

# The Effect of Internal Control Components on Mitigating The Impact of Covid-19 Risks in Healthcare Organizations in Ethiopia

Enyew Mulu Zelie

Mekdela Amba University, Mekane Selam, Ethiopia

## ARTICLE INFO

### Article history:

Received 13 March 2021

Revised 31 March 2021

Accepted 31 March 2021

### JEL Classification:

G32, I11, I18

### Key words:

Internal control, Healthcare organizations, COVID-19, Ordered logistic regression

### DOI:

10.14414/jebav.v23i3.2517

## ABSTRACT

The COVID-19 pandemic hit the world's economy and created significant risks from which many sectors – including the healthcare sector – are adversely affected. This study aimed to evaluate the reliability of internal control systems in healthcare organizations and the effect of internal control components on mitigating the impacts of risks affected by the pandemic. The study used cross-sectional primary data collected from 241 healthcare organizations in Addis Ababa, Ethiopia. Descriptive statistics and ordered logistic regression analysis methods were applied. The internal control system in the Ethiopian healthcare organizations is found to be moderately reliable. In addition, the ordered logistic regression results show that control environment, risk assessment, control activities, information and communication, and monitoring activities have a statistically significant and negative effect on the impact of COVID-19 risks. This implies as the reliability of internal control components increases, the impact of COVID-19 risks on the overall performance of healthcare organizations decreases.

## ABSTRAK

Pandemi COVID-19 melanda ekonomi dunia dan menciptakan risiko signifikan yang menyebabkan banyak sektor – termasuk sektor perawatan kesehatan – terkena dampak negatif. Penelitian ini bertujuan untuk mengevaluasi keandalan sistem pengendalian internal dalam organisasi kesehatan dan pengaruh komponen pengendalian internal dalam mengurangi dampak risiko akibat pandemi. Studi ini menggunakan data primer cross-sectional yang dikumpulkan dari 241 organisasi perawatan kesehatan di Addis Ababa, Ethiopia. Penelitian ini menggunakan Statistik deskriptif dan metode analisis regresi logistik untuk analisisnya. Sistem kontrol internal dalam organisasi perawatan kesehatan Ethiopia ternyata cukup andal. Selain itu, hasil ordered logistic regression menunjukkan bahwa lingkungan pengendalian, penilaian risiko, kegiatan pengendalian, informasi dan komunikasi, serta kegiatan pemantauan secara statistik berpengaruh signifikan dan negatif terhadap dampak risiko COVID-19. Implikasinya, bahwa dengan meningkatnya keandalan komponen pengendalian internal, dampak risiko COVID-19 terