

# Which factors affect the internal audit effectiveness in India?

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## ABSTRACT

**Purpose:** In the age of rapid technological changes, the nature of work of internal auditors is also changing and new influencing factors are emerging which affect the internal audit effectiveness. Therefore, the aim of this study is to investigate important factors influencing the effectiveness of internal audit in Nifty-500 listed companies in India. **Methodology:** The methodology used in this study was proportionate stratified sampling technique and data were collected using questionnaire method which was sent to 252 companies and 74 responses were received; however, only 64 usable questionnaires are included in the analysis. The response rate is 28.2%, non-response bias and common method bias (CMB) are none existence in the data. Factor analysis and multiple regression techniques are used. **Findings:** Reveal that “internal audit function and audit committee frequent meetings” and “usage of Big Data and Analytics (BDA)” are positively significant with IA effectiveness in Indian context. The regression function is highly significant and 34.2% of variations in dependent variable are explained by variations in independent variables. **Implications:** The implications are that sound awareness by the head of internal audit functions and top management are important on how the usage of BDA is going to influence the IA performance and frequent meetings and interactions between IA function and AC are necessary in the changing business and technological environment in reshaping the internal audit function. Also, furthermore, how to maximize the support of employees and top management as well as to provide more independence to internal audit should be considered. **Originality:** The study suggests that additional evidence is warranted to support the increasing relevance and importance of BDA by internal auditors for achieving IA effectiveness.

**Key words:** Audit committee, big data and analytics, internal audit effectiveness, internal audit independence, management support

**JEL Classification:** M42: Auditing

## INTRODUCTION

Internal audit (IA) is considered as an important tool to control the governance and operation of an organization (IIA, 2010). Until recently, IA function focused on

compliance assurance, financial control, and assets safeguarding (Allegrini et al., 2006; Dellai et al., 2016) but now, IA is involved in enhancing the value adding potential through improved effectiveness. In this context, the Institute of Internal Auditors (IIA) (2017) defines IA:

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*“Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization’s operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes.”*

Despite increasing importance of IA as an arm of management, inadequate research focus is given to examine the factors influencing IA effectiveness’ in Indian context. There has been too much focus on studying the role of external audit and less on the IA. Several researchers have recommended the need for more research on the IA effectiveness.

Prior research has applied different approaches to study IA effectiveness. The literature also indicates that factors and the measurement of effectiveness are used differently by the researchers (Arena & Azzone, 2009) and there is lack of general agreement on the best framework for effectiveness. Moreover, inadequate attention and awareness to the theories that may service to build a theoretical framework of IA effectiveness is also lacking. Adams (1994) confirms that *“The agency theory contributes to rich and meaningful internal auditing research, explaining the existence of internal audit, its nature and the approach which is adopted, and predicting how internal auditors.”*

Moreover, the level of awareness among employees as well as the management of the significance of effective IA may impact its effectiveness to add value to the firm. Despite the fact that IA has become known as an integral portion of the structure of the organization for its value-added service as mentioned by Al-Twajjry et al. (2003) and Mihret et al. (2010).

Prior literature provides some evidence on IA effectiveness in developing countries (e.g., Abu-Azza, 2012; Cohen and Sayag, 2010; Mihret and Woldeyohannis, 2008; Yee et al, 2008; Fadzil, Haron and Jantan, 2005). Despite this, researchers have called for more studies to determine how IA practices in developing countries have advanced along the lines of convergence and maturity (Salvioni, Bosetti & Almici, 2013). On the other hand, IA effectiveness in Indian context has not been studied so far. A few researchers opine that IA effectiveness is largely still considered as a “black box” that is under-explored. Therefore, this study is an attempt to fill the knowledge and research gap on IA effectiveness by taking the case of Indian capital market.

## Significance of the Study

The study is particularly important as it will help policy makers know the major determinants of IA effectiveness in listed companies to enhance the internal audit units to ensure that scarce resources are effectively put to use for robust utilization. In addition, the study is significant as it would contribute to the limited literature on the subject matter in emerging economies.

