Assessing the influence of information systems on an internal audit environment of the retail companies operating in Malaysia

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Abstract

Aims: The current study is intended to assess the role of information systems in the internal auditing of retail firms in Malaysia. Increasing globalization and consumerism has rapidly transformed the retail business into a continuously expanding and challenging domain. To sustain efficient financial functions, it is essential to maintain a transparent and efficient internal auditing framework.

Method/design: The study is based on a primary quantitative method, in which responses of 200 participants were collected through a survey questionnaire on a 5-point Likert scale.

Findings: Statistical analysis showed a high correlation of the independent variables of Assistance in Information System, Lack of awareness IT, and Security threats on the dependent variable of internal auditing environment with correlations of at. Moreover, the study found a strong association of the mediating variable IT Governance on the causal relationship between independent and dependent variables with the internal audit environment.

Future implications: The current research would also help in guiding future researchers in conducting a case-based study of a country or a lower dominion to extract more nuanced data of these relationships.

Keywords: IT, information system, governance, internal audit, environment, retail.

Introduction

With the emergence of a globalized market economy, the functions of internal audits have become a part of business organizations, due to which their scope, definitions, and functions have expanded substantially (Mexmonov et al., 2020). The function of internal auditing encompasses a wide range of tasks, including assessments of risk, control assessments of internal functions, and provision of consultation. Moreover, the internal audit function also helps provide governance functions, which further helps in the management and compliance of the company's rules and regulations (Griffiths, 2016). The avenue of internal auditing was imitated in the 1930s. The Institute of Internal Auditors (IIA) described the function as an objective and independent assurance aimed at value addition and improvement of the operations of any organization. Through this, an organization can achieve its goals more efficaciously by avoiding intermittent hindrance and anticipating hurdles. Internal auditing is also an essential task to identify weak links within the business, i.e., systems, processes, decision-making loops, and practices, which are systemic and pose an impediment against growth (Ammar et al., 2019). Therefore, effective internal auditing also helps in risk analysis and management.

In this said dynamics, internal auditors become an essential part of the company's internal environment, which portray the most control to monitor the control of other functions (Anderson et al., 2015). While an internal auditor could be concerned about many functions and control, including operations, processes, and management, financial controls often remain the principal function. Therefore, on this site, the scope of the internal auditor encompasses the evaluation of control efficacy. It is periodic testing to check possible loopholes in a decision, coordination with other management functions, consultation services, etc (Elena et al., 2015). For retail companies, an internal financial audit is increasingly becoming an essential job. This is because of a general pace of expansion of the retail business, due to which the companies are prone to become complex in terms of their financial chains. Complications brought about by globalization necessitates that retail companies monitor their financial functions and their impacts on other domains of management and operations as well (Naheem, 2016). In this respect, the current research was conducted to assess the influence of information technology systems on internal audit environment of retail firms. Since retail firms vary substantially in their business model due to their dependence on many external factors, this study was carried out based on country since it shapes the audit through geographical and legal factors.

The research is circumscribed around the following objectives:

- To examine the significance of information systems in assisting on internal audit environment of the retail companies

- To identify the impact of the IT system on the effectiveness of the internal audit environment of the retail companies.

Literature Review and hypothesis development

Analysis of literature of internal audit of financial functions indicates that international standards and local practices emphasize on condition of objectivity during the entire accounting process. The need for independence from conditions, inclination, and subjection of judgment, or irreconcilable circumstance that impedes their capacity to perform equitably, is thoroughly assessed in the norms (Ngungat et al., 2019). Moreover, the abilities, information, and authorities that should be provided form the basis of prerequisites in the components of the IIA principles. Furthermore, the trait guidelines set prerequisites for a proficient turn of events and quality affirmation for the internal audit initiatives. In the current economic era, organizations work in a modernized climate, some of them being practically 100% computer-based, and some utilizing applications required for accounting and announcing monetary proclamations. Based on this literature analysis, the following hypothesis is developed regarding the relationship between information systems and internal audit environment.

H1: *The assistance in information systems has a significant effect on the internal audit environment.*

An electronic environment for monitoring comes packaged alongside the undeniable benefits of new frameworks, extra principles concerning efficiency and a satisfactory rate of errors (Ngungat et al., 2019). The job of data innovation and control etc. keeps on being an essential component for guaranteeing the accurateness of data frameworks and the announcing of association accounts to keep away from and forestall future monetary emergencies. The research proposes that audit committees have been given more extensive tasks in the current time, and their job inside the association has been broadened. These jobs have been reached out to monetary announcing processes, inward control construction, and code of corporate direct, reviewing exercises, and business exercises. Additionally, internal auditors have been changed from monetary regulators to designated individuals from the administration independent direction (Drogalas et al., 2017).

