

# **Does Information Technology (IT) Expedite the Internal Audit System? Determinants of Internal Audit Effectiveness: Evidence from Pakistani Banking Industry**

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## **Abstract**

*Pakistani banking industry is suffering from low performance due to ineffective internal audit practices. Due to low performance of banking industry, the economy of Pakistan is declining. As approximately 95% financial system of Pakistan is grounded in the banking industry. To report this issue, the main objective of this study is to examine the major determinants of internal audit effectiveness (IAE). To achieve this objective, cross-sectional research design was selected with quantitative research approach. Data were collected from internal auditors of all the conventional and Islamic banks in Pakistan. Smart PLS 3 was preferred to examine the data. It is found that independence of internal audit department (IIAD) and management support for internal audit (MSIA) are the major determinants of IAE. Moreover, information technology (IT) has a mediating role to enhance the positive contribution of IIAD and management support towards IAE. Therefore, the study contributed in the literature by investigating the major determinants of internal audit and mediating role of IT. This study is helpful for practitioners to improve the banking performance by promoting internal audit independence, management support and IT.*

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### Introduction

The banking industry of Pakistan has undergone innumerable fluctuations due to various reforms were undertaken by the governments from nationalization-to-privatization. It is also suffered due to inefficient political actions taken by various political parties. Based on various issues explained by various researchers the banking industry faced numerous challenges which caused many changes in the banking industry. Apart from all the challenges, IAE is one of the most important challenges which has a major role in banking performance. IAE increases the performance by developing the possible measures to avoid fraudulent activities both from the customer as well as employees.

However, Pakistani banking industry suffering from low performance due to ineffective internal audit practices. Due to low performance of banking industry, the economy of Pakistan is declining. As approximately 95% financial system of Pakistan grounded in the banking industry.<sup>1</sup> Low level of IAE is one of the issue for low performance. As IAE enhances the enterprise risk management,<sup>2</sup> which affect positively on performance. Therefore, the recognition of possible determinants of IAE is one of the most significant parts to enhance banking performance.

Despite the facts that most crucial area of IAE has been broadly documented by various studies,<sup>3</sup> as the one of the significant parts of internal governance. Various studies with diverse theoretical frame work have attempted to discover the aspects which influence the function of IAE.<sup>4</sup> But, the determinant of IAE is not clear.

Hence, numerous academic researchers<sup>5</sup> have emphasized for more research on this critical problem of internal audit as well as its effectiveness. Thus, the present study is one of the attempts to explore the major determinants of internal audit. In this study, IAD and MSIA are taken as the major determinants of IAE.

As according to International Internal Audit (2012), top management, as well as the board of governance should support the auditing body, it is helpful the internal auditors to get cooperation and effective collaboration by the auditee firm and auditors will able to accomplish their task more independently.<sup>6</sup> Moreover, independence is one of the vital elements of internal audit.<sup>7</sup>

Furthermore, IAE could be enhanced through effective IT. Generally, the use of IT has made the auditing as well as financial reporting well-organized and fraudulent less.<sup>8</sup> IT has significant influence

to transfer the positive effect of management support and IAD towards effectiveness of internal audit. Hence, in the current study, IT is considered as the mediating variable

between IAD and IAE, MSIA and IAE.

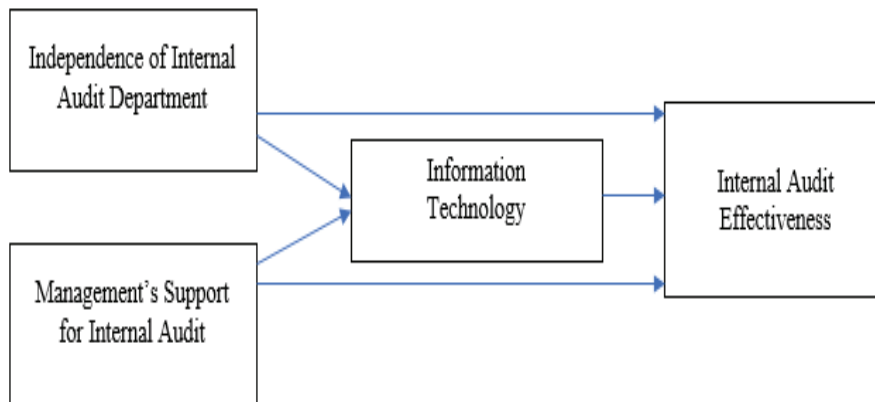


Figure 1. Theoretical Framework

### Review of Literature

Every organization get two key benefits from effective internal audit department of the organization. Firstly, effective internal audit achieves transparency in operations of firm, timely accomplishment of the task as well as risk management. Secondly, it is most important for deduction of corruption, frauds and protection of assets.<sup>9</sup>