## Research Question

What are the critical factors influencing the IA effectiveness in Indian context?

## Objective of the Research

In the light of the above, this study aims to investigate empirically the critical factors influencing the IA effectiveness. The objectives of the study will be achieved by testing four variables, namely, management support, IA independence, frequent interactions between IA and AC, and usage of Big Data Analytics.

## Theoretical Perspectives

Several previous studies (e.g., Yaqi et al., 2012; Christopher et al., 2009; Yamak and Suer, 2005) have adopted both agency and institutional theories to test factors affecting the IA effectiveness; agency theory is used to understand the relationships between agents and principals. The relationship between agents (managers) and principals (shareholders) can be best explained by agency theory. The agent undertakes to perform certain duties for the principal and the principal promises to reward the agent (Jensen and Meckling, 1976). As per this theory, the role of the auditor is to supervise the relationship between the managers and the owners. A gap expectation occurs when the allocation of the responsibility is not well defined. Therefore, IA is considered as one of the internal arms of management for corporate governance. Since agency theory is the main theory to target IA effectiveness, an effective internal audit function assists in reducing monitoring costs. The theory is generally used to explain the role of the IA function in protecting organizations’ resources on behalf of the owners. In the context, Jensen and Meckling (1976) argued that

*“The main purpose of audit is to enhance the reliability and confidence in the financial reporting system for the company.”*

Managers are delegated with certain powers and authorities to conduct the firm business. However, these powers may be misused by managers for personal gain. The presence of the AC, the external and internal auditors may help the organization in enhancing their performance, and also may ensure that the management implements its plans according to the procedures (Adams, 1994). In this context, Peursem and Pumphrey, 2005, state that;

*“Internal auditors are agents and monitors for a variety of the internal audit users that include the board, AC, and senior management”*

It is to be noted that the senior management trust more in the internal auditors’ ability to evaluate their work. However, in this context, Endaya and Hanefah, 2013, state that

*“Internal auditors may have varying motives to act against the board of directors’ interests and its AC and these motives include financial rewards from managers, personal relationships with them, and the power of senior management in shaping the future position of internal auditors and their salaries.”*

Internal auditors need strong support from senior management and AC. The existence of a well-balanced AC in the organization helps IA to maintain its independence which in turn enables it to reduce senior management interferences in IA working. Therefore, agency theory is a relevant and useful in explaining the relationship between some variables in this study.

Institutional theory shows how IA contributes to organizational behavior change, which may conform to society and other stakeholders’ requirements. The theory considers rules, norms, routines and various aspects of corporate governance. In addition, the different parts of institutional theory explain how these elements are created, diffused, adopted, and adapted over space and time. All these ideas are very important to make IA function effective. This theory may help to emphasize the IA function and its importance for effective and efficient operations.

Mihret et al. (2010) argued that;

*“The various components of institutional theory are capable of providing an insight into the IA practices as one element of organizational systems and shed light on the relationship between IA and the attainment of the objectives of the firms.”*

Therefore, institutional theory is also a relevant and useful theory in explaining the relationships of management support and IA independence.

The rest of the paper is divided into five sections. Section two discusses literature review and hypotheses development, while section three deals with methodology and data collection. Section four presents study results and discussion and section five discusses conclusions and implications of findings.

## Literature Review and Hypothesis Development

Mihret et al. (2010) posits that IA may become an arm of management when it is considered effective. Evidence from prior literature shows some agreement on the measures used for IA effectiveness including internal auditor competence, the quality and scope of their work, independence function, the status and structure of IA, professional proficiency, and the level of management support (see., Badara and Saidin, 2013; Endaya and Hanefah, 2013). However, there are still some deficiencies in this area as certain measures of IA effectiveness are not tested much in detailed. For example, how the usage of Big Data and Analytics and IA function frequent meetings impact IA effectiveness. The remaining section discusses literature review on the research variables included in this paper.

