The Relationships between Technology and User Satisfaction in Online Tax Filing: The Mediating Role of Confirmation of Expectation

Yenni Mangoting
Tax Accounting Department
Petra Christian University
Surabaya, East Java, Indonesia
yenni@petra.ac.id

Gabriella Whitney
Tax Accounting Department
Petra Christian University
Surabaya, East Java, Indonesia
whitney0898@gmail.com

Gladys Paramita Tjioewinata
Tax Accounting Department
Petra Christian University
Surabaya, East Java, Indonesia
gladys.paramitha@gmail.com

Abstract—This study investigates the relationship between the quality of the e-file system and user satisfaction. Building on the success of information systems (IS) and user satisfaction literature, this study adds confirmation of expectation as a mediating variable. This study collected the research data through a web-based survey. Structural Equation Modeling—Partial Least Square (SEM-PLS) was used to analyze the data from an online questionnaire on 220 e-tax service users in Indonesia. The results confirm that the quality dimensions of e-files consisting of information, systems, and service quality are factors that influence user satisfaction. The study also found that there were indirect effects of information system success factors on user satisfaction through the confirmation of expectations. The high quality of the e-file system can meet user expectations so that it can lead to their satisfaction. The study concludes with useful implications for academics, policymakers, and tax authorities in the economic context that appears in the future.

Keywords—confirmation; e-tax filing; IS success; satisfaction

I. INTRODUCTION

One of the principles of tax collection is efficiency, which means that the taxation system must be implemented practically and easily so that tax revenue can be achieved [13]. The government has tried to implement efficiency by modernizing tax administration since 1983 through the Self Assessment System [4]. Implementing administrative modernization will be difficult without information technology. Therefore, the use of technology through the use of electronic taxation transactions and paperless documentation models is considered very important to support tax revenue and increase taxpayer compliance [4]. The information era is changing conventional economic transactions headed for the use of electronic money. Also, traditional forms of trade began to be abandoned and switch to electronic commerce using internet facilities, so [3] emphasized that the taxation system must be able to adapt to the dynamics of the modern economy.

In the information era, the existence of a taxation system such as e-filing answers the need for an effective and efficient tax collection system. The quality of e-filing systems, such as the quality of information, systems, and services plays an important role. The better the quality of the e-filing system, the greater the benefits and convenience felt by its users. Research by [23] in 2018 proves that there is a perceived satisfaction of taxpayers using taxation technology through e-filing.

Satisfaction occurs when taxpayers feel that the quality of the e-filing system can meet or even exceed their expectations. Taxpayers have great expectations in the use of e-filing because it has three advantages, which are saving time, flexibility, and easier with the automatic calculation feature. Therefore, expectations are the key to determining someone's satisfaction in using technology. [17] explains that expectations are beliefs, prior individual beliefs, about what should happen in certain situations. Expectations come from perceptions formed by someone of an expectation confirmation object. The higher the confirmation of one's expectations, the higher the perceived satisfaction [15].

Satisfaction is an assessment of the characteristics or features of a product or service, or the product itself, which provides a level of customer pleasure related to meeting customer needs [12]. [1] found that taxpayers responded positively to the implementation of innovation in tax administration. Taxpayers experience quality systems, services, and information through the implementation of technological innovations in taxation obligations that have a significant impact on taxpayer satisfaction.

The advantages contained in the e-filing system, such as time and cost savings and good system and information quality, show the effectiveness and feasibility of a tax reporting system.
that uses e-filing. These advantages are expected to provide satisfaction to the taxpayer. The satisfaction of taxpayers is the main objective of the Tax Office in terms of providing e-filing facilities.

Before using e-filing, taxpayers will form expectations of the e-filing system. Then, taxpayers will compare their expectations of e-filing with the actual benefits of e-filing, which forms a confirmation of expectations. When the results obtained meet or even exceed the expected expectations, it will give satisfaction to the taxpayer. Based on the background above, this study has 4 objectives consisting of 1) determine whether the quality dimensions of the e-filing system (systems, information, and services) have a positive effect on the confirmation of expectations, 2) determine whether the quality dimensions of the e-filing system (systems, information, and services) are positively related to user satisfaction, 3) determine whether the quality dimensions of the e-filing system (systems, information, and services) affect user satisfaction indirectly through the confirmation of expectation, 4) and determine whether confirmation of expectation is positively related to user satisfaction.

