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RESEARCH ARTICLE / ARAŞTIRMA MAKALESİ

The Impact of IT Application Control on the quality of the Audit Evidence: An Application Example

Bilgi Teknolojileri Uygulama Kontrollerinin Denetim Kanıtının Kalitesine Etkisi: Bir Uygulama Örneği

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ABSTRACT

In recent years, firms have started to invest millions of dollars on information technologies for a number of reasons, such as managing their operations more effectively, expanding trade channels, and preventing fraudulent activities. Parallel to these investments in IT, financial reporting processes have undergone serious changes. In addition to the creation of all accounting records that have bases on financial statement items with different IT applications, factors such as the expansion and diversification of companies' operations have made it difficult to audit accounting records with classical methods. In the past, while accounting records were created by people in the classical way, thousands of records could be created automatically very quickly thanks to IT applications. For this reason, the reliability of audit evidence obtained by ignoring IT application controls has become questionable. In this study, first of all, the effect of IT on audit processes and audit evidence has been explained. Then, IT application control tests were applied in a manufacturing enterprise and the effect of the obtained audit evidence on the audit was investigated. Since our paper is one of the first studies to examine the effects of IT practices on audit quality in the literature, it will lead the further studies.

Keywords: IT Audit, IT Application Control, ITGC

ÖZ

Firmalar, son yıllarda operasyonlarını daha efektif yönetmek, ticaret kanalları genişletmek, suiistimalleri engellemek gibi birtakım nedenlerden ötürü bilgi teknolojilerine milyonlarca dolar para harcamaktadırlar. BT'ye yapılan bu yatırımlara paralel olarak, finansal raporlama süreçleri de ciddi değişikliklere uğramıştır. Finansal raporlama süreçleri eskiden tek bir uygulama kullanılarak yönetilebilirken, günümüzde neredeyse finansal tabloları oluşturan bütün kalemler BT 'ye entegre edilen farklı uygulamalar ile yönetilmeye başlanmıştır. Finansal tablo kalemlerinin temelini oluşturan muhasebe kayıtlarının neredeyse tamamının farklı BT uygulamaları ile oluşturulmasına ek olarak firmaların operasyonlarının genişlemesi ve çeşitlenmesi gibi etkenlerde muhasebe kayıtlarının klasik yöntemler ile denetimini zorlaştırmıştır. Muhasebe kayıtları önceden insanlar tarafından klasik olarak oluşturulurken, BT uygulamaları sayesinde binlerce kayıt çok hızlı bir şekilde otomatik olarak oluşturulmaktadır. Bu nedenle, BT uygulama kontrollerinin göz ardı edilerek elde edilen denetim kanıtlarının güvenirliği sorgulanır hale gelmiştir. Bu çalışma da öncelikle BT'nin denetim süreçlerine ve denetimin kalitesine etkisi açıklanmış daha sonra bir üretim işletmesinde BT uygulama kontrol testleri uygulanmış ve elde edilen denetim kanıtlarının denetime etkisi araştırılmıştır. Çalışmamız da BT uygulamaların denetim kalitesine etkisini literatürde inceleyen ilk çalışmalardan biri olması nedeniyle sonraki çalışmalara öncelik edecektir.

Anahtar kelimeler: Bilgi teknolojileri denetimi, Bilgi teknolojileri uygulama Kontrolleri, BT Denetimi

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1. Introduction

Developments in information technologies (IT), monitoring whether the activities in the value chain are carried out in accordance with the planned objectives, principles, legislation and standards have made the use of intelligent autonomous decision support systems widespread in auditing processes. Developments in information technologies make significant contributions to the development of auditing. It is foreseen that the management of routine transactions, especially in auditing, with smart systems will gain depth and prevalence. Likewise, it is expected that data analytics techniques will be used more intensively in audit processes, and more effective risk management will be achieved in auditing. In terms of technological developments, principles, standards and auditors, which are the components of auditing, it is clear that the compatibility and complementarity of developments in these areas will make significant contributions to more effective and efficient auditing processes. Effective design and implementation of the necessary education and training processes for the new generation auditing processes is also important in terms of preventing disruptions in this area.

In this study, first of all, the effect of IT on audit processes and audit evidence was explained. Then, IT application control tests were applied in a manufacturing enterprise and the effect of the obtained audit evidence on the audit was investigated.