## Management Support and IA Effectiveness

Several researchers and practitioners argue that internal auditors need support from top management and Board of Directors to execute its duties and fulfill its responsibilities. IA department should have sufficient resources to improve the effectiveness of its activities. The previous studies have also demonstrated that support for internal auditing by top management is crucial to the effectiveness of IA. Soh and Bennie (2011) report that internal auditing is effective when supported from senior management, and when an AC exists. Top management need to be fully aware of the importance of the role of IA within an organization and they should support the internal auditors to ensure legitimacy, credibility and authority of the IA function (Sarens and De Beelde, 2006).

Top management support is an influencing factor in explaining IA effectiveness. Several studies (e.g., Dubale, 2019; Ali, 2018; George et al., 2015; Cohen and Sayag’s, 2010) report that there is high correlation between top management support and IA effectiveness. In addition, management support becomes crucial to facilitate the internal auditors in conducting their duties (Baheri et al., 2017).

A limited number of studies also show that management support is not significant with IA effectiveness in

developing countries (e.g., Shamki and Alhajri, 2017; Abu-Azza, 2012). Last but not the least, Narayanaswamy et al. (2018) argue that the support from Board of Directors to IA is less in India and Chinese context, perhaps of weak institutional structure. Therefore, the following hypothesis is formulated:

H<sub>01</sub>: Management support has a positive association and it impacts significantly the IA effectiveness.

### IA Independence and IA Effectiveness

Impairment of IA independence threatens its to carry out internal audit responsibilities in an unbiased manner. In the absence of independence, IA becomes part of management team. Several studies (e.g., Erasmus and Coetzee, 2018; Cohen and Sayag, 2010) have shown that independence of IA is an influencing variable of IA effectiveness.

As per prior empirical studies (e.g., Dubale, 2019; Temesgen and Estifanos, 2018; Tahajuddin and Kertali, 2018; Rudhani et al., 2017; Mustika, 2015, George et al., 2015; Ebissa, 2015; Abu-Azza, 2012; Cohen and Sayag, 2010; Mihret et al., 2010), IA independence is positively associated with internal auditing activity. Armstrong et al. (2019) in the context of Ghana, and Ali (2018) for Libya also report that IA independence is one of the positive and significant influencing factors of IA effectiveness. However, still, IA independence has received minimal attention from researchers in Indian context. Therefore, the present study would enrich the findings of the earlier studies. The following hypothesis is proposed for testing;

H<sub>02</sub>: IA independence is positively and significantly influences IA effectiveness.

### IA Function and AC Frequent Meetings

Since the occurrence of financial scandals and Sabans Oxley Act was promulgated, frequent interactions and frequent meetings of IA with the audit committee (AC) have been emphasized in various studies. IA is considered an indispensable resource and a source of information for the AC. With the support of the AC, the IA function facilitates its work, which, in turn, may enhance the IA effectiveness. It is essential that there should be a continuous open dialogue between IA and AC because it may help in enhancing IA effectiveness. In fact, it is posited by few researchers that IA should have direct communication with the AC which reinforces the organizational status of IA and enables support to in maintaining IA independence.

Barišić and Tušek (2016) state in the context of good practice of corporate governance as:

*“The members of the AC believe that continued communication and dialogue between the IA function and the AC, on the adequacy and sufficiency of auditing resources required for achieving the functions and tasks of internal auditing, has a significant influence on increasing the quality of the internal audit operations.”*

The audit committee members view IA as a significant source of information provider and their knowledge on issues pertaining to accounting auditing functions and financial reporting is increased (e.g., Sarens et al., 2006). In addition, Abdullah et al. (2018) state that

*“Specific reviews by the audit committees on internal audit activities affect audit quality or overall internal audit performance.”*

Jaggi (2019) reports that the value of the IA function as a resource to the AC increases when (1) the AC meets privately with the IA function to discuss the activities of the IA function and relevant IA findings and ensures open communication between them, which, in turn, enhances the IA effectiveness. In addition, Alzeban (2015) points out that

*“The nature of the interaction between the AC and the IA can significantly influence IA effectiveness by affecting its conformance with the International Standards for the Professional Practice of Internal Auditing (ISPPA).”*

Based on prior evidence, the following hypothesis is formulated:

H<sub>03</sub>: IA function and AC frequent meetings positivity impact the IA effectiveness.