As the credit is most crucial for any business. That is the reason, effective internal audit practices for the banking industry is most important for better performance by achieving the transparency in operations and deduction of fraud through effective internal audit practices.

Additionally, now a day, internal audit has progressively become applicable as an imperative mechanism of corporate governance. Thus, apart from transparency in operations and deduction of fraud, the effective internal audit is also one of the important tools to better execute corporate governance practices.

Hence, an effective internal audit has multiple benefits for banking industry of every country. However, various factors affect on the IAE. According to Mihret, James, and Mula (2010), effectiveness of internal audit influenced by the different predominant dynamic forces in internal audit setting. The current study focused on the key influencing

factors namely; IIAD and MSIA. These are the most crucial factor which effects on the quality of the internal audit.<sup>10</sup> Senft and Gallegos (2008) described that IT has key importance in the audit process. Moreover, in the coming era, paperless audit practices will become important as most of the audit related clients are gradually shifting towards paperless audit and software's are established that permits auditors to accomplish most procedures through the online system. With the help of online audit process, auditors can integrate on- line audit software as their major audit instrument and gather evidence electronically.

Hence, from above discussion, it is evident that IIAD is crucial for the effectiveness of internal audit practices. Moreover, IT has a key role to enhance audit effectiveness by increasing the IIAD. Thus, the following hypotheses are proposed;

*H<sub>1</sub>: The IIAD has a relationship with IT.*

*H<sub>2</sub>: The IIAD has a relationship with IAE.*

Furthermore, it is proved by the literature that management support is vital elements which effects the IAE. A good management support is directly connected with IAE as it is found by Getie Mihret and WondimYismaw (2007). Moreover, Alzeban and Gwilliam (2014) revealed that both management support as well as internal audit has a positive relationship with each other.<sup>11</sup>

Furthermore, top management support towards internal audit is a requirement for the internal auditors to achieve their mission effectively as well as efficiently. According to Albrecht *et al.*, (1988), MSIA is most significant for IAE.<sup>12</sup> Moreover, Hung and Han (1998) conducted a study in Taiwan and found that favourable management's attitude toward internal auditors facilitates annual auditing plan.<sup>13</sup>

However, the IT is most crucial in management support to the internal audit department. Information communication technology (ICT) can provide a better platform for auditors to discuss the various issue with management of the company. As ICT is vital to manage information.<sup>14</sup> Communication with the management as well as employees can be helpful to deduct fraud and corruption. Internal auditors can get required data from management through effective IT which help to accomplish audit process in a smooth way. In conclusion, MSIA has a significant relationship with IT and IAE. IT facilitates management support to promote IAE. Thus, below hypothesis are proposed;

*H<sub>3</sub>: The MSIA has a relationship with IT.*

*H<sub>4</sub>: The MSIA has a relationship with IAE.*

Additionally, as it is discussed above, IT has a key role to enhance audit effectiveness by increasing the IIAD through online audit system. Thus, IT is playing a mediating role between IIAD and IAE. Moreover, IT promotes management support in a sense to enhance IAE.

Therefore, IT also playing a mediating role between MSIA and IAE. Nevertheless, as discussed above, IIAD and MSIA has a significant relationship with IT and IAE. Moreover, IT also has a significant relationship with IAE. Hence, in this situation, by following the guidelines of Baron and Kenny (1986), IT could be used as mediating variable between IIAD and IAE, MSIA and IAE.<sup>15</sup> Therefore, below hypothesis are proposed;

*H<sub>5</sub>: IT mediates the relationship between IIAD and IAE.*

*H<sub>6</sub>: IT mediates the relationship between MSIA and IAE.*

Nonetheless, from above discussion, it is concluded that;

*H<sub>7</sub>: IT has a relationship with IAE.*

## **Method**

The appropriate research method is crucial for every study. The method is one of the crucial parts of any research study. Selection of in appropriate method for the research should be in line with the nature of objectives/problem of the research. This research study was conducted on banking industry of Pakistan. Section of industry based on the reason that the economy of Pakistan is majorly based on the banking sector.