2. The Impact of IT Application Control on Audit Processes

Technological changes have a significant impact on business and analysis processes and decision-making techniques in the field of accounting and auditing. The development process of auditing technologies is given in Table 1. Accordingly, audit processes made with pencil, paper and calculator are moving towards more advanced autonomous intelligent systems and software.

Table 1: Timeline of Audit Technologies

Period	**Audit Technologies**
Before 1970	Pencil, Calculator
1970-1980	Computer and related tools
1980-1990	Expert Systems
1990-2000	Computer Assisted, Computer Assisted Audit Tools and Techniques (CAATT), (Electronic working papers, word processing and spreadsheet applications)
2000-2010	Generalized audit software (GAS), Continuous controls monitoring (CCM)
2010-2020	Certification in Risk Management Assurance (CRMA), Data analytics, Data Mining, Data Visualization, Internet of Things, Industry 4.0, Blockchain, Audit App, Drones, ….

Source: Dai, J. (2017). Three essays on audit technology: audit 4.0, blockchain, and audit app (Doctoral dissertation, Rutgers University-Graduate School-Newark)

The development stages of the audit are given in Table 2. Accordingly, the development stages of the audit are divided into four stages. Audit systems are moving from manual auditing, using paper, pencil and calculator, to making processes for auditing with more intensive computer-aided intelligent systems depending on the developments in information and communication technology over time. In this context, in the Audit 2.0 stage, software and programs such as Excel, CAAT software and audit technologies have progressed. In the process defined as Audit 3.0, there was a more intensive application of big data and analytical techniques to audit processes. In the phase defined as Audit 4.0, partially or completely autonomous smart information technologies have been used intensively in audit processes and decision support mechanisms.

Table 2: The Generations of the Audit				
Generations	**Audit 1.0**	**Audit 2.0**	**Audit 3.0**	**Audit 4.0**
Characteristic	Manual audit	IT audit	Inclusion of Big Data in audit analytics	Semi- and progressive automation of audit
Tools	pencils, calculators	Excel, CAAT software	Analytical apps	Sensors, CPS, IoT/IoS, RFID, GPS
Source: Dai, J., & Vasarhelyi, M. A. (2016). Imagineering Audit 4.0. *Journal Of Emerging Technologies In Accounting*, *13*(1), 1-15				

The difference between traditional and artificial intelligence (AI) and the audit process is given in Table 3. Accordingly, at all stages of the audit process, the artificial intelligence-supported audit process collects, processes and contributes to the reporting processes with continuous instant smart algorithms. Intelligent autonomous artificial intelligence algorithms, which have the ability to process and report higher volumes of data more intensively according to audit needs, make significant contributions to auditors' more effective decision making.

Table 3: Comparison Between AI Audit Process and Traditional Audit Process		
Phase	**AI-Enabled Automated Audit Process**	**Traditional Audit Process**
Pre-Planning	• AI collects and analyzes Big Data (exogenous) • Data related to the client's organizational structure, operational methods, and accounting and financial systems is fed into the AI system	• Auditor examines client's industry • Auditor examines client's organizational structure, operational methods, and accounting and financial systems
Engagement	• AI uses the estimate of the risk level (from Phase 1) and calculates audit fees and the number of hours • AI analyzes a database of contracts and prepares the contract • Auditor and client sign contract	• Engagement letter is prepared by the auditor- based on the estimated client risk • Auditor and client sign the contract
Understanding Internal Controls and Identifying Risk Factors	• Feed flowcharts, questionnaire answers, and narratives into the AI system and use image recognition and text mining to analyze them • Use drones to conduct the walkthrough, then use AI to analyze the generated video • Use visualization and pattern recognition to identify risk factors • AI aggregates all these data to identify fraud and illegal-acts risk factors	• Document understanding (flowcharts, questionnaires, narratives, walkthrough) • Auditor aggregates this information and uses their judgment to identify risks factors • Understanding of Internal Control (IC) to determine the scope, nature, and timing of substantive tests
Control Risk Assessment	• Continuous control monitoring systems examine controls continuously • AI runs process mining to verify proper IC implementation • Logs are automatically generated to ensure their integrity	• Examination of the client's IC policies and procedures • Risk assessment for each attribute • Test of controls • Risk reassessment • Document testing of controls
Substantive Tests	• Continuous Data Quality Assurance ensures quality of data and evidence • AI examines data provenance • Continuous test of details of transactions on 100% of the population • Continuous test of details of balances (at all times) • Continuous pattern recognition, outlier detection, benchmarks, and visualization	• Periodical sampling-based tests, and nature, extent, and timing depend on IC tests • Tests of details of a sample of transactions • Test of details of balances (at a certain point in time) • Analytical procedures
Evaluation of Evidence	• This becomes part of the previous phase	• Auditor must evaluate the sufficiency, clarity, and acceptability of collected evidence. Accordingly, auditor may either collect more evidence, or withdraw from the engagement
Audit Report	• AI uses a predictive model to estimate the various risks identified • Audit report can be continuous (graded 1-00 for example) rather than categorical (clean, qualified, adverse, etc.)	• Auditor aggregates previous information to issue a report • Report is categorical: clean, qualified, adverse, etc.
Source: Issa, H., Sun, T., & Vasarhelyi, M. A. (2016). Research ideas for artificial intelligence in auditing: The formalization of audit and workforce supplementation. *Journal of Emerging Technologies in Accounting*, *13*(2), 1-20.		