### Usage of Big Data and Analytics

The advancement in data analytics is enabling organization to remain competitive in the fast changing business practices. The use of technology-based audit techniques has also become an important part of the IA function. In this context, Sandwich (2017), the chief professional practices advisor at the Chartered Institute of Internal Auditors (CIIA), states

*“Whether it is time for internal auditors to start implementing Big data analytics to mitigate risk, albeit always retaining a human element of judgment. It is further argued that data analytics help answer key questions and identify patterns earlier in the audit process, leading to increased efficiency in the audit as well as enhanced coverage of risk”.*

Murphy and Tvsiac (2015) claims that with the help of BDA, auditors can conduct complete sets of data, rather than just testing samples. In this context, Katie William, a partner at KPMG, Australia (2016) states:

*“The power of data and analytics for IA is immediately clear in fieldwork and reporting. Internal audit ability to delve deeply into large datasets is the key benefit. The ability to continuously audit and monitor trends, and conduct automated testing on selected sections of data are just some of the advantages.”*

While, Yoon et al. (2015) and Joshi and Marthandan (2020) state that the addition of Big data can improves the sufficiency, reliability, and relevance of audit evidence. Similarly, Kaya et al. (2018) study findings report that

*“Big data analytics increase the effectiveness of internal audit. Using analytics in internal control, risk management, and fraud detection have many benefits in identifying anomalies.”*

Deloitte (2018) survey of chief internal auditors reveals that a majority 66% of respondents state that they use analytics for audit fieldwork; however, analytics can provide more value during the audit-scoping or -planning phase. Eulerich and Masli (2019) report that IA perceive C-level executives and AC use internal audit results more intently when there is higher implementation of technology within the IA function. Similarly, Oussous et al. (2017). State that

*“Because of the interesting and valuable information could be extracted from the so called Big data, many firms are vouching for big projects in all functional areas.”*

In the light of above arguments, the following hypothesis is formulated:

H<sub>04</sub>: There is a positive relationship between the usage of BDA and IA effectiveness.

### Research Model

$$Y \text{ (IAE)} = \beta_0 + \beta_1 \text{ (Mgmt. support)} + \beta_2 \text{ (IA independence)} + \beta_3 \text{ (IAF and AC frequent meetings)} + \beta_4 \text{ (usage of BDA)} + \epsilon$$

Where

### Dependent Variable

Y = Internal audit effectiveness (measured through Likert scale)

### Independent Variable

$\beta_0$  = Constant

$\beta_1$  = Management support (measured through Likert scale)

$\beta_2$  = Internal audit independence (measured through Likert scale)

$\beta_3$  = Internal audit function and audit committee frequent meetings (measured through Likert scale)

$\beta_4$  = Usage of Big Data and Analytics (measured through Likert scale)

$\epsilon$  = Error term

In the light of the above literature review, formulation of hypotheses and the model, the following framework is developed.

### Methodology and Data Collection

Nifty-500 companies were the population for this study. Random sampling method was applied which was based on Security Exchange Board of India (SEBI) definitions of large Cap, mid cap and small cap, as on December 31, 2018. The procedure followed for sample selection was as follow: First 100 companies as large, 100 companies from mid-cap 101–250<sup>th</sup>, and 100 companies from 251<sup>st</sup>–500 companies, respectively. Finally, a total of 300 companies were selected. The internal audit department of the selected companies was contacted by email and phones. A total of 252 companies agreed to send them copy of the questionnaire and the link by email or post. Therefore, data gathered by a self-designed questionnaire which was put online using Smart Survey. The questionnaire and online link were sent to Head of Internal Audit department of the sample companies. In some cases, emails and letters were also sent to the CEO of the sample companies. The respondents were given one and half month time to reply to the questionnaire. Reminders were sent after 3 weeks requesting them to complete the questionnaire. The study was conducted during January-April 2020.

