Determinants of an auditor's continuance intention with respect to use of the Audit Tools and Linked Archives System (ATLAS): A model of extended expectation confirmation

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Abstract

The aim of this study was to examine the determinants of the continuance intention with respect to use of the Audit Tools and Linked Archives System (ATLAS) by employing survey methods. These determinants are developed from an Expectation Confirmation Model (ECM). The sample of this study is auditors who use ATLAS in public accounting firms in Indonesia. As many as 356 data points can be processed using smartPLS. This study revealed that perceived usefulness, confirmation, information quality, top management commitment and satisfaction affected the auditor's intentions when using ATLAS. The implications of this study are (1) Public accounting firms must provide full support to auditors in using ATLAS and equip auditors through training so auditors understand that using ATLAS is very useful; (2) IAPI must pay attention to outputs that are complete, good and appropriate so that the auditor is satisfied when using ATLAS. The auditor has a tendency to continue using ATLAS if he is satisfied.

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Introduction

The rapid development of information systems in the digital era has brought changes in various sectors. One such sector is auditing. The audit field has used information technology in the work process. The information system used by auditors in Indonesia is the Audit Tools and Linked Archives System (ATLAS).

ATLAS is one solution to improve auditor performance. Some of the benefits of ATLAS are, first, assisting the auditor in carrying out and documenting the audit process. Second, it makes it easier for the auditor to prepare audit working papers, so that the audit working papers he prepares are more systematic. Third, it reduces auditor errors when carrying out the entire audit procedure. The use of working papers processed on a computer has existed for a long time among auditors, but the ATLAS implementation is a new thing for auditors.

Auditors are not yet required to use ATLAS in preparing working papers [1]. However, the successful implementation and success of ATLAS is expected with confidence by the Ministry of Finance and Indonesian Association of Public Accountants (IAPI). In fact, not all implementations of ATLAS are in accordance with the government's expectations. Based on the results of [2], the implementation of ATLAS does not improve auditor performance and also does not improve audit quality. One reason is the low perception of the ease of using ATLAS that makes auditors reluctant to use the ATLAS system [3].

Technological and human factors are important components in the implementation of technology adoption such as ATLAS. ATLAS implementation is not considered to be in accordance with the expectations of the Indonesian Association of Public Accountants (IAPI). This is one of the causes of the human factor. Implementation failure occurs because of the reluctance or rejection of individuals within the company towards the implementation of technology [4]. Aldholay et al. [5] showed that the failure occurred due to aspects of individual behavior in the organization. Information system implementation will be successful if the information system is accepted by its users [6].

This study will focus on the determinants of the continuance intention to use ATLAS. This model is proposed to facilitate understanding of the factors that impact ATLAS acceptance. Bhattacherjee [4] created a model, namely the Expectation Confirmation Model (ECM). ECM is different from other information system acceptance concepts. ECM focuses on the continued use of information systems, thereby providing solid explanations and long-term projections of behavior.

ECM validated in various types of studies with many sample characteristics and different countries. Several research results using the ECM model include [7−11] support for the main model of ECM, although not all of the studies that have been conducted show results consistent with previous studies. The inconsistency of the results of this study is due to differences in the characteristics of the sample and the context of the information system studied.

The ECM model has several advantages over the previous theory. However, the ECM model has not included the technological context and organizational context. The ECM model only focuses on individual contexts: confirmation constructs, satisfaction, and perceived usefulness. The researcher finds that ECM does not include the technological context and organizational context in its model.

To improve ECM, this study will incorporate both the technological context and the organizational context. The technological context is represented by system quality, information quality and service quality which had previously been formulated by [12]. In the success model, system quality measures technical success, namely the accuracy and efficiency of the system in producing information. Information quality measures semantic success, namely the success of information in conveying meaning. Service quality measures the success of the level of effectiveness, namely the influence of the information generated by the information system. The selected organizational context is top management commitment. Top management commitment is support from management (a public accountant firm) for auditors to use ATLAS.