However, the performance of this industry is not up to the mark due to poor internal audit practices. To address this issue, the existing study preferred to use the quantitative approach. Additionally, a cross-sectional research design is used. Data were collected from internal auditors of all conventional as well as Islamic banks in Pakistan. The 5-point Likert scale was utilized to collect the data. Questionnaires were distributed with the help of area cluster sampling. The response rate is given in Table 1.

Table 1. Response Rate

Response	Frequency/Rate
Total distributed questionnaires	200
Total returned questionnaires	87
Total questionnaires Useable	82
Total excluded questionnaires	05
Total rate of response	43.5%
Total rate of valid response	41%

### 3.1 Measures

All the measures are adapted from prior studies. The measures for the IIAD are adapted from Alzeban and Gwilliam (2014) and measured through 06 items. MSIA is measured based on 05 items and these measures are adapted from Alzeban and Gwilliam (2014) and George et al. (2015). Moreover, IT is measured through 05 items and measures are adapted from Payne and Curtis (2008). Finally, IAE is measured by 07 items adapted from Alzeban and Gwilliam (2014). All the items are given in Table 2.

### Data Analysis and Results

The data analysis of the current study is based on two main sections. The first part covered the measurement model assessment. In this part reliability and validity was examined. To achieve this purpose, factor loading, Cronbach's alpha, composite reliability (CR), average variance extracted (AVE) and discriminant validity were examined.

In the second part, the structural (Inner Model) was assessed in which the hypothesis measurement model assessment was performed through Smart PLS bootstrapping. Smart PLS (SEM) was performed in this process.<sup>16</sup> In this process, convergent validity was attained through factor loading. Figure 2 shows the measurement model and Table 2 illustrates the results. Factor loading must be above 0.5 to achieve the convergent validity.<sup>17</sup> In Table 2 it is clear that all the items have a factor loading more than 0.7. Thus, the convergent validity is attained.

Furthermore, composite reliability and AVE should be more than 0.7 and 0.5 respectively.<sup>18</sup> Table 2 displays that CR and AVE is more than 0.7 and 0.5 respectively.

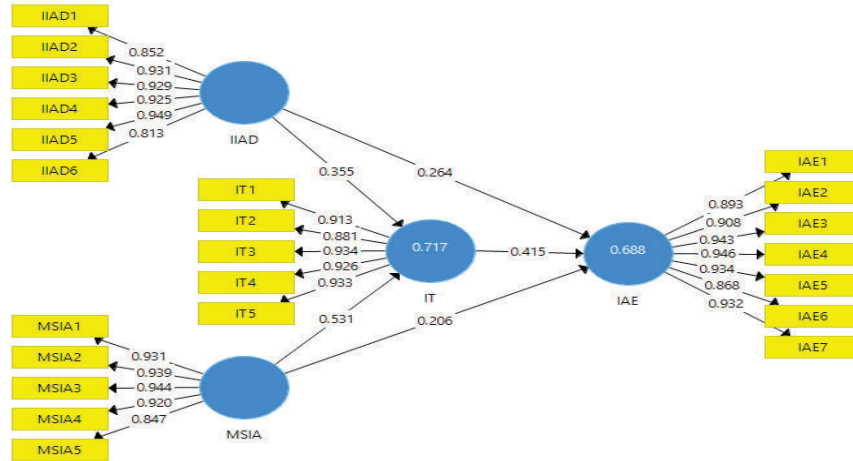


Figure 2. Measurement model assessment

Construct		Loadings	$\alpha$	CR	AVE
IIAD (IIAD)	IIAD-1	.852	.953	.963	.812
	IIAD-2	.931			
	IIAD-3	.929			
	IIAD-4	.925			
	IIAD-5	.949			
	IIAD-6	.813			
MSIA (MSIA)	MSIA-1	.931	.952	.963	.841
	MSIA-2	.939			
	MSIA-3	.914			
	MSIA-4	.920			
	MSIA-5	.847			
IT (IT)	IT-1	.913	.954	.964	.842
	IT-2	.981			
	IT-3	.934			
	IT-4	.926			
	IT-5	.933			
IAE (IAE)	IAE-1	.893	.969	.974	.843
	IAE-2	.908			
	IAE-3	.943			
	IAE-4	.946			
	IAE-5	.934			

IAE-6	.868
IAE-7	.932

Table 2. Convergent validity, Cronbach's alpha, CR, AVE

Table 3 shows the discriminant validity. All the correlations values among the variables are lesser as compared to the square root-averages (AVEs). It is shown in bolded from in Table 3. Hence, the external consistency is achieved.

Table 3. Discriminant Validity

	IAE	IIAD	IT	MSIA
IAE	<b>0.918</b>			
IIAD	0.761	<b>0.901</b>		
IT	0.794	0.790	<b>0.918</b>	
MSIA	0.764	0.819	0.822	<b>0.917</b>

The structural model was assessed through PLS bootstrapping. T-value was examined to analyze the relationships. By following the PLS, in the current study significant level of t-value was 1.96. However, original sample ( $\beta$ -value) was considered to examine the direction of the relationship. Figure 3 shows the structural model assessment.

The results of the direct relationship of all the variables are shown in Table 4. According to the results of direct relationships, all the relationships have t-value more than 1.96. Therefore, all the relationships are significant.

It indicates that  $H_1$ ,  $H_2$ ,  $H_3$ ,  $H_4$  and  $H_7$  are accepted. However, the  $\beta$ -value is also positive for all the relationships as shown in Table 4. Figure 3 is PLS generated figure which also shows that t-value is above the satisfactory level 1.96. Moreover, the p-value is less than 0.5.



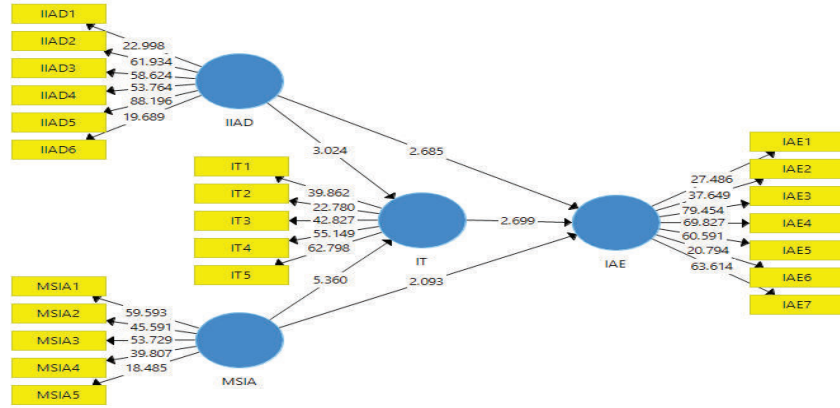


Figure 3. Structural Model Assessment

Table 4. Direct Effect

Hypothesis		$\beta$	(M)	(STDEV)	T Statistics	P Values	(f <sup>2</sup> )	Decision
H <sub>2</sub>	IIAD -> IAE	0.264	0.270	0.099	2.685	0.008	0.064	Supported
H <sub>1</sub>	IIAD -> IT	0.355	0.353	0.117	3.024	0.003	0.147	Supported
H <sub>7</sub>	IT -> IAE	0.415	0.404	0.154	2.699	0.007	0.156	Supported
H <sub>4</sub>	MSIA -> IAE	0.206	0.210	0.099	2.093	0.037	0.034	Supported
H <sub>3</sub>	MSIA -> IT	0.531	0.534	0.099	5.360	0.000	0.328	Supported

Table 5 shows the result of indirect hypothesis involving IT as a mediating variable. The results of the indirect analysis show that the t-value 2.309 and 2.076 in both hypotheses which above the satisfactory level 1.96. Moreover, the p-value is also within the range of satisfactory level. Therefore, the mediation results are significant with positive  $\beta$ -value. Thus, these results validated H<sub>5</sub> and H<sub>6</sub>.