The questionnaire contained three parts. Part A includes demographic information about the respondents and their organizations. Part B contains questions related to the audit effectiveness. Part C covers a set of questions for variables tested in this study. The questionnaire was pretested with five people, two audit practitioners from audit firm located in Mumbai, one auditing Professor and two audit managers from

corporate sector companies. After receiving their feedback, the questionnaire was improved and then it was finalized.

Ultimately, 74 questionnaires were received back which makes a response rate of 28.2%. However, ten questionnaires were found incomplete and were dropped. The respondents represented manufacturing, information technology, trading, and services companies. There was no response bias as we compared first 20% responses with late 20% responses and t-test shows no significant differences. Data were analyzed on using SPSS software.

Harman Single-Factor Test (HSFT) was also applied to check if all the variables in the data could be explained by any single factor or not (i.e., explains greater than 50%). The single factor did not account for explaining most of the variances for the research objective; rather it was limited to 34.523% variances. The analysis suggests that data were free from the prejudiced response and there is no common method bias.

## DISCUSSION OF RESULTS

Table 1 presents the results of factor loading, Kaiser-Meyer-Olkin (KMO) and Reliability test

It is to be noted that in this study, reliability of the measures was ascertained using Cronbach's alpha test. Cronbach's alpha of 0.70 or more is considered significant and highly reliable; therefore, the results show a high internal consistency for the four variables which is 0.755 for "management support," 0.804 for "independence," 0.933 "frequent interactions between AI and AC," and 0.900 for "usage of Big Data and Analytics," respectively [Table 1]. For dependent variable 'internal audit effectiveness,' the value is 0.758.

In the factor analysis, the Varimax Rotation and the Principal Component method are used. The values of factor loadings for all the questions for independent and dependent variables are greater than 0.50. The coefficient of KMO is greater than 0.5 with a significant Bartlett's Test ( $P < 0.01$ ). Table 2 shows descriptive results for the variables included in the regression model.

Table 2 shows that the number of responses is 64. The table further shows mean values and standard deviations for the dependent and independent variables. It is to be noted that the mean values are more than 4 for both dependent and independent variables and the standard deviations are much below than the mean values for all the variables.

Pearson Correlation matrix was computed for the independent and dependent variables, which are presented in Table 3. Results reveal that the observed variables are independent of each other and correlate with total variables. It can be observed that the highest correlation is 0.462 for "management support" with "frequent interactions between IA and AC" which does not exceed 0.80 (Judge et al., 1985). There is no multi-collinearity problem in the results. This is also substantiated by the low value of VIF as reported in regression coefficients.

Table 4a and 4b present model summary and ANOVA respectively for the regression function.

While Tables 4a and 4b, respectively, present summary of the regression model as well as. The F value is high and significant indicating the regression model worked out to be significant at 0.01 level. The R value is 58.5% and R square value is 34.2%. The explanatory power of the model, as expressed by R<sup>2</sup>, indicates that 34.2% of the variation in the dependent variable can be explained by the variation in independent variables. F-ratio is 7.658 and is significant at 0.01 levels, which supports the significance of the regression model.

Table 5 presents the coefficients values for the multiple regressions.

- These results are also verified using Bootstrap Regression

Table 5 shows the results of the regression equation. The method used is ENTER method for the regression. It is clear that among the four variables tested, three turned out to be significant. There is no multi-collinearity problem in the data set as the VIF values are low.

It is found that "frequent Interactions between IA-AC" ( $t = 3.079$ ;  $P < 0.01$ ) and the "usage of BDA" ( $t = 2.386$ ;  $P < 0.05$ ) have a positive and significant effect on the IA effectiveness. Therefore, alternative hypotheses are accepted.

An insight is provided by the results that audit committees consider internal audit function as an important information provider. As per the Agency theory, board delegates its governance powers of oversight to audit committee. From frequent communication and interactions between audit committee and internal auditor, it becomes easy for them to evaluate the operational performance, fraud detection, and monitoring functions within the organization. This process strengthens the relationship between AC and IA.