Based on the analysis above, the aim of this study is to investigate the relationship between perceived usefulness, confirmation, information quality, design quality, service quality, top management commitment and satisfaction with the intention to continue using ATLAS among auditors in Indonesia.

This study has made its contribution in two aspects, namely the contribution to the development of theory and practice. The results of this study contribute to theory and practice related to scientific development.

♦ The theory contribution in this study is in terms of construct development, model development and providing empirical evidence about acceptance and ATLAS.

♦ The practical contribution in this study is for systems analysts and governments. The results of this study can be applied to the practice of designing and implementing ATLAS systems, so that in developing a system one can pay attention to the constructs of confirmation, satisfaction and perceived usefulness, system quality as well as top management commitment. For the government, the results of this study provide input for the Ministry of Finance and IAPI so that in making decisions to implement a system, it can pay attention to aspects of user acceptance.

1. The comprehensive theoretical basis

In this section, the concept of Expected Confirmation Theory (ECM) is introduced before the discussion regarding the relationship between related variables.

1.1. Expectation Confirmation Model

Studies on the use after adoption in the area of information systems began since [4] proposed the Expectation Confirmation Model (ECM). ECM is a model for using an information system after adoption. ECM is a development model based on Expectation Confirmation Theory (ECT) developed by [13]. The concept of ECT is integrated in the technology acceptance model (TAM) in information systems and with further refinement to address its theoretical weaknesses, [4] added a perceived usefulness variable. Perceived usefulness is felt after using an information system, not before using the system.

ECM is a theoretical model of information system sustainability hypothesizing that expectations followed by initial acceptance lead to confirmation by comparing anticipated consequences. When actual performance is confirmed, users of the information system will be satisfied and potentially this leads to continued use. In contrast to other consumer acceptance models that focus on the first use of a new information system, ECM focuses on continuing use after acceptance of the information system, and provides solid explanations and long-term scale projections of user behavior [4].

Continuance is a form of behavior after adoption [14]. Information system continuance is basically the same as repurchasing behavior, namely following the initial decision and being influenced by initial use and potentially stopping use [4]). The use of advanced information systems can be determined by the intention resulting from certain reasons. The user's interest to continue using a technology can be referred to as continuance intention.

1.2. Research model and hypothesis

Figure 1 shows the research model developed from the previously described literature. This study is different from previous studies. This study carries out construct development in the ECM proposed by [4] which includes the technological context and organizational context. The constructs in the context of this technology are system quality, information quality and service quality. System quality and information quality will determine the attitude of system users [15]. System quality, information quality and service quality will also determine individual satisfaction in using information systems [16]. Several researchers, including [12, 17–19] in an information system success model with different indicators and measurements, have used the technological context. Organizational context is also needed because it is closely related to individual attitudes in using the system. The selected organizational context is top management commitment. Top management commitment will greatly affect employee satisfaction because with this role, management can monitor the quality of the system that is being implemented within the company [20]. This model is expected to be able to prove what factors can influence satisfaction and interest in continuing to use ATLAS.

1.2.1. The hypothesis of perceived usefulness

Perceived usefulness is defined as a person's belief that he will use the system if the system has utility value [21]. The construct of perceived usefulness was originally described through TAM by [21]. TAM relates the perceived usefulness construct to the behavioral interest construct. TAM found that perceptions of usability and ease of use

are prominent beliefs that influence information systems' acceptance behavior in the field of technology. ECM modifies the relationship between perceived usefulness and satisfaction. Perceived usefulness is expected to influence user satisfaction after working with the information system. The results of [4] study state that perceived usefulness has a positive effect on satisfaction. The more useful an information system, the stronger the individual satisfaction in using the information system.

The following studies [22−24] also strengthen ECM that the positive influence between perceived usefulness constructs on satisfaction in various types of applications. Based on the research results of [22], perceived usefulness has a positive impact towards satisfaction. Oghuma et al. [24] found perceived usefulness is the construct that has the greatest influence on their model. From the previous explanation, the formulation of the hypothesis is as follows.

H1: Perceived usefulness has a positive effect on satisfaction for using the ATLAS system.

1.2.2. The hypothesis of confirmation

Confirmation is defined as the perception between the conformity of expectations with reality after someone uses the system [4]. The research results of [4] show that confirmation has a positive effect toward satisfaction. Confirmation is the strongest predictor of satisfaction. The more in line with the performance of the information system with user expectations, the higher the individual satisfaction in using the information system. The positive relationship between confirmation and satisfac-

tion formulated and proven by [4] in ECM, has been supported by many studies. From the previous explanation, the formulation of the hypothesis is as follows.

H2: Confirmation has a positive effect toward satisfaction for using the ATLAS system.

1.2.3. The hypothesis of information quality

Information quality is characteristics system output when used by user [12]. This model shows that the quality of information has a positive impact toward satisfaction. This positive relationship formulated and proven by [12] in the DeLone and McLean Information Systems (IS) success model has been supported by many studies [25−29]. From the previous explanation, the formulation of the hypothesis is as follows.

H3: Information quality has a positive effect on satisfaction for users of the ATLAS system.

1.2.4. The hypothesis of system quality

System quality has a positive impact toward satisfaction because when a system has good performance in providing the information needed by users, users will be satisfied when working with the system [12]. This work shows that system quality has a positive impact on satisfaction. The positive relationship has been supported [25−28]. From the previous explanation, the formulation of the hypothesis is as follows.

H4: System quality has a positive effect on satisfaction for using the ATLAS system.
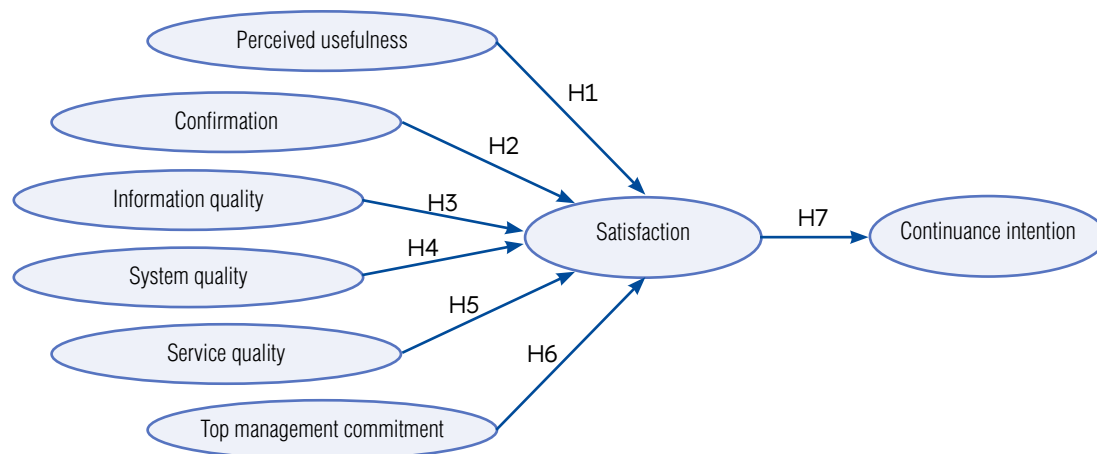

Fig. 1. Model research.

1.2.5. The hypothesis of service quality

Service quality is defined as the quality of support by users when using the system directly. There is a positive effect between service quality and satisfaction because if users get good enough support when using a system, for example when there are difficulties using the system (errors), then there are IT staff who are ready to help quickly. In this case, user satisfaction will increase in using the system [12]. This success model shows that service quality has a positive effect toward satisfaction. The positive relationship formulated by [12] in the DeLone and McLean IS success model has been supported by many studies [26−28]. From the previous explanation, the formulation of the hypothesis is as follows.