II. LITERATURE REVIEW AND HYPOTHESIS

A. E-FILE SYSTEM QUALITY

The quality of the e-filing website is an overall evaluation of the efficiency and effectiveness of the e-filing service [2]. High-quality e-tax filling websites have efficient services in terms of time and cost and are also effective in terms of convenience, ease of use, and personalization. The dimensions of the e-file system quality consist of information quality, system quality, and service quality.

1) Information Quality

[9] defined information quality as the desirable characteristics of the system output. For example, relevance, understandability, accuracy, conciseness, completeness, currency, timeliness, and usability [9]. The information quality of e-tax can be of high quality if it meets the desired characteristics, such as relevant, accurate, and complete.

2) System Quality

[8] measured the system quality in terms of functionality, ease of use, reliability, flexibility, data quality, portability, integration, and importance. The quality of e-government website systems refers to the user's perceptions or desired characteristics of an information system relating to ease of learning, ease of use, system flexibility, system reliability, and system features such as intuitiveness, sophistication, and response time [9].

3) Service Quality

Service quality is a quality that supported by the service provider, including department or organization of information systems, internet service providers (ISP), or information technology support personnel [9]. SERVQUAL, as a measurement tool adapted from marketing, uses dimensions of reliability, responsiveness, assurance, empathy, and tangibles such as up-to-date hardware and software to measure service quality [8].

B. Confirmation of Expectation

[5] defined confirmation as the users' perception of the suitability between expectations of use and actual performance. E-government users' confirmation of expectation is defined as the extent to which users receive their expected benefits by using e-government services [2]. E-filing users will confirm by assessing the extent to which their expectations are met. The level of confirmation of expectations made by the users will affect their satisfaction or dissatisfaction.

C. User Satisfaction

User satisfaction is an individuals' evaluation of past positive or negative experiences with reports, websites, and support services [9]. [8] state that user satisfaction can be used to measure user opinions about e-commerce systems, where the level of user satisfaction must cover the entire cycle of user experience.

D. Expectation-Confirmation Theory

The expectation-confirmation theory (ECT) is generally used to study customer satisfaction. This theory was developed by Richard L. Oliver in 1977 and 1980, who explained post-purchase satisfaction or post-adoption as a function of expectations, perceived performance, and disconfirmation of beliefs. User satisfaction is determined by two constructs, which are expectations of information systems and confirmation of expectations, following actual use [5]. [5] uses ECT in terms of measuring the continuous intention of information systems, known as the Expectation Confirmation Model-Information System Continuance (ECM-ISC). ECM-ISC supporters state that confirmation will stimulate satisfaction.

E. The Information System Success Model

William H. DeLone and Ephraim R. McLean develop the D&M Information System Success Model (ISSM) in 1992. The information system success model is an information system (IS) theory that seeks to provide a comprehensive understanding of IS success by identifying, describing, and explaining the relationships between the six dimensions of success. These dimensions consist of information quality, system quality, service quality, use, user satisfaction, and net benefits [7]. The ten-year updated ISSM states that there is no physical interaction between the public and the government when tax reporting, so high-quality e-tax websites can play an important role in reducing people's risk perceptions and forming their satisfaction [8]. Therefore, the success of e-government websites depends on their quality in terms of their information, system, and services.

F. Hypothesis Development

1) The Relationship of E-File System Quality and Confirmation of Expectation

The success dimensions of information systems which consist of information quality, system quality, and service
quality have an important role in forming the level of confirmation of expectations and user satisfaction. [2] stated that the website quality of e-tax systems that are perceived high in the perspective of information, systems, and services, can lead to confirmation of citizens' expectations. Thus, the e-filing dimension quality can build up users' expectations regarding the benefits that users will receive from using e-filing to fulfill their duties or tax obligations. Based on the explanation above, it can be formulated our first hypotheses as follows:

H1: The quality dimensions of the e-filing system (systems, information, and services) have a positive effect on the confirmation of expectations.