**Table 1: Factor loadings, KPO, and reliability**

Variables	Questions	Factor loadings	Cronbach Alfa	KPO
IA effectiveness	IA improves department's operational performance.	0.820		
	IA contributes to organizational performance.	0.772		
	IA adds value to the operations.	0.762		
	IA prepares proposals for improving the internal control framework when suitable.	0.751	0.758	0.759
	IA assesses the effectiveness of internal controls.	0.730		
	IA assesses the economical, successful, and effective utilization of assets.	0.586		
Management support	IA department has adequate budget to effectively carry out its responsibilities.	0.873		
	Top management provides assistance and encouragement for training and development for internal audit staff.	0.857	0.755	0.589
	IA department is large enough to effectively carry out its duties	0.854		
	Senior management is aware of resources required for IA.	0.829		
IA independence	IAs operate independently, and can audit any areas they consider necessary.	0.816		
	IAs have full access to departments and employees in the organization.	0.740	0.804	0.663
	IAs report to the highest level within the business.	0.613		
Frequent interactions between IA and AC	Frequent meetings with audit committee and internal auditor facilitate the monitoring and reviewing the work of the internal audit function resulting in its increased effectiveness.	0.882		
	IA function and AC frequent meetings leads to an enhanced IA effectiveness.	0.829	0.933	0.882
	IA function and AC frequent meetings enable the IA to implement its recommendations on a timely manner.	0.797		
	IA function and AC frequent meetings helps in establishing power base for the IA function thereby enabling it to fulfill its obligations.	0.765		
	IA function and AC frequent meetings reduces errors in financial reporting.	0.684		
Usage of Big Data and Analytics (BDA)	Big data needs internal auditors to use tools for data simulation for risk profile, risk identification, risk assessment, risk quantification, risk prediction, etc.	0.835		
	BDA helps IA to minimize the human errors, detection of frauds, minimizing costs, obtaining accurate results, and participating in the audit activities more effectively.	0.795	0.900	0.773
	Big data entails internal auditors to apply data mining software to detect patterns.	0.751		
	Big data necessities internal auditors to use tools for accurate internal audit planning and scheduling is used.	0.714		

IIA (2004) suggested that the Chief Internal Auditor should report to the AC to interact on confidential matters. This process also enables that IA to maintain their organizational independence. In addition, the results indicate the importance of audit committee inputs and concerns in evaluating the internal audit activities for achieving the effectiveness of the IA function.

The fast-emerging importance of the new technologies such as Big data and analytics is also a clear indication in this study. The “usage of BDA” has a positive and significant effect in enhancing the IA effectiveness in Indian context.

The insignificant influence of IA’s independence may be explained by the characteristics of family business companies in India and generally in developing countries where, IA is part of management representing the majority shareholders (Siregar and Utama, 2008). In other countries such as Indonesia, government regulations require the existence of an independent IA, but the number is small so that they still cannot demonstrate their independence because of the small number of votes (Rahardjo et al., 2019). Furthermore, Narayanaswamy et al. (2018) in Indian context, indirectly indicates that, in general, the lack of support for internal auditing from management. Therefore, in India, for IA to act with independence is a longstanding challenge and this has been a renewed attention in the development of the role of internal auditing.

The present study shows that although there is a positive association between “management support” and IA effectiveness in Indian context, yet it is not significant which may hint at that less support from management to IAF. In addition, very limited support from other departments is received because ICAI (2015) states that “Auditees may

**Table 2: Descriptive results**

Variable	Mean	SD	n
IAE	4.547	0.411	64
Mgmt. Support	4.147	0.567	64
IA independence	4.521	0.569	64
IA function and AC frequent meetings	4.284	0.697	64
Usage of BDA	4.164	0.646	64

**Table 3: Correlations**

Variable	IAE	Mgmt. support	IA independence	IA-AC interactions	Usage of BDA
Pearson Correlation	1.000	0.367	0.286	0.479	0.372
		1.000	0.293	0.462	0.315
			1.000	0.231	0.152
				1.000	0.168
					1.000

**Table 4a: Model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.585 <sup>a</sup>	0.342	0.297	0.344	0.342	7.658	4.000	59.000	0.000

a: Predictors: (Constant), Big Data and Analytics, Independence, Management Support, Frequent Interactions between IA-AC. B: Dependent Variable: Internal audit effectiveness

**Table 4b: ANOVA**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.635	4	0.909	7.658	0.000 <sup>b</sup>
	Residual	7.002	59	0.119		
	Total	10.637	63			

a. Dependent Variable: Internal audit effectiveness. b. Predictors: (Constant), Big Data and Analytics, Independence, Management Support, Frequent Interactions between IA-AC.