H5: Service quality has a positive effect on satisfaction for users of the ATLAS system.

1.2.6. The hypothesis of top management commitment

Sinha et al. [30] define top management commitment as top management's active involvement in establishing and monitoring policies, communicating and encouraging employees to achieve their goals. Management plays an important role in the success of an organization. Top management commitment is believed to be able to increase the level of confidence and willingness of employees to complete tasks properly. Addis et al. [20] proved that top management commitment has a positive effect on satisfaction in quality management practices of manufacturing organizations in Ethiopia. From the previous explanation, the formulation of the hypothesis is as follows.

H6: Top management commitment has a positive effect on satisfaction when using the ATLAS system.

1.2.7. The hypothesis of satisfaction on continuance intention

Bhattacherjee [4] presented satisfaction as an emotion related to previous experience by users of information systems. The satisfaction construct is explained through ECM. ECM relates the satisfaction construct to the repeated use intention construct with the logic of thinking that the user's repeated use intention will be determined mainly from the user' satisfaction when using the given system. If the user feels bad emotions when using an information system, then this could be a reason for the user to stop using the information system. ECM proved that satisfaction has a positive effect on intention to use again.

The following studies also strengthen the theory formulated by [4] about a positive influence of the satisfaction construct on intention to use repeatedly in various types of applications by [22, 31, 32]. From the previous explanation, the formulation of the hypothesis is as follows.

H7: Satisfaction has a positive effect on the intention to continue using the ATLAS system.

2. Research method

The population in this study was auditors who use the ATLAS system in their work processes in all public accounting firms (PAF) in Indonesia that were registered with the Indonesian Public Accountants Association (IAPI) in 2022.

The unit of analysis is an auditor who works in PAF and has used the ATLAS system in his work. The sampling technique in this study is non-probability sampling. Non-probability sampling is a technique in which all members of the population do not have the same opportunity to be sampled. This study uses judgment sampling in the sampling procedure, namely the sample is taken based on existing criteria on auditors who have used ATLAS in their work process.

The data collection technique used is a survey data collection technique. The survey method of this study is a mail survey. The Mail Survey conducted in this study was by distributing questionnaires via WhatsApp, Instagram, Email and Telegram. Mail surveys have a potential problem anticipated by researchers, namely low return rates. To ensure that researchers get a high rate of return on questionnaires, certain steps are taken.

The statistical method used is Partial Least Square (PLS). By using SmartPLS ver. 4.0 M3. PLS is a structural equation modeling that can solve multiple regression problems with small samples and multicollinearity.

$$S = \beta_1 PU + \beta_2 C + \beta_3 IQ + \beta_4 SYQ + \beta_5 SEQ + \beta_6 TMC + e$$
$$CI = \beta_7 S + e,$$

where:
S − satisfaction;
PU − perceived usefulness;
C − confirmation;
IQ − information quality;
SYQ − system quality;
SEQ − services quality;
TMC − top management commitment;
CI − continuance intention;
β_i − coefficient construct;
e − error.

The constructs in this study are information quality, system quality, service quality, top management commitment, confirmation, satisfaction, perceived usefulness and intention to continue using it. The instruments used to measure constructs in this study are instruments that have been used in previous studies [4, 10, 20, 27, 33], making it possible to increase the validity and reliability of the measurements. The measurement uses a Likert scale from 1 to 7 which has the following meanings: (1) Strongly Disagree, (2) Disagree, (3) Somewhat Disagree, (4) Neutral, (5) Somewhat Agree, (6) Agree, and (7) Strongly Agree.