IT-based software applications have an increasing importance in audit processes. Owing to IT technologies, millions of routine transactions, information and documents in the audit processes can be audited and verified more efficiently. Although the experience and common sense of the auditors are still vital in the sensitive issues of the audit processes, IT supported audit processes and results also provide important contributions to the auditors (See, Sayana 2002, Padayachee & De Jager 2015, Fowler & Mar 2017, Karya & Moertini 2013, Henderson et al 2013, Chen 2011)

Jakšić (2009) stated various tools and techniques based on computers used in audit processes can be used. Thanks to the use of information technologies in audit processes, internal controls can be verified, records can be accessed and processes can be completed with high efficiency. The most important computer-assisted audit techniques are:

1. Test data, 2. Integrated testing facility, 3. Parallel simulation and 4. Online audit monitor.

Bellino et al (2007) stated that the IT Application Control has control over the scope of individual business processes or application systems, including data orchestrations, segregation of business functions, balancing of transaction totals, transaction logging and error reporting. Testing application controls makes a positive contribution to time savings, increased audit quality, reduced costs, increased security, reduced risks, and efficiency. Application controls cover the following purposes:

- The correct, complete, authorized and correctness of the entered data,
- The data is processed as intended within a reasonable time frame,
- The stored data is correct and complete,
- The outputs are correct and complete,
- A record is kept to monitor the data process from input to storage and final output,

Figure 1. shows the key elements of focus for application audits from data input to data output by considering all the processes.

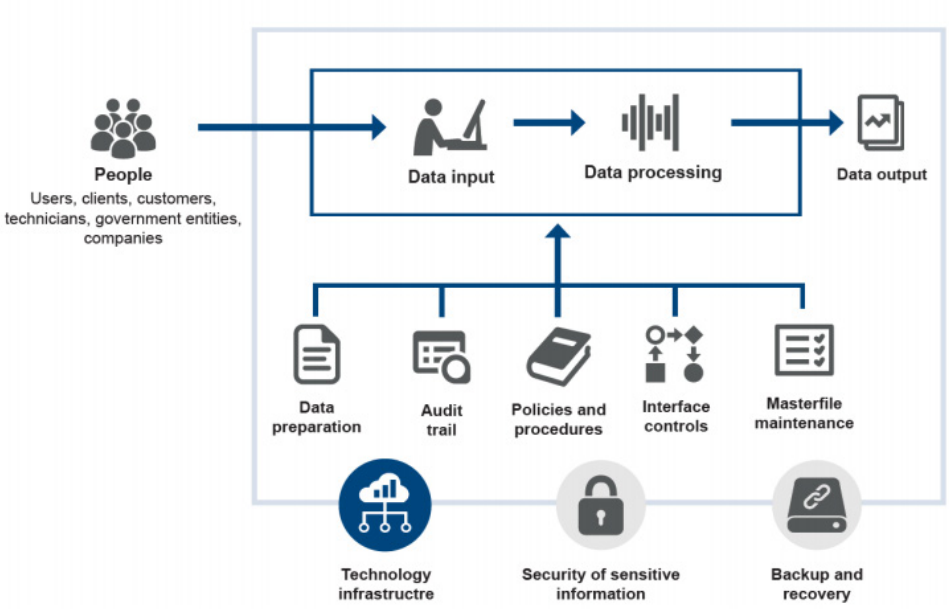

Figure 1. Key elements of focus for application audits

Source: Jordan Langford-Smith J., Aslam K., Tilbrook P., Bakhsh F., (2021), Western Australian Auditor General's Report, Application Controls Audits 2021, Office of the Auditor General Western Australia