Table 5: Regression results

Model/B	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics		
	Std. Error	Beta				Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF	
1 (Constant)	2.241	0.461		4.864	0.000	1.319	3.163						
Mgmt. Support	0.052	0.091	0.071	0.565	0.574	-0.131	0.235	0.367	0.073	0.060	0.701	1.426	
IA independence	0.100	0.080	0.139	1.249	0.217	-0.060	0.261	0.286	0.161	0.132	0.899	1.112	
IA function and AC frequent meetings	0.218	0.071	0.369	3.079	0.003	0.076	0.359	0.479	0.372	0.325	0.776	1.289	
Usage of BDA	0.169	0.071	0.266	2.386	0.020	0.027	0.311	0.372	0.297	0.252	0.896	1.115	

These results are also verified using Bootstrap Regression

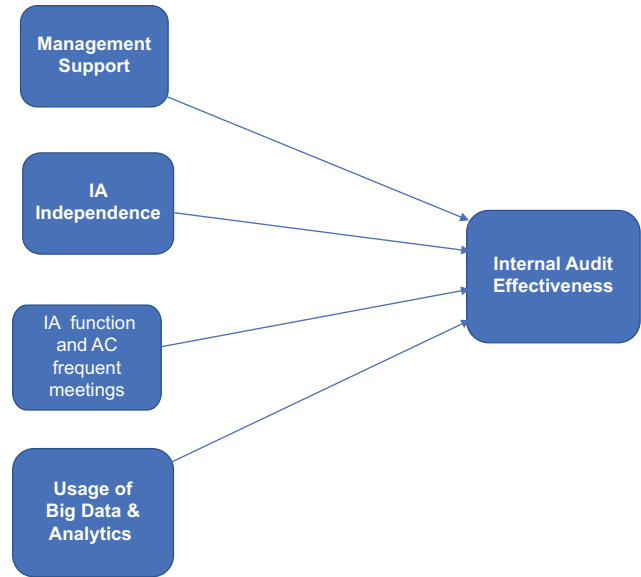


Figure 1: Research framework

not attach much value to internal audit as they may view internal audit as a policing function.”

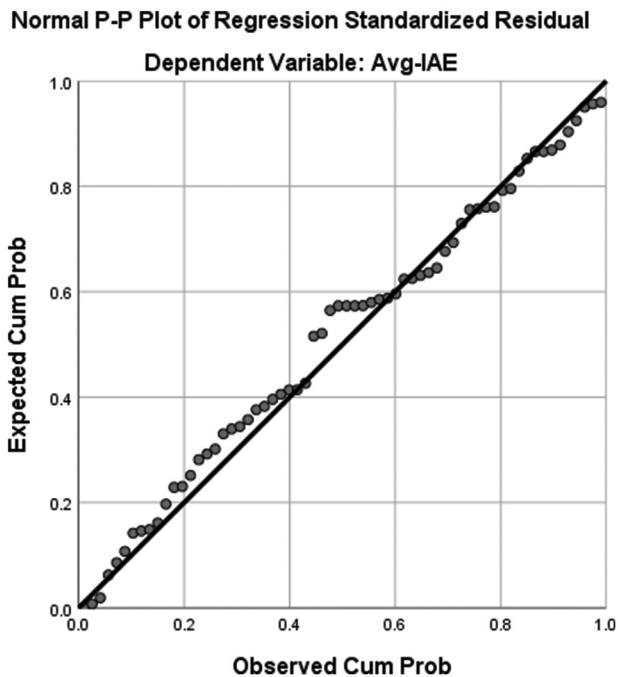
Narayanaswamy et al. (2018) study findings also give indirect indication of lack of management support to internal auditors who are often pressurized to suppress their findings. Poltakm et al. (2019) report in Malaysian context that management support cannot be a moderating variable in explaining IA effectiveness. Similarly, Amare (2016) also found no relationship between management support and IA effectiveness in case of Ethiopia. While, Mihret and Yismaw (2007) report that

“IA recommendations are not given required attention and management in some cases does not work on its reports despite the audit evidence attached”.