Before the actual distribution of the questionnaire, the researcher conducted a pilot test with the aim of convincing himself that the questionnaire items were sufficient, correct and understandable to the respondents. Researchers conducted a pre-test as follows:

1. Translate the original English instrument into Indonesian.
2. Ask for help from individuals who are experts in English to translate it back into English. Next, the results of the translation into English will be compared by the researcher with the original instrument so that from this step it is hoped that there will be no differences in the meaning or significance of the translated instrument.
3. Asking negative questions on several items in the questionnaire so that the questionnaire is not biased and there is a form of control over the questionnaire.
4. Discuss the meaning of each indicator with several ATLAS users.

Then, confirmation of the public accountant's ability to accept research and confirmation that the public accounting firm is indeed using ATLAS is carried out first by phone. After the survey was approved, the researcher brought and took the questionnaire directly to the research location for the reason of increasing the response rate from those returning the questionnaire.

The pilot test was conducted on 34 students of PPAK and Master of Accounting as well as apprentice students at PAF who had used ATLAS in the audit process. After testing, the results show that all items in the questionnaire are valid and reliable. Once it is known that the items in the questionnaire are valid and reliable, the researcher distributes the questionnaires to the real respondents in the field.

3. Results

All questionnaires that can be used and processed are 356 questionnaires. The majority of respondents, 39.89%, were junior auditors, 51.40% were senior auditors and 8.71% were supervisors. The number of female respondents was 33.99% and 66.01% were male. The majority of respondents were aged 31−40 years and the majority of respondents' highest education was the bachelor's degree. The majority of respondents had more than 5−10 years of work experience and more than 10 years of experience using computers.

3.1. Validity and reliability testing

PLS model evaluation is done by evaluating the outer model and inner model. Evaluation of the outer model is carried out by conducting convergent validity tests, discriminant validity tests and reliability tests. In order to fulfil convergent validity, all constructs must have AVE value of more than 0.5. All constructs in *Table 1* have an AVE value more than 0.5. It can be concluded that convergent validity has been fulfilled.

In order to qualify for discriminant validity, all indicators must have a factor loading value of more than 0.7. The test results show that all indicators in *Table 2* have a value of more than 0.7; it means that discriminant validity is fulfilled.

Table 1.

Output quality criteria overview model with SmartPLS

	AVE	Composite reliability	R-squared	Cronbach's Alpha
Perceived usefulness	0.837	0.954		0.935
Confirmation	0.828	0.935		0.896
Information quality	0.835	0.953		0.934
System quality	0.809	0.944		0.921
Services quality	0.798	0.941		0.916
Top management commitment	0.830	0.936		0.898
Satisfaction	0.840	0.940	0.969	0.905
Continuance intention	0.807	0.926	0.577	0.881

All constructs must have a Cronbach's alpha value composite reliability must be greater than 0.7. Tests show that all constructs in *Table 2* have Cronbach's alpha values and composite reliability of more than 0.7. This means that all constructs are reliable.

Table 2.

Output cross loading with SmartPLS

Indicator	C	CI	IQ	PU	S	SEQ	SYQ	TMC
C1	0.899							
C2	0.910							
C3	0.921							
CI1		0.893						
CI2		0.890						
CI3		0.912						
IQ1			0.915					
IQ2			0.906					
IQ3			0.920					
IQ4			0.914					
PU1				0.920				
PU2				0.900				
PU3				0.921				
PU4				0.917				
S1					0.913			
S2					0.908			
S3					0.928			
SEQ1						0.889		
SEQ2						0.886		
SEQ3						0.902		
SEQ4						0.898		
SYQ1							0.891	
SYQ2							0.895	
SYQ3							0.912	
SYQ4							0.899	
TMC1								0.905
TMC2								0.910
TMC3								0.918

Evaluation of the inner model or structural model is a stage for evaluating the relationship between constructs. The Inner Model is evaluated with R2 and statistical testing. The results of the structural model testing using the R2 value and the significance test through the path coefficient values for each path. This is the results of the significance test for the path coefficient values or *t*-values for each path.