Wood et al (2013) stated that General controls (see Figure 2) cover all business processes, business units, and the IT environment that includes application controls. Application controls are specific to a business process, and each business process supports a business unit. A given business process may support several business units. For publicly traded and other Sarbanes-Oxley compliant companies, the tests are suitable for both business processes and the IT environment. Consistent with the IT environment and business processes, financial reporting objectives, asset claims, completeness, rights and obligations, accuracy, limits and classifications must meet financial requirements.

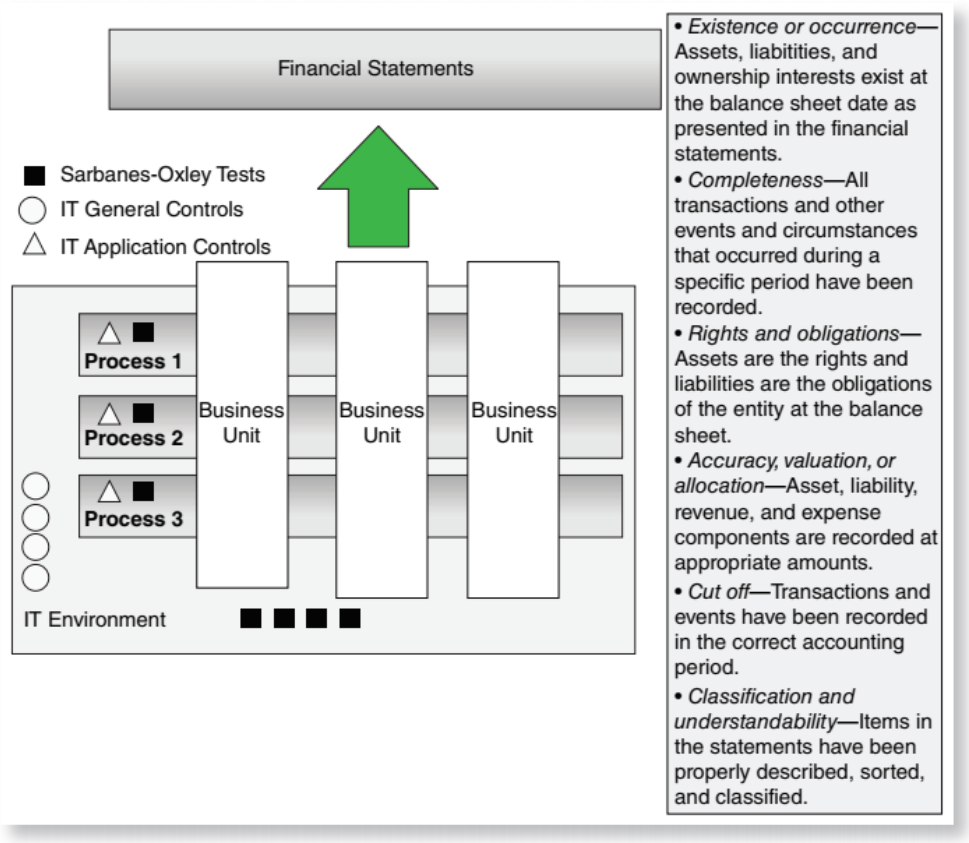

Figure 2. IT General and Application Controls
Source: Wood, J., Brown, W., & Howe, H. (2013). IT Auditing and Application Controls for Small and Mid-Sized Enterprises: Revenue, Expenditure, Inventory, Payroll, and More (Vol. 573). John Wiley & Sons.