Table 5. Indirect Effect

Hypothesis		$\beta$	(M)	(STDEV)	T Statistics	P Values	Decision
H <sub>5</sub>	IIAD ->IT- >IAE	0.147	0.137	0.064	2.309	0.021	Mediation
H <sub>6</sub>	MSIA ->IT - > IAE	0.220	0.221	0.106	2.076	0.038	Mediation

Moreover, R-Square ( $R^2$ ) value is shown in Table 6. Three sets of variables namely; IIAD, MSIA and IT expected to explain the 68.8% variance independent variable (IAE). According to Chin (1998)<sup>19</sup>,  $R^2$  value above 0.67 is substantial, above 0.33 is considered as moderate, and below 0.33 but above 0.19 is considered to be weak determination. In the current study,  $R^2$  value is above 0.67 which is substantial.

Table 6. R-Square ( $R^2$ ) Value

	Variance Explained ( $R^2$ )
IAE (IAE)	68.8%
IT (IT)	71.7%

Furthermore, Table 7 shows the predictive relevance ( $Q^2$ ). Predictive relevance ( $Q^2$ ) was observed to investigate the quality of the model. This process was performed by using Smart PLS Blindfolding. Predictive relevance ( $Q^2$ ) should not be less than zero. In the present study, this value is 0.539 which is more than zero.

Table 7. Predictive relevance ( $Q^2$ )

Total	SSO	SSE	$Q^2 = (1 - SSE/SSO)$
IAE (IAE)	574.000	264.690	0.539
IT (IT)	410.000	179.858	0.561

### Research Findings and Discussion

This study investigated the determinants of IAE with mediating role of IT. From the results of the current study, it is found that IIAD has a significant positive relationship with IAE with t-value 2.685 and  $\beta$ -value

0.264. It indicates that IIAD enhances the level of IAE among Pakistani banks. Zhang, Zhou and Zhou(2007), found that auditor's committee independence enhances the quality of the internal audit. Thus, the current study is consistent with the findings of Zhang, Zhou and Zhou(2007).<sup>20</sup>

Moreover, a significant relationship found between MSIA and IAE with t-value 2.093 and  $\beta$ -value 0.206. Positive  $\beta$ -value shows a direct relationship between MSIA and IAE. It explains that MSIA increases the IAE. Furthermore, IIAD and MSIA has a significant relationship with IT with t-value 3.024 and 5.360 respectively. The  $\beta$ -value of these two relationships is 0.355 and 0.531 respectively. The positive  $\beta$ -value shows a direct relationship. As the IT has made the auditing and financial reporting efficient as well as fraudulent less.<sup>21</sup>

Moreover, IT has a significant positive relationship with IAE with t-value 2.699 and  $\beta$ -value 0.415. It depicts that more the IT of banks more will be the IAE. According to Chen et al., (2014), the IT facilitates internal control effectiveness.<sup>22</sup> Nevertheless, Kim, Mannino and Nieschwietz (2009) found a positive influence of IT (IT) on internal audit.<sup>23</sup> Thus, the current study is consistent with Chen et al., (2014) and Kim, Mannino and Nieschwietz (2009). Nonetheless, the current study found a mediating role of IT. It is found that IT is playing a mediating role between IIAD and IAE with t-value 2.309 and  $\beta$ -value 0.147.

Moreover, it is revealed that IT is playing a mediating role between MSIA and IAE with t-value 2.076 and  $\beta$ -value 0.220. It shows that IT facilitates the positive effect of IIAD and MSIA towards IAE.

### Conclusion

The current study investigated the determinants of IAE in Pakistani banks. To achieve this, the role of IIAD and MSIA on IAE was examined. Moreover, the mediating role of IT was also examined. Data were collected from the internal auditors of banks all over the Pakistan. The findings of the current study revealed that IIAD and MSIA are the major determinants of IAE.

Moreover, the findings of the study suggested that the promotion of IIAD and MSIA is essential to enhance internal audit process. Without the promotion of these two determinants, it is quite tough to enhance the internal audit quality level. Moreover, IT has a key role to enhance the positive effect of IIAD and MSIA towards IAE, particularly in Pakistani banks. It is needed to introduce IT for the betterment of internal audit practices.

It is recommended for Pakistani banking industry to promote IAE through better internal audit department independence and management

support. It will automatically enhance the performance of banks and affect positively on the economy. Future research is required to examine the role of competency of internal audit department and the size of internal audit department on the effectiveness of internal audit.

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