Through *Fig. 2*, it can be concluded that the R2 values for satisfaction and interest in continuing to use the system are 0.97 and 0.58. This explains that the constructs of perceptions of usefulness, confirmation, information quality, system quality, service quality and top management commitment are able to explain the satisfaction construct by 97%; the remaining 3% is explained through other variables outside the proposed model. Continuing intention to use ATLAS can explain the satisfaction construct by as much as 58%.

The significance test is obtained through the results of the *p*-value. The hypothesis is supported if the *p*-value has a value less than 0.05. Based on *Table 3* it can be concluded that H1a, H1b, H1c, H1f, and H2 are supported because they have *p*-values less than 0.05, while H1d and H1e are rejected because they have *p*-values greater than 0.05.

This study succeeded in proving that perceptions of usefulness, confirmation, information quality and top management commitment have a positive impact on satisfaction when using the ATLAS system. Meanwhile, the satisfaction construct has a positive effect on the intention to continue using ATLAS. This study failed to prove the effect of system quality and service quality on satisfaction. The following is a discussion for each construct.

4. Discussion and conclusion

This study examines the relationship between perceived usefulness, confirmation, information quality, system quality, service quality, top management commitment, satisfaction and intention to continue using ATLAS based on the development of the ECM model [4] and [12]. The focus of this research was to investigate the auditor's continuance intention for use of ATLAS in the context of information systems. This study confirms that (a) the more useful a system is, the higher the auditor's satisfaction with its use; (b) the more expectations are confirmed in ATLAS, the higher the perceived satisfaction created; (c) the more complete the information available on the ATLAS, the higher the auditor's satisfaction; (d) the more useful the information provided in ATLAS, the higher the auditor's satisfaction in using it; (e) the more satisfied the auditor is in using ATLAS, the
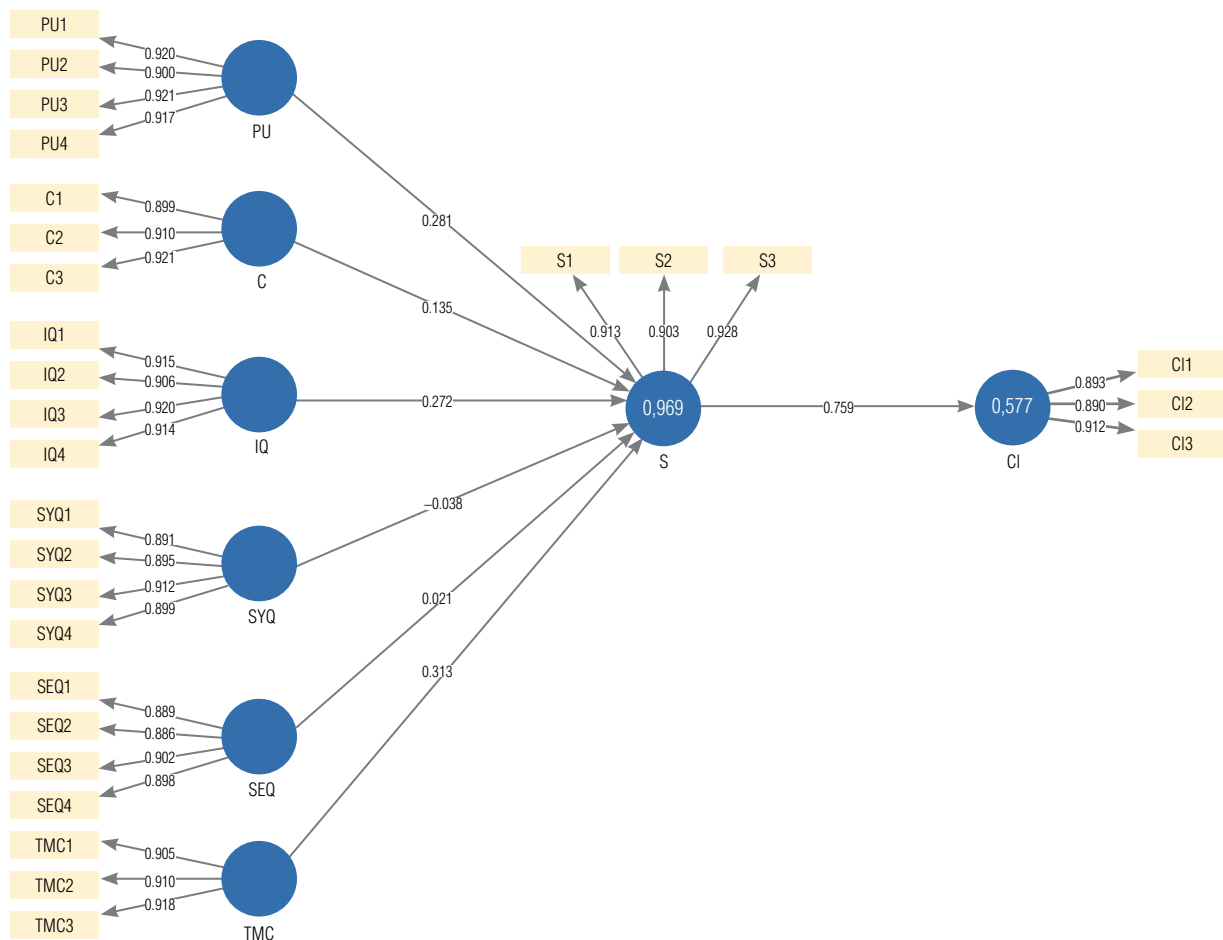
Fig. 2. Measurement model output.