3. IT Application Control Tests for a Manufacturing Company

3.1 Research Type and Approach

The aim of the research is to show the effect of the IT General Environment Control (ITGC) and IT Application control (ITAC) on the audit process and on audit evidence. For this aim, we have selected a company from the automotive industry. The Company uses information technology widely in its operations. The company's IT environment has a direct effect on the Company's strategies and business. The company's ERP system is SAP. We have performed ITGC and ITAC audits on the Company's data.

3.2 Analysis and Findings

Due to the fact that relying on application controls depends directly on the design and operating effectiveness of the ITGCs, IT General Control procedures have been performed for the company.

Our review of the IT General Controls covers the following areas:

Manage Access

Program change management controls.

Manage IT Operations

The work performed resorted to various methods of information gathering over the IT environment. These are:

- Meeting with Management,
- Analysis of the documentation provided, and
- Discussion of the key findings with management**.**

The result of the ITGCs risk procedures and results have been summarized in Table 4.

Table 4: ITGCs Test Procedures

IT process	**Risks**	**ITGC Tested**	**Results**
Manage Access	Users of the IT environment aren't the intended users due to inadequate authentication and security settings.	Passwords application and security configurations have been tested.	**Effective**
		Passwords to system resources and utilities and security configurations have been tested.	**Effective**
Manage Access	Users of the IT environment are not authorized.	User access to the application (creation/ modification) have been tested.	**Effective**
Manage Access	Unauthorized access to data. Critical actions launched by unauthorized people (configuration, development, access management…).	Access to privileged application has been tested.	**Effective**
		User accounts to system resources and utilities have been appropriately reviewed.	**Effective**
		User accounts to system resources and utilities (OS/DB) have been appropriately removed when no longer required.	**Ineffective**
Change Management Control	Programs in production are not secured permitting developers to move unauthorized or untested changes into the production environment.	Segregation of incompatible duties exists within the change management environment.	**Effective**
Change Management Control	New IT application programs or changes to the production IT application programs (including reports and interfaces) are not appropriate for the business or the IT environment.	Client openings have been tested.	**Effective**
Manage IT Operations	Issues with programs that cannot process to completion are not addressed or are addressed inappropriately.	Critical jobs of the IT application have been monitored.	**Effective**
Manage IT Operations	Hardware or software issues result in loss of data or the ability to accurately process that data.	Backup of the IT application has been performed and monitored.	**Effective**
		Incidents related to the IT application have been addressed in a timely manner.	**Effective**

Based on our review, we have not identified significant weaknesses which could significantly threaten IT reliability in respect to the production of financial information. As a consequence, we can rely on the IT General Controls of the IT environment. After relying on ITGCs, we designed and deployed critical controls based on the SAP. The Critical control and testing of ITAC testing procedures and results and the effect of the audit evidence have been summarized in Table 5.

Table 5: SAP Control Activity Test Procedures

Control Activity	**Testing procedure**	**Testing results /Effect of the Audit Evidence**
Manual journal entries should only be posted to document types which are configured in the SAP system.	We examined the configuration of the system, in order to verify that the settings found in the system correspond to those described in the definition of the control.	**Result: No exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can check the manual journal on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all entries. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.
General Ledger (G/L) accounts in the SAP system are appropriately configured to only allow automatic postings.	G/L accounts which have been designated as automatic post only.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can check the automatic journal on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC Procedure, the auditor can check all automatic entries. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.
Posting periods in the SAP system are configured to prevent the periods in which postings can be made to the general ledger.	We have analyzed the open/close posting periods transaction to ensure the correct and justified use of this transaction.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The cut-off risk is a high risk in the audit approach. The auditor can perform cut off testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all cut-off transactions. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit. By this way, the auditor can reduce the high risk to a standard risk.
G/L accounts in the SAP system are configured with the appropriate posting blocks and deletion flags.	We have analyzed the G/L account master data to determine if accounts have been appropriately defined as marked for deletion and/or blocked for posting.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor cannot perform any testing for deletion and posting transactions. With this ITAC procedure, the auditor can perform testing for these transactions. The audit evidence obtained by using this ITAC process is of higher quality. By this way, the auditor can reduce fraud risk.
One-time customer use is restricted.	We examined the configuration of the system, in order to verify that the settings found in the system correspond to those described in the definition of the control.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can perform testing for this procedure on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all restriction customers. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.

