universitas Diponegoro Semarang

Grönroos, C. (1991). The marketing strategy continuum: towards a marketing concept for the 1990s. *Management Decision*, *29*(1). https://doi.org/10.1108/00251749110139106

Groß, M. (2015). Mobile shopping: a classification framework and literature review. *International Journal of Retail & Distribution Management*, *43*(3), 221-241.

Gupta, A., & Arora, N. (2017). Understanding determinants and barriers of mobile shopping adoption using behavioral reasoning theory. *Journal of Retailing and Consumer Services*, *36*, 1-7.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (1998). *Multivariate data analysis* (Vol. 5, No. 3, pp. 207-219). Upper Saddle River, NJ: Prentice hall.

Hoda, R., & Murugesan, L. K. (2016). Multi-level agile project management challenges: A self-organizing team perspective. *Journal of Systems and Software*, *117*(1), 245-257.

Hoda, R., Salleh, N., Grundy, J., & Tee, H. M. (2017). Systematic literature reviews in agile software development: A tertiary study. *Information and Software Technology*, *85*, 60-70.

Hummel, M., & Epp, A. (2015, January). Success factors of agile information systems development: A qualitative study. In *2015 48th Hawaii International Conference on System Sciences* (pp. 5045-5054). IEEE.

Ives, B., Olson, M. H., & Baroudi, J. J. (1983). The measurement of user information satisfaction. *Communications of the ACM*, *26*(10), 785-793.

Jia, L., Hall, D., Yan, Z., Liu, J., & Byrd, T. (2018). The impact of relationship between IT staff and users on employee outcomes of IT users. *Information Technology & People*.

Kaplan, J. G. (1991). Effectiveness, Accountability, And Efficiency (Medical Care Management Information System). Physician Executive

Kanaanm, E. (2017). (2017). *A shifting landscape*. Criteo, New York, NY, available at: www.criteo.com/ media/6443/criteo-digital-commerce-marketing-trends-2017.pdf

Kettinger, W. J., & Lee, C. C. (1994). Perceived service quality and user satisfaction with the information services function. *Decision Sciences*, *25*(5-6), 737-766.

Kettinger, W. J., Lee, C. C., & Lee, S. (1995). Global measures of information service quality: a cross-national study. *Decision Sciences*, *26*(5), 569-588.

Kettinger, W. J., & Lee, C. C. (1997). Pragmatic perspectives on the measurement of information systems service quality. *MIS Quarterly*, *21*(2), 223-240.

Kettinger, W. J., & Lee, C. C. (1999). Replication of measures in information systems research: the case of IS SERVQUAL. *Decision Sciences*, *30*(3), 893-899.

Lee, J. (2007). Servqual vs Servperf: round 2 in a multi-cultural setting. *Journal of Academy of Bussiness and Economics*, *7*(3), 77-87.

Vargo, S. L., & Lusch, R. F. (2014). Service-dominant logic: What it is, what it is not, what it might be. In *The service-dominant logic of marketing* (pp. 61-74). Routledge.

Mcleod Jr, R. (1995). Management Information System A Study of Computer-Based Information System 6 th, edition Prentice-Hall inc. *New Jersey*.

Myerscough, M. (2002). Information systems quality assessment: REPLICATING Kettinger and Lees USISF/SERVQUAL combination. *AMCIS 2002 Proceedings*, 153.

O'Brien, J. A. (1999). Management Information System: Managing Information Technology in the Internetworhed Enterprise, United States: Irwin Mc.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple–item scale for measuring consumer perceptions of Service quality. *Journal of Retailing, 64*(1).

Pitt, L. F., Watson, R. T., & Kavan, C. B. (1995). Service quality: a measure of information systems effectiveness. *MIS quarterly*, 173-187.

Putri, E. R., Udin, & Djastuti, I. (2019). Structural empowerment and service-oriented organizational citizenship behavior: The mediating roles of innovativeness and job satisfaction. *Quality-Access to Success, 20*(170), 112-117.

Sekaran, U. (2006). *Research Methods For Business*. 4th ed., Wiley.

Senthil, T.N., Dharun, A.B., & Kasilingam, L. (2017). Understanding the intention to use mobile shopping applications and its influence on price sensitivity. *Journal of Retailing and Consumer Services, 37*, 8-22.

Soliha, E., Basiya, R., Rochmani, R., Darmawan, A. D., & Udin, U. (2019). The effect of product quality and customer value on satisfaction and loyalty. *Transylvanian Review, 27*(45), 13052-13057.

Gupta, S., Kumar, S., Kamboj, S., Bhushan, B., & Luo, Z. (2019). Impact of IS agility and HR systems on job satisfaction: an organizational information processing theory perspective. *Journal of Knowledge Management*.

Maguire, S. (2000). Towards a "business-led" approach to information systems development. *Information Management & Computer Security*, *8*(5), 230 – 238

Van Dyke, T. P., Kappelman, L. A., & Prybutok, V. R. (1997). Measuring information systems service quality: concerns on the use of the SERVQUAL questionnaire. *MIS quarterly*, 195-208.

Van Dyke, T. P., Prybutok, V. R., & Kappelman, L. A. (1999). Cautions on the use of the SERVQUAL measure to assess the quality of information systems services. *Decision sciences*, *30*(3), 877-891.

Wong, C. H., Lee, H. S., Chua, B. H., Chai, B. H., & Tan Han, G. W. (2012). Predicting the consumers' intention to adopt mobile shopping: an emerging market perspective. *International Journal of Network and Mobile Technologies*, *3*(3), 24-39.

Wu, P. L., Yeh, S. S., & Woodside, A. G. (2014). Applying complexity theory to deepen service dominant logic: Configural analysis of customer experience-and-outcome assessments of professional services for personal transformations. *Journal of Business Research*, *67*(8), 1647-1670.