2) The Relationship of E-File System Quality and User Satisfaction

The quality dimensions of information systems (information, systems, and services) must be measured or controlled separately because these dimensions affect user satisfaction [8]. Seddon et al. state that there is a significant relationship between system quality and user satisfaction, and also between the quality of information and user satisfaction [14]. User experience related to the quality dimensions of e-filing can determine the level of satisfaction felt by users. If the user feels the high quality of e-filing, the user will feel satisfied. However, if the user feels that the quality of e-filing is low or doesn't feel quality at all, the user will feel dissatisfied. Thus, we posit the following:

H2: The quality dimensions of the e-filing system (systems, information, and services) are positively related to user satisfaction.

3) The Relationship of Confirmation of Expectation and Users' Satisfaction

Oliver states that consumers have formed expectations before they use the product or service [14]. After that, consumers will form satisfaction based on the level of confirmation of their expectations. [5] also states that confirmation of expectations from past use will affect user satisfaction. Before using e-filing, users will form expectations of the e-filing system. When the user compares the benefits received with the expected benefits from the actual use of the e-file system, that is when confirmation of expectation occurs. Expectations fulfilled from the confirmation process can lead to user satisfaction. The reverse causes dissatisfaction. Thus, we posit the following:

H3: Confirmation of expectation is positively related to user satisfaction.

4) The Relationship of E-File System Quality and User Satisfaction through the Confirmation of Expectation

[8] state that the quality dimensions of information systems affect user satisfaction. The quality dimensions of e-filing also play an important role in determining the level of confirmation of expectations. Expectations met through confirmation can determine the level of user satisfaction [2]. So, the quality dimensions of the e-filing system positively influence user satisfaction through the confirmation of expectation. Based on the explanation above, the study posits the following:

H4: The quality dimensions of the e-filing system (systems, information, and services) affect user satisfaction indirectly through the confirmation of expectation.

III. METHODOLOGY

A. Research Model

Based on the explanation above, we mapped our research model is presented below:

![Structural Equation Model](image)

Fig. 1. Structural Equation Model

Note: E-FileQ = E-Filing System Quality, CNF = Confirmation of Expectation, SAT = Satisfaction

B. Sample Selection

The research samples showed that 220 individual taxpayers in Indonesia used e-filing. This study examined the research sample randomly. We used an online questionnaire as the research tool. The questionnaire contained questions about the quality of e-filing (information, system, and service quality), confirmation of expectations, and satisfaction using e-filing system. The number of questions became the indicator in measuring the tested variables. Taxpayers could choose the answer based on their experience using e-filing as follows: Strongly Disagree / Disagree / Neutral / Agree / Strongly Agree.

C. Variable Measurement

Questionnaire questions in this study adapt some reliable literature so that the measurement scale is valid. For example, questions about quality measures refer to research by [21] and [22], while questions related to satisfaction and confirmation refer to [5] research. This study measure answers to questions based on a 5-point Likert scale, starting from strongly disagreeing to strongly agreeing. The results would be processed by the WarpPLS program to see whether the tested variables had significant influence or correlation. The criteria are as follows:

- If p-value \( \leq 0.10 \) (\( \alpha=10\% \)), the tested variables have weak significant influence or correlation.
- If p-value \( \leq 0.05 \) (\( \alpha=5\% \)), the tested variables have significant influence or correlation.
If p-value ≤ 0.01 (α=1%), the tested variables have high significant influence or correlation.

To see the testing results, we used ‘p-value’ as the basis for determining the significance of influence or correlation between variables. A low p-value indicates that the variables tested have a highly significant influence or correlation.

IV. Research Results and Analysis

The study conducted a web-based survey in 2019. The total respondents who filled out the online questionnaire were 220 respondents, consisting of 127 men and 93 women. Most respondents are at the age of 45 years or more. The majority of the respondents’ education level is a college degree, which indicates that e-filing users have a fairly high level of education. Private employees are the most jobs from respondents. Most respondents have used the internet for more than five years, but most of them only have 1 to 2 years of experience using e-tax.

TABLE I. Table Distribution and Returned Questionnaire

| Information                        | Total |
|------------------------------------|-------|
| Distributed online (using Google Form) questionnaire | 240    |
| Accepted online (using Google Form) questionnaire | 232    |
| Not suitable for processing         | 12    |
| Number of questionnaire that can be used for the study | 230    |

Outer model evaluation explained how each indicator relates to its latent variable [11]. The measurement model is assessed using reliability and validity. A valid instrument is an instrument that can measure what must be measured precisely [18], while an instrument is reliable or trusted if the results are accurate, consistent, and stable [11]. WarpPLS has two methods in testing questionnaire validity, which are convergent validity and discriminant validity. Convergent validity explained the value of the correlation coefficient between the reflective indicator score and the score of its latent variable [11].

Based on the results in Table II, the loading value of all indicators is higher than the cross-loading, concluding that the discriminant validity of all indicators is valid. Table II also provides the results of convergent validity and discriminant validity. The results conclude that all indicators have met the requirement of validity, as they have loading values above 0.50. If the loading value of an indicator is more than 0.70, then the indicator fulfills convergent validity. The value of loading must be larger from the value of cross-loading.

Table III shows that all variables meet the reliability requirements, where the composite reliability value is higher than 0.7, and Cronbach’s Alpha value is higher than 0.6. Table IV below exhibits the test results that show discriminant validity for variables is also fulfilled, as the square root of AVE is greater than the value of other variable correlation coefficients.

The structural method or inner model is a method and process of calculating path coefficients, namely the coefficient of influence of explanatory variables or predictors on response or dependent variables [19], [19] also stated that the inner model illustrates the relationship between latent variables based on the substantive theory of research. Testing the inner model uses the value of R-squared, the value of Q-squared, and indicators of the Model Fit and Quality Indices.

R-squared shows the extent to which predictor variables explain the proportion of response variables [19]. High R-squared describes a good model. Based on the output results in Table V, the R-squared value for the expectation confirmation variable is 0.615. Therefore, the e-file system quality variable affects the confirmation of expectations of 61.5%, and the remaining 38.5% indicates that other variables and errors affect expectations of expectations. Furthermore, the value of
R-squared for the variable user satisfaction is 0.633, which means that the contribution of the effect of the variable e-file system quality and confirmation of expectation of user satisfaction is 63.3%. The remaining 36.7% shows that variables outside the research model and errors affect user satisfaction.

Q-squared is used to assess the predictive validity or relevance of a set of latent predictor variables on the variable criterion [19]. Q-squared values that are positive or greater than zero indicate a good model. Based on Table V, the Q-squared value of expectations and user satisfaction is 0.617 and 0.632, where both are greater than zero. Both of these values indicate good predictive validity or indicate a good model.

Table VI presents the criteria in the Goodness of Fit Model test. The Goodness of Fit is an index and a measure of the goodness of relations between latent variables (inner models) related to their assumptions [19]. Based on the results in Table VI, the model in this study has a Goodness of Fit.

H1 formulates a positive relationship between the dimensions of e-file quality and confirmation of expectations. The results of hypothesis testing in Table VII show that H1 is supported. The quality dimension of the e-file system significantly and positively influences the confirmation of expectations, where the p-value <0.001 and path coefficient are 0.785. The path coefficient of 0.785 is the biggest coefficient among others, which means the quality dimension of the e-file system has the strongest influence on confirmation of expectations. This study proves that the high quality of e-file systems can lead to greater confirmation. Respondents of this study feel that the quality of e-filing can meet their expectations, which means that the government and tax authorities have succeeded in meeting the demands or needs of taxpayers in the current digital era through good quality e-filing. Research conducted by [2] also states that the three dimensions of the quality of e-file systems (information, systems, and services) have a significant and positive influence on confirmation of expectations.

In H2, the dimensions of the quality of e-file systems (information, systems, and services) are positively related to user satisfaction. The results of hypothesis testing in Table VII support the H2 statement. The quality dimension of the e-file system has a positive and significant effect on user satisfaction, where the p-value <0.001, which means that the effect is highly significant. These results prove that the high-quality dimensions of e-file systems can lead to user satisfaction. In the context of this study, the government and
tax authorities can provide good quality e-filing systems, information, and services so that respondents feel satisfied after using e-filing to meet their tax obligations. Accuracy, ease of learning about its use, and tax service office staff who are ready to help increase respondents' satisfaction when using e-filing. Several previous studies also obtained the same results that the greater the quality of information, systems, and services from e-filing can increase user satisfaction. [10] research results state that information quality and service quality have a strong influence on user satisfaction, where taxation information systems increase user satisfaction through updated, accurate, and reliable information. [16] also found that system quality and information quality have a significant influence on the level of user satisfaction.