higher the interest in continuing its use in the future. The findings support the following implications in this study.

First, the greater the perception of usability, the higher the satisfaction when using ATLAS. The outcomes from this research are consistent with [22, 34–36]. This empirical evidence is consistent with ECM that perceived usefulness has an effect on satisfaction. These results imply that perceived usefulness can be a predictor of perceived satisfaction in using the system for auditors. This empirical evidence has implications that the auditor is satisfied using ATLAS if the auditor feels ATLAS is useful in supporting his performance. Thus, PAF must equip auditors to provide more training so that auditors understand that the use of ATLAS is very useful and can support performance. When auditors feel they have the ability and control after receiving sufficient provision from the training process, they will tend to use the AT-LAS system well and have high confidence.

Second, auditor expectations that have been confirmed in ATLAS positively influence auditor satisfac-tion as supported by previous research [22–24]. This empirical evidence is consistent with ECM that confirmation has an impact on satisfaction. These results imply that expectations can be a predictor of perceived satisfaction when auditors use the system. Good experience and maximum service for auditors must be provided to meet the expectations of auditors when using AT-LAS. Thus, IAPI as the manufacturer of ATLAS must provide the best performance from ATLAS so that AT-LAS can be used continuously by auditors.

Third, satisfaction increases when the quality of information is fulfilled. The same findings were found in previous studies [25–29]. This empirical evidence is consistent with the information systems achievement model, that the quality of information affects satisfaction. These results indicate that the quality of information can play an important role in understanding satisfaction in using a technology. Thus, ATLAS must be designed to be useful, understandable, attractive and believable. High quality information must be maintained and improved to provide even more satisfying results.

Table 3.

Results of hypothesis testing with SmartPLS

Hypotesis	Path	Original sample	*t*-statistic	*p*-value	Conclusion
H1	$PU \rightarrow S$	0.281	3.629	0.000	Supported
H2	$C \rightarrow S$	0.135	2.024	0.022	Supported
H3	$IQ \rightarrow S$	0.272	3.606	0.000	Supported
H4	$SYQ \rightarrow S$	−0.038	0.678	0.249	Rejected
H5	$SEQ \rightarrow S$	0.021	0.374	0.354	Rejected
H6	$TMC \rightarrow S$	0.313	4.436	0.000	Supported
H7	$S \rightarrow CI$	0.759	23.145	0.000	Supported