In open-ended responses related to problems faced by the internal audit function, 14% of them clearly stated the lack of management support to internal audit in their organizations and also limited time given to them to investigate the issues and reporting. Some of them also stated that limited authorization is given by management to access the critical data in their organizations.

**Normal P-P of Regression Standardized Residuals**

Figure 1 presents the normal P-P of regression standardized residuals for the dependent variable. It shows that the data used in this study were normally distributed. Regression model is fit and reliable (see, Table 4b, F value).



## CONCLUSIONS AND IMPLICATIONS OF FINDINGS

There has been a paradigm shift in IA from focusing on accountability about the past to enhancing its effectiveness (e.g., Goodwin, 2004). The internal audit literature is concerned; this study provides new evidence on determinants of the IA effectiveness. The study drives the factors that contribute to IA effectiveness. The “usage of Big Data and Analytics” and the “frequent interactions of IA with AC” are the two significant explanatory factors emerged from this study. Therefore, the contributions of this study bridge the gap in the literature through the suggested theoretical framework. In particular, the framework measures the association between critical factors and the IA effectiveness. Thus, the results provide additional determinants influencing the IA effectiveness with the “usage of Big Data and Analytics” ( $t = 3.079$   $P < 0.01$ ) and “frequent interactions between IA and AC” ( $t = 2.386$   $P < 0.05$ ). Particularly, in the Big data era, use of data analytics may add ability of the internal audit function to extract value from Big data in enhancing the efficiency and effectiveness of IA (Rakipi et al., 2020). Furthermore, it is interested to note that all the factors influencing the IA effectiveness have positive association though “management support” and “IA independence” are not statistically significant. Furthermore, it opens up opportunities for studies in the future to expand the comprehension of the IA effectiveness not only for the context of India but also for other emerging economies.

The findings and recommendations from this study would only serve any purpose if management shows its interest and commitment to implement them. Agency theory (Adams, 1994) explains focus of management to maintain a strong internal audit department. Implementation of audit recommendations is highly relevant to audit effectiveness.

More studies need to be undertaken from developing countries with additional variables to examine the changing role of IA in effective corporate governance practices. Additional evidence is warranted to support the increasing relevance and importance of Big Data and Analytics by internal auditors for achieving IA effectiveness.

The present study also provides some policy implications. Regulators should pay more attention to the issue of maintaining an IA function mandatory, especially by all listed companies in India. The relationship between the IA function and other governance parties, especially the audit committee, and the disclosure of more relevant information about the internal audit department’s characteristics and practices need to be monitored. The appointing authority of internal auditors should be different from the body responsible for determining their incentives and remunerations. This is to safeguard their independence. In addition, since internal audit has become an important arm of good corporate governance, there should be a statutory legislation of professional qualifications of internal auditors so as to enhance their independence in mind and appearance since management members with higher qualifications tend to overlook the importance of the internal audit unit and hence, their recommendations.

Finally, it is recommended that the observations made by IA function and actions taken by management should be disclosed in the annual reports for the better transparency and benefits of the stakeholders.

## Limitations of the Study

This study may suffer from certain limitations and the results may be interpreted subject to limitations. The findings are derived from a cross section survey and from one country. If survey is extended to other periods and countries, perhaps the findings may change slightly. In addition, there could be the choice of the selection of influencing factors in the model based on a specific stream of the literature; other literature may also suggest some other variables for investigation. All efforts were made to improve the response rate, still there could be a tendency among the respondents to underplay in responding or remain neutral on certain questions, because they may consider them either confidential or sensitive in nature.

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