H3 formulates a positive relationship between the confirmation of expectations and user satisfaction. The results of hypothesis testing in Table VII support the H3 statement. Based on the hypothesis testing, results have obtained that confirmation of expectation significantly affects user satisfaction on using the e-filing system, with a p-value of <0.001. P-value of <0.001 is being smaller than 0.05, which means that the effect is highly significant. Taxpayers as respondents in this study feel that their expectations of the use of e-filing have been fulfilled so well, that makes them satisfied. Respondents' answers prove that the government and the Directorate General of Taxes can meet the needs of taxpayers for a good tax information system (one of which is e-filing). This success can result in a greater level of respondent confirmation, which can provide a satisfying experience for respondents. These results are consistent with [14]'s research results that consumers will form satisfaction based on the level of confirmation of their expectations. First, users will form expectations using the e-filing system. Then, they used the e-filing system and compare their experience with their expectation, that is when confirmation of expectation occurs. When the experience can meet its expectations, the user will feel satisfied. [5] also states that confirmation was a strong predictor of satisfaction. Confirmation is a cognitive belief, where during the actual use, the user can realize the confirmation of the expectation of the information system. Users who confirm expectations, where the information system can meet their expectations, will feel satisfied.

In H4, the quality dimensions of the e-filing system (systems, information, and services) affect user satisfaction indirectly through the confirmation of expectation. The results of hypothesis testing in Table VIII support the H4 statement. The table shows that the indirect effect of e-filing system quality on satisfaction is 0.300 with p-value <0.001. Since the p-value is less than 0.05, this means confirmation of expectation is capable of mediating the effect of e-filing system quality on satisfaction. Better quality of the e-filing system will impact on benefits that users gained. The user will compare the benefits received with the expected benefits from the actual use of the e-filing system. Users will feel satisfied when the quality of the e-file system can meet their expectations [2]. In the context of this study, expectations play a key role, namely the prior beliefs of taxpayers about the use of e-filing in the future. Taxpayers as respondents feel that the benefits received after the use of e-filing for the second time are greater than the previous use, resulting in satisfaction in the use of e-filing. The response shows that the quality of e-filing implemented by the government and tax authorities is even better because taxpayers gained more benefits in the use of e-filing. Research conducted by [6] states that high in information quality, system quality, and service quality are needed to add value to create customers’ satisfaction through using confirmation of expectation model. [20] developed a satisfaction composition model and founded that confirmation have a significant influence on satisfaction for product and information, as well as overall.

V. CONCLUSION

This research studies how the quality dimensions of e-filing systems (information, systems, and services) will have an impact on user satisfaction through the confirmation of expectations. The test results show that the quality of the e-filing system has the strongest effect on confirming user expectations, where the user has formed the e-filing quality expectations before using it. After forming the expectation level, users will compare these expectations with the quality of the e-filing system felt by them. This study also found that the quality of the e-file system had a positive and significant direct effect in determining the level of user satisfaction. Users who feel that e-filing has high quality will be satisfied when using e-filing in fulfilling their duties or tax obligations. Besides, the results show that confirmation of expectations can affect the satisfaction of e-file system users'. Users who feel that the quality of the e-filing system can meet or even exceed their expectations will be satisfied.

The findings of this study are consistent with ISSM, where the information system success factor (quality dimension), plays an important role in shaping user satisfaction. Not only ISSM, but the results also show the same conclusions as ECT, where high information system performance can lead to greater confirmation, and this confirmation affects user satisfaction. Overall, this study concludes that the e-file system quality consisting of information, systems, and services quality affects satisfaction indirectly through the confirmation of expectations. This research is expected to be an additional reference for future researchers, the government,
and tax authorities, especially in improving the quality of e-filing systems that can answer the needs of its users as a means of effective and efficient tax reporting.