Table 5: SAP Control Activity Test Procedures		
Control Activity	**Testing procedure**	**Testing results /Effect of the Audit Evidence**
Customer master data modification is secured.	Ensure that all customer creations/modifications are secure and respect the standard procedure define by the group.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can perform testing for this procedure on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all customers that have been created comply with standard procedures. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.
Copy controls have been configured in the SAP system to correctly copy quantity information from the (source) sales order document through to the (target) billing document: price and quantity.	We examined the configuration of the system, in order to verify that the settings found in the system correspond to those described in the definition of the control.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can perform testing for this procedure on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all order forms and billing documents. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.
Over delivery is limited.	We have identified and justify all customers allowed to perform over deliveries in the system.	**Result: Exceptions noted** **Quality of audit evidence compared to traditional audit approach:** This ITAC control procedure shows that delivery notes are not limited. So, the auditor does not get more quality evidence and should perform more substantive testing for this risk**.**
Deliveries are systematically linked to valid orders.	We have verified that there are no outbound delivery documents with an impact on the G/L accounts that can be created without referring to a sales order document.	**Result: Exception noted** **Quality of audit evidence compared to traditional audit approach:** This ITAC control shows that delivery notes are not systematically linked to valid orders So, the auditor does not get a higher quality of evidence and should perform more substantive testing for this risk.
Deliveries are systematically invoiced.	We have noted that every week, a report from SAP is extracted in order to monitor the deliveries not invoiced.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can perform testing for this procedure on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all invoices. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.

Table 5: SAP Control Activity Test Procedures

Control Activity	Testing procedure	Testing results /Effect of the Audit Evidence
Copy controls in the SAP system are configured to copy information from the (source) sales order document through to the (target) delivery document, ensuring crucial information (such as items and order requirements) is copied onto the delivery document.	We have reviewed the system configuration in order to ensure the consistency of the information between the sales document and the delivery document on quantity and price.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can't control all mathematical controls between the sales document and delivery document in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all invoices. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.
Cut off is enforced (goods issue date / invoice date).	Report and processes are in place to analyze, monitor, share, alert and escalate open items. The report is extracted from SAP and all exceptions are justified.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The cut-off risk is a high risk in an audit approach. The auditor can perform cut off testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all cut-off transactions. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit. By this way, the auditor can reduce the high risk to a standard risk.
Due invoices list is monitored.	Report and processes in place to analyze, monitor, share, alert and escalate open items. The report is extracted from SAP and all exceptions are justified.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The Auditor can perform this testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all due invoices. So, the audit evidence obtained by using this ITAC process is of higher quality than that obtained from a traditional audit.
The provision for doubtful clients is calculated and reviewed.	Report from SAP to identify the provision for doubtful clients. At the end of the month the amount from doubtful clients is calculated and monitored.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The Auditor can perform this testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all doubtful clients. So, the audit evidence obtained by using this ITAC process is of higher quality than that obtained from a traditional audit.
Credit notes are blocked before posting.	No value in order to identify the documents with no preceding documents defined	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The Auditor can perform this testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all credit notes. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.

Table 5: SAP Control Activity Test Procedures

Control Activity	**Testing procedure**	**Testing results /Effect of the Audit Evidence**
Account determination in the SAP system is configured to automatically post to the inventory GL account upon goods issued.	We have verified that the chart of accounts allowing automatic posting upon goods is associated with accounts beginning with "3".	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The Auditor can perform this testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all automatic posts. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.
Invoice tolerances in the SAP system are configured to prevent payment of an invoice where the price per unit exceeds the purchase order price per unit by an appropriately defined tolerance.	We have checked the table and verified that configured tolerances are in line with the company's procedures.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The Auditor can perform this testing on sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all invoice and purchase orders. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit**.**
Account determination in the SAP system is configured to the appropriate revenue general ledger account.	We have verified that the chart of accounts related to revenue begins with "7" Group.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The Auditor can perform this testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all tolerances. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.
Invoice tolerances in the SAP system are configured to prevent payment of an invoice where the quantity invoiced exceeds the goods receipt quantity by an appropriately defined tolerance.	We have verified that configured tolerances are in line with procedures.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The Auditor can perform this testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all tolerances. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.
Account determination in the SAP system is configured to automatically post to the liability suspense account (GR/IR) upon goods receipt and invoice receipt.	We have verified that GR/IR clearing accounts to which Good Receipt and Invoice receipt movement types are connected do not access manual entries.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can perform this testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check the liability suspense account. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.

Table 5: SAP Control Activity Test Procedures

Control Activity	Testing procedure	Testing results /Effect of the Audit Evidence
Upon entry of purchase invoices, the system automatically checks whether the invoice is already present in the system. In case of duplicates, the system will provide a warning message. The system does not allow the payment of blocked invoices.	Checking that for the vendors groups for in-scope entities, the double invoice check is activated.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can perform this testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check the liability suspense account. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.
In case of litigation as a result of price differences, the invoice is recorded on reception of the invoice whatever the difference, and the difference is recorded in a specific account of purchases expenses #. The system automatically blocks the invoice and sends the invoice for approval.	Checking the parameterizing and performing tests of one related to: - Differences between Invoice and Purchase Order Rounding / minor differences within the invoice	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can perform this testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check liability price differences. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.
Account determination in the SAP system is configured to ensure the appropriate inventory account is updated during goods receipt processing.	Verifying that stock accounts to which Good Receipt movement types are connected do not access manual entries.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can perform this testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check the inventory account. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.
The invoices are automatically blocked in the system until the approval workflow is concluded.	We have performed standard configuration tests in SAP.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can perform this testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all automatically blocked invoices. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.
The access to supplier master data (regarding IBAN changes) is restricted to the appropriate users.	Exhaustive analysis of users having performed suppliers IBAN changes during FY20.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can perform this testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check all supplier master data. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.

Table 5: SAP Control Activity Test Procedures		
Control Activity	**Testing procedure**	**Testing results /Effect of the Audit Evidence**
The SAP does not allow the payment of blocked invoices.	We have performed standard configuration tests in SAP.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can perform this testing on a sample base in a traditional audit approach. The sample base control does not give full assurance. With this ITAC procedure, the auditor can check blocked invoices. So, the audit evidence obtained by using this ITAC procedure is of higher quality than that obtained from a traditional audit.
The SAP does not allow the change of the due date by the person who prepare the payment proposal.	We have performed standard configuration tests in SAP.	**Result: No Exception noted** **Quality of audit evidence compared to traditional audit approach:** The auditor can't perform this testing in a traditional audit approach. With this ITAC procedure, the auditor can check blocked invoices. So, the audit evidence obtained by using this ITAC procedures is of higher quality than that obtained from a traditional audit.

As result of IT application control summarized in Table 5, we concluded that, IT application control is a great opportunity for auditors to improve their knowledge of the company and to reduce manual substantive testing that the auditor should perform. With ITAC procedures, the auditor can perform testing on all transactions instead of a sample base control. The auditor can take more quality data compared to a traditional audit approach. With the increase in the complexity of companies, performing manual substantive tests can be time-consuming for the auditor and cannot give sufficient reliable audit evidence for the auditor. With an IT Application Control audit, the auditor can provide more reliable, higher quality audit evidence.

4. Discussion

Parallel to these investments in IT, financial reporting processes have undergone serious changes. While financial reporting processes could be managed using a single application in the past, nowadays, all items that are based on financial statements have begun to be managed with different applications integrated into IT. In addition to the creation of all accounting records that the bases of financial statement items with different IT applications, factors such as the expansion and diversification of companies' operations have made it difficult to audit the accounting records with classical methods. In this study, using data on an automotive industry company, we have examined the effects of ITAC on an audit. Firstly, we have performed ITGC procedures on an ERP system. Based on our review on the IT general environment, we have not identified significant weaknesses which could significantly threaten IT reliability in respect to the production of financial information. Therefore, we concluded that, we can rely on the IT General Controls of the IT environment. After relying on the ITGC system, we have determined the critical business control of the ERP system, and we have performed an ITAC audit on those critical controls and we have collected audit evidence from the systems. We have concluded that ITAC and ITGC audit procedures provide stronger audit evidence with respect to the classic audit approach. IT application control is a great opportunity for auditors to improve their knowledge of the company and to reduce manual substantive testing that the auditor should perform. With the increase in complexity of companies, performing manual substantive testing can be time-consuming for the auditor and cannot give sufficient reliable audit evidence for the auditor. In future studies, researchers can investigate the relationship between ITAC control and using artificial intelligence in audit procedures, which is a further step in audit methodology.

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