Fourth, top management commitment affects auditor satisfaction when using ATLAS. In other words, when management provides full support to the auditors to use ATLAS, the auditors will be satisfied with the new system. This finding is in accordance with the findings of the previous study [20]. Top management commitment must be continuously improved. This empirical evidence has implications that auditors have a high level of satisfaction when auditors in PAF get full support from top management. Top management commitment is believed to be able to increase the level of confidence and willingness of employees to complete tasks properly. Thus, in designing a system, PAF does not only think about the greatness of the implemented system, but also must provide full support to the auditors in the application of ATLAS.

In addition, perceived satisfaction positively influences intention to continue using ATLAS. The outcomes of this study are consistent with studies accompanied by [22, 32]. This empirical evidence is consistent with the ECM and information system success models, that satisfaction influences the intention to continue using the system. The findings in this study indicate that satisfaction is a strong factor influencing intention to continue using ATLAS. That is, even though auditors initially have a positive perception of ATLAS, the auditors will not continue to use ATLAS if they are dissatisfied with the system. Moreover, the use of the ATLAS system is voluntary, so the auditor has the power to continue using ATLAS or not. Thus, PAF management needs to think about motivating its employees so that they are more motivated to use the ATLAS system properly. When auditors are motivated to use the ATLAS system, they will tend to continue using the ATLAS system.

On the other hand, system quality and service quality do not affect satisfaction when using ATLAS. This finding is inconsistent with previous research [25−28]. This empirical evidence is supported by the study of [37]. This empirical evidence is suspect because the satisfaction felt by the auditor is subjective so that the perception of each auditor can be different. This study proves that the relationship between information quality and satisfaction in the DeLone and McLean model is not sufficient to explain the phenomenon of someone accepting or rejecting use of the ATLAS system.

With the development of technology, ATLAS was introduced as an information system that combines the entire audit process from the initial engagement to the independent auditor's report. The significance of this study is to identify the factors that influence the intention to continue using ATLAS. From the results, this study suggests a strategy to increase interest in continuing the use of ATLAS by verifying the causal relationship between related factors, and the use of ATLAS for auditors is voluntary.

The limitation of this study is that it only uses one construct related to the organizational context, namely top management commitment. Based on the limitations of this study, further studies can be carried out, namely further studies can add other constructs in the organizational context that were not examined in this study, for example organizational culture. ∎

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Факторы, определяющие намерение аудитора продолжить использование системы аудита и связанных архивов (ATLAS): Модель расширенного подтверждения ожиданий

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Аннотация

Статья посвящена исследованию факторов, определяющих намерение аудиторов продолжать работу с системой аудита и связанных архивов (Audit Tools and Linked Archives System, ATLAS). В ходе исследования использованы опросы и модель подтверждения ожиданий (Expectation Confirmation Model, ECM). Выборка, использованная в ходе исследования, охватывает аудиторов, использующих систему ATLAS в бухгалтерских фирмах Индонезии. Для этого был использован инструментарий SmartPLS, позволяющий обрабатывать до 356 элементов набора данных. Исследование показало, что на намерения аудиторов в отношении использовании ATLAS повлияли такие факторы, как воспринимаемая полезность, подтверждение, качество информации, удовлетворенность и приверженность высшего руководства. В результате можно сделать следующие выводы. Во-первых, бухгалтерские фирмы должны оказывать полную поддержку аудиторам в использовании ATLAS и обучать аудиторов, чтобы они ощущали полезность системы. Во-вторых, Ассоциация бухгалтеров Индонезии (Indonesian Association of Public Accountants, IAPI) должна обращать внимание на то, чтобы результаты были полными, качественными и уместными, чтобы аудитор был удовлетворен использованием ATLAS. В случае удовлетворенности аудиторы склонны продолжать использование системы ATLAS.

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