REFERENCES

[1] Abadi, A. M., Abadi, A. M., & Jafari, A. (2017). Innovation Acceptance and Customer Satisfaction. A Survey on Tax Information Systems. AD-Minister, 149-171.
[2] Akram, M. S., Malik, A., Shareef, M. A., & Goraya, M. S. (2019). Exploring the Interrelationships Between Technological Predictors and Behavioral Mediators in Online Tax Filing: The Moderating Role of Perceived Risk. Government Information Quarterly, 1-15.
[3] Albuquerque, M. C. C. d. (2010). A New Tax Technology: The Brazilian Experience with a General Bank Transactions. Journal of Accounting and Taxation 2(1).
[4] Anggoro, S. (2015). Pajak Kepemimpinan & Masa Depan: Kanwil DjP Jateng J. Semarang: Dreamlight Apps.
[5] Bhattacherjee, A. (2001, September). Understanding Information Systems Continuance: An Expectation-Confirmation Model. MIS Quarterly, 25(3), 351-370.
[6] Chen, Y.-Y., Huang, H.-L., Hsu, Y.-C., Tseng, H.-C., & Lee, Y.-C. (2010, August). Confirmation of Expectations and Satisfaction with the Internet Shopping: The Role of Internet Self-Efficacy. Computer and Information Science, 3, 14-22.
[7] DeLone, W. H., & McLean, E. R. (1992). Information Systems Success: The Quest for the Dependent Variable. Information Systems Research, 3(1), 60-88.
[8] 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), 9-50.
[9] DeLone, W. H., & McLean, E. R. (2016). Information Systems Success Measurement. Foundations and Trends in Information Systems, 2(1), 1-116.
[10] Floropoulos, J., Spahis, C., Halvatzis, D., & Tspouriou, M. (2010). Measuring the Success of the Greek Taxation Information System. International Journal of Information Management, 30(1), 47-56.
[11] Ghozali, I. (2011). Structural Equation Modelling: Metode Alternatif dengan Partial Least Square. Semarang: Badan Penerbit Universitas Diponegoro.
[12] Nuralam, I. P. (2017). Etika Pemasar dan Keputusan Konsumen dalam Pemasaran Perbankan Syariah Malang: UB Press.
[13] Nurmantu, S. (2003). Pengantar Perpajakan. Jakarta: Kelompok Yayasan Obor Indonesia.
[14] Oliver, R. L. (1980, November). A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions. Journal of Marketing Research, XVII, 460-469.
[15] Rahi, S., & Ghani, M. A. (2019). Integration of Expectation Confirmation Theory and Self-Determination Theory in Internet Banking Continuance Intention. Journal of Science and Technology Policy Management.
[16] Seddon, P., Kiew, M.-Y., & Patry, M. (1994). A Partial Test and Development of the DeLone and McLean Model of IS Success. Proceedings of the International Conference on Information Systems, 99-110.
[17] Setiadi, N. J. (2008). Perilaku Konsumen: Perspektif Kontenporer pada Motif, Tujuan, dan Keinginan Konsumen. Jakarta: Kencana Prenanda Media Group.
[18] Sinithaj, T. J., & Sugiarto. (2006). LISREL. Yogyakarta: Graha Ilmu.
[19] Solimun, Rinaldo Fernandes, A. A., & Nurjannah. (2017). Metode Statistika Multivariat Pemodelan Persamaan Struktural (SEM) Pendekatan WarpPLS. Malang: UB Press.
[20] Spreng, R. A., & Yuliastoro, H. R. (2018). What are the Motivation of Taxpayers in Using E-Filing Information System. Jurnal Akuntansi Multiparadigma, 9(3), 510-515
[21] Stefanovic, D. M. (2016). Assessing the Success of E-Government Systems. An employee perspective, 53(6), 717-726.

[22] Wang, Y., & Liao, Y. (2008). Assessing E-Government Systems Success. A Validation of the DeLone and McLean Model of Information System Success, 25(4), 717-723.
[23] Yefni, Murniati, S., Zifi, M. P., & Yuliantoro, H. R. (2018). What are the Motivation of Taxpayers in Using E-Filing Information System. Jurnal Akuntansi Multiparadigma, 9(3), 510-515