Due to increasing rates of inquiry, a substantial increase in transactions rates, and shifting of normal management processes to computer-based techniques, internal audit controls are also being replaced by computerized accounting systems, which work on the framework of Computer Assisted Audit Techniques (CAATs) (Mansour et al., 2016). Information systems is an umbrella term used to refer to the product of usage of IT product made by the IT delivery systems by the user. In this, information systems are defined as all tangible and virtual communication channels utilized within an organization to transmit information. An information system is comprised of a multitude of elements, including people, processes, information, information technology, and channels of inputs and outputs (Omonuk et al., 2016). Therefore, the following hypothesis is formulated to decipher the relation between security threats and the internal audit environment.

H2: *IT and security threats have a significant effect on the internal audit environment.*

One of the major concerns of the employee base in the adoption of information systems is regarding IT security. In 2020, IT cyber-attacks were rated as the fifth highest-rated public risks, which are increasingly becoming a norm in public and private organizations. The World Economic Forum (2020) report showed that due to complexities in digital forensics, the rate of detection of cyber-attacks on information systems of organizations is as low as 0.05% in the United States. Ultimately, the rates of international cyber-attacks are projected to increase by 200% by the year 2025. Nevertheless, various studies in recent literature point towards the efficacy of digitization of information systems of auditing to control corrupt practices and digital attacks (Belykina et al., 2020). Some researches indicate that the threat of cyber-attacks and data leakage does not arise from weaknesses present in the information systems. Instead, in usual cases, they result from inefficient integration of the automated information system with the human element (the manual systems) employed within the organizations. This causes issues such as password theft, data leakage, pattern identification, and data losses. Moreover, manual systems also impede the pace of security threat detection that a modern information system is equipped to deal with (Johansson et al., 2017).

The standards established help in enhancing the security of networks and mitigating threats. However, CAATs are significantly diverse, which necessitates companies to design their modalities of CAATs as per their preferences. Standards Board of ISACA issues IS auditing guidelines regarding the utilization of computer-assisted audit techniques, which are related to the guidelines of Standard 050.010 (Audit Planning), Standard 030.020 (Due Professional Care), and

Standard 060.020 (Evidence) (Elefterie et al., 2016). These guidelines help to design computer tools as per the recruitments of audit controls of a particular company. CAATs refer to the usage of commuter systems to automate the processes. Therefore, they combine essential office software (such as word processors, excel sheets, text editing programs) and advanced software used for statistical analysis and business intelligence tools. Through this combination, a trained auditor can carry out tasks at various stages of the auditing process (Ngungat et al., 2019). Therefore, to analyze the influence of awareness, the following hypothesis is developed to establish a relationship between lack of awareness and the internal audit environment.

H3: *Lack of awareness has a significant effect on the internal audit environment*.

The role of internal audit has conceptually transformed with the advent of information technology. Its functions currently involve value addition through monitoring and adjusting the company controls, risk management, and governance processes. Therefore, it has markedly shifted from traditional compliance assurance and asset safeguarding roles (Kotoupis et al., 2018). Drawing on the examination for the internal review, it tends to be seen that critical investigations have been embraced considering the requirement for interior review freedom alongside the requirement for objectivity during the time spent evaluating. In any case, this peculiarity has been examined according to a different point of view with the accentuation given on the impression of partners towards inspecting interaction and the other way around. In the interim, more prominent accentuation has likewise been given to investigating the impression of various partners concerning the examining system (Trotman et al., 2015). Nonetheless, there was a need to investigate how an internal auditor work while functioning in an authoritative setting deal

Li et al. (2018) propounded that the Technology Organisation Environment Framework becomes relevant in this domain since it conceptualizes the linkage among three factors of technological, organizational, and environmental factors to discern the adoption of new technology. In the case of retail agencies, it has been observed that a lack of awareness about the benefits and extent of facilitation through a specific technology remains a significant hurdle in its adoption within firms. This is backed by a lack of knowledge about its working (Ramanathan et al., 2017). Technology can be adopted pre-maturely and without sufficient study about the company's internal man-oriented and machine-handled tasks. In such a case, while new technology integrates with the machine component relatively easily by its flexibility of design, it remains disconnected from the human element.

Moreover, Yusof (2015) also pointed that assistance provided by information system act as a significant motivator for the adoption of technology. Concerning internal auditing, these facilitations include high-end statistical analysis, low error margin, high time efficiency, and ease of governance etc. However, it has also been identified that companies need to possess (or develop) an infrastructure of policies and networks that will be conducive to introducing information systems. Lastly, for the action of a moderator of IT Governance, the following hypothesis is developed:

H4: *There is a moderating effect of IT Governance over the relationship between information systems and the internal audit environment*.

It was identified that in the absence of an appropriate IT infrastructure; Governance of information systems becomes complicated. This is because of the relation of governance functions with various other policies functions of an organization (Ahmadi et al., 2015). Moreover, since governance is highly integrated with the decision-making hierarchy, the rate and extent of adopting the new information system by various employees directly relate to the IT governance of the company. However, a lack of awareness of the benefits and drawbacks of the system becomes a hindrance in this relationship (Johnston & Henson, 2015).
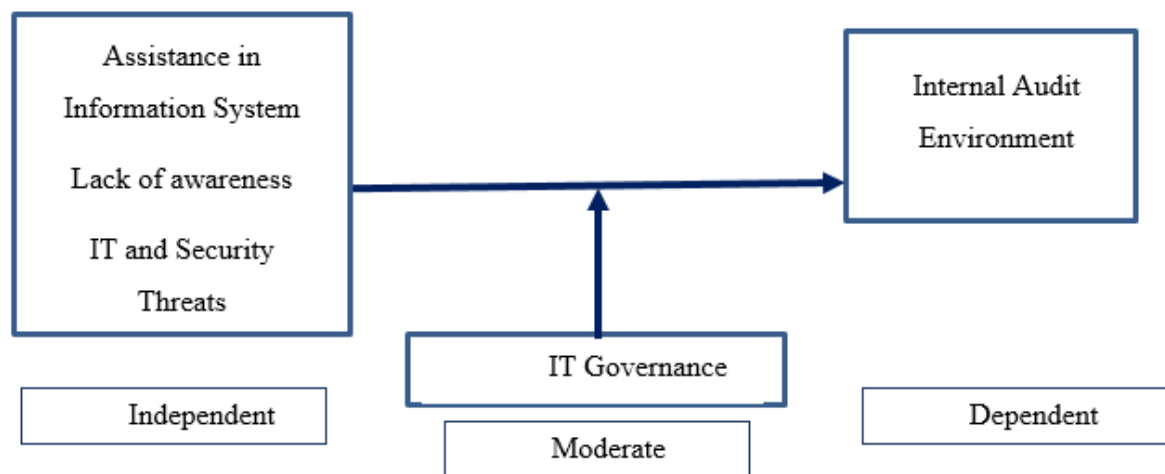
Conceptual Framework

Figure 1 Conceptual Framework

Source: Author (2021)

Methodology

Research philosophy pertains to the underlying philosophy of the researcher through which they intend to carry out the fundamental research. Saunders et al. (2015) categorized research philosophies as interpretivism, positivism, realism, and pragmatism. Among these, this study was based on a positivist philosophy because of the intention of the researcher to base it on objective data/information. Positivist philosophy helped the researcher discern objective information present in literature from the subjective one, so only those aspects are used to form the literature analysis component, which could be backed with quantitative data. Although literature review also involves many qualitative studies, their purpose was to establish the groundwork for hypothesis development. Moreover, positivist philosophy also helped the researcher eliminate biases from obtained information by focusing on objective data, which was dually checked for credibility and reliability.

There are fundamentally two kinds of research designs, i.e., qualitative and quantitative (Edmonds & Kennedy, 2016). The current study adopted a quantitative research approach in which the researcher relied on quantitative data to ascertain the truth. The quantitative approach used literature first to establish a basis of the information, which was then used to form questionnaires for this study. The quantitative design also allowed for using mathematical/statistical tools for analysis, which was a linchpin in ensuring high validity of data and outcomes. Quantitative investigation helps in mitigating systemic and psychological biases.

The research approach pertains to the approach of method employed to carry out a study. It is categorized, i.e., inductive and deductive approaches. The deductive approach is more suitable for quantitative studies, whereas the inductive approach is more suitable for qualitative research. The current research was based on a quantitative design. There're, the researcher used a deductive approach. Through deductive approach, hypotheses were developed under the light of contemporary literature and the aims and objectives of this research.

The data source for this study was primary, which was based on survey questionnaires. Since the study was highly contextual and geographically limited, the primary source enabled the researcher to eliminate errors to misfit models and inherent biases. Data sampling pertains to the methods employed, and sources used to extract relevant data to carry out research. In case of the current study, in terms of sampling, convenience sampling was opted by the researcher in which participants for the study were chosen as per convenience of accessibility and participation, with due diligence considered regarding internal biases in this approach of data sampling. Responses of participants were gathered on a 5-point Likert scale.

Moreover, the Likert scale was designed according to the accordance established in literature to efficiently decipher actual relations among the independent and dependent variables to be studied in the research. Data from the Likert scale was transferred and analyzed through the statistical software of EVIEWS and Stata. The analysis included descriptive statistics to discern the average responses and standard deviation of participants about mean responses. Moreover, correlation and regression analysis were obtained to ascertain statistical association and causal relationship between independent and dependent variables.

Results and analysis

Descriptive Analysis

Table 1-Descriptive Statistics

	Assistance in Information System	It And Security Threats	IT Governance	Lack Of Awareness	Internal Audit Environment
Mean	1.320	1.558	1.623	1.311	1.4783
Median	1	1.666	1.5	1.333	1.166
Maximum	4	3.666	4	3.333	4

Minimum	0	0	0	0	0
Std. Dev.	0.948	0.791	0.995	0.760	0.993
Skewness	0.394	0.127	0.280	0.380	0.288
Kurtosis	2.743	2.590	2.307	2.771	2.493
Jarque-Bera	5.739	1.940	6.622	5.259	4.911
Probability	0.056	0.378	0.036	0.072	0.085
Sum	264	311.666	324.666	262.333	295.666
Sum Sq. Dev.	179.076	124.653	197.180	115.128	196.350
Observations	200	200	200	200	200

From the above table, the mean value indicates the average responses received from 200 respondents. The mean value of assistance in an information system is estimated to be 1.32, the mean value of IT and security threats is calculated to be 1.55, the mean value of IT Governance is 1.62, and the mean value of lack of awareness is calculated to be 1.31. Thus, based on the five-point Likert scale, these mean values indicate that average respondents are inclined to agree. Further, while referring to these findings, the standard deviation value of assistance in an information system is found to be 0.948, IT and security threat is 0.791, IT governance is 0.995, and lack of awareness is 0.993, which depicts the mean values of all these variables are inclined towards one and expected to deviate towards agreement.

Correlation Analysis

Table 2 Correlation

Covariance Analysis: Ordinary
Date: 11/11/21   Time: 12:16
Sample: 1 200
Included observations: 200

Correlation

Probability	Assistance in Information System	IT and Security Threats	IT Governance	Lack of Awareness	Internal Audit Environment
Assistance in Information System	1				
IT and Security Threats	*0.928	1			
IT Governance	*0.960	*0.911	1		
Lack of Awareness	*0.829	*0.924	*0.812	1	

Internal Audit Environment	*0.966	*0.919	*0.981	*0.781	1

From the above table, the correlation value shows a significant positive association between all variables. Specific to the internal audit environment, it can be seen that the coefficient value of assistance in an information system is calculated to be 0.966, IT and security threat coefficient value is 0.919, IT governance is 0.981, and lack of awareness is 0.716. The values above indicate that the internal audit environment (dependent variable) has a significant positive and high association with assistance in information, lack of awareness, and IT Governance (Independent variables).

Regression Analysis

Table 3 Regression

Dependent Variable: Internal Audit Environment
Included observations: 200

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.147	0.025	-5.877	0.000
Assistance in Information System	***0.230	0.0409	5.624	0.000
IT and Security Threats	***0.500	0.048	10.223	0.000
Lack of Awareness	***-0.382	0.0335	-11.413	0.000
IT Governance	***0.64	0.0351	18.311	0.000
R-squared	0.982	Adjusted R-squared		0.981
*Significant at 10%; **Significant at 5%; ***Significant at 1%				

The above table shows that assistance and information systems, IT and security threats, and IT Governance positively affect the internal audit environment as coefficient value is calculated to be positive 0.230, 0.500, 0.64. Whereas, only lack of awareness is coefficient value is identified to be -0.482, which implies that lack of awareness has a negative effect on internal audit system. Moreover, the significant values of all these variables are calculated to be 0.000, p<0.01, which revealed a significant impact of these variables on the internal audit environment.

Furthermore, the above table also indicates the value of R square and adjusted R-squared, which indicates the model's fitness and variance independent variable due to changes in independent variables (Rao, 2016). The value of R square is calculated to be 0.98, which implies that the model is fit and meets the requirement. The value of the adjusted R square is calculated to be 0.98, which implies that 98% of changes in the internal audit environment are caused by changes in the assistance and information system, IT and security threats, and IT Governance.

Interactive Regression Model

Table 4 Interactive Regression

Dependent Variable: Internal Audit Environment
Included observations: 200

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.209	0.044	4.681	0.000
Assistance in Information System	***0.830	0.072	11.428	0.000
Assistance in Information System * IT governance	***-0.150	0.036	-4.179	0.000
IT and Security Threats	-0.089	0.152	-0.587	0.5575
IT and Security Threats * IT governance	***0.430	0.068	6.296	0.000
Lack of Awareness	-0.074	0.119	-0.620	0.536
Lack of Awareness * IT governance	***-0.192	0.057	-3.351	0.001
R-squared	0.964			
Adjusted R-squared	0.963			

*Significant at 10%; **Significant at 5%; ***Significant at 1%

The above table shows that assistance in information systems and lack of awareness with IT governance has a negative effect on internal audit systems as its coefficient value is calculated to be -0.150 and -0.192. In comparison, IT and security threats moderated with IT Governance positively affect the internal audit environment. Moreover, it is imperative to note that significant values of all these variables are calculated to be 0.000, 0.000, and 0.001, P<0.01, which revealed that (information system, IT and security threats, and lack of awareness) moderated with IT Governance has a significant impact on internal audit environment.

Discussion and hypothesis assessment summary

The developed hypothesis in this research has been instrumental in deciphering the relationship between independent variables of Assistance in Information System, Lack of awareness, and IT and security threats, and the dependent variable of Internal Audit Environment. Within the impact of the IT governance model, the literature pointed out the substantial role of governance infrastructure in attaining and sustaining an efficient information system in business organizations in general and retail businesses in particular (Ngungat et al., 2019). This was also substantiated by the current research in which the IT governance showed high association with internal audit environment. This is because retail organizations generally experience higher pressure due to rapid changes in consumer demands than other consumer services. Moreover, retail markets are not restricted in terms of the variety of products or terms of price ranges (Sohl et al., 2020). Therefore, enacting an effective governance model, which efficiently monitors incoming and outgoing capital streams, has become a linchpin of business success in the modern era. However, the current

research indicated a high association between assistance in information systems and the internal audit environment. In this respect, Yusof (2015) identified the element of ease of usage and user awareness as a determining factor behind assistance perceived by the user by an information system.

Although the current study examines awareness of information systems as a separate independent variable, whose association with the internal audit environment was high with a correlation of 0.78, its association was relatively lower than the two other independent variables of Assistance in Information System and IT security and threats. This result is substantiated by the findings of Small (2014), who showed that as the looming threat of continuously evolving cyber-attacks expands, the primary factor behind the lack of adoption of information systems by companies is no longer cost and complexities, but rather security issues. It is also pertinent to note that most retail companies operate on thin profit margins (Vaja, 2015), which limits their ability to expend capital on dealing with constant cyber threats. Regarding the impacts of assistance in information systems, the current study found a high and direct relationship with the internal audit environment. However, literature suggested that assistance in information systems is an indirect function of the extent of training of employees on the nuances of the system. In the absence of proper training, employees would remain incapable of utilizing the full potential of information systems in internal audits. Meanwhile, lack of user awareness about the system has also been shown to decrease its efficacy against IT threats and cyber-attacks.

Table 5 Hypothesis assessment summary

S. No.	Developed and tested hypothesis	Status
1	The assistance in information systems has a significant effect on the internal audit.	Accepted
2	IT And security threats have a significant effect on the internal audit environment.	Accepted
3	Lack of awareness has a significant effect on the internal audit environment.	Accepted
4	IT Governance moderate the relation between information systems and internal audit environment.	Accepted

Conclusion

The current study was intended to examine the influence of information systems on the internal audit environment of retail companies in Malaysia. Survey questionnaires were distributed to 200

candidates whose responses were collected on a 5-point Likert scale. Statistical correlation, regression, and descriptive analysis indicated that all the independent variables of Assistance in Information Systems, Lack of awareness, IT and security threats highly correlate with the internal audit environment. Moreover, the research also found a high association of the mediating variable of IT governance on this relation. Regression analysis depicted that the causal relationship between the independent and dependent variables is strong, proving the validity of the formulated model.

Future implications

The current study was focused on limited dimensions of information systems in internal audits. Future research could bridge the gap between the role of consumers and its impact on the IT governance of a retail business. Moreover, the current research would also help future researchers conduct a case-based study of a country or a lower dominion to extract more nuanced data on these relationships. The role of user awareness in influencing the protection against cyber threats is also an open venue in need of future research for which the current study could be used to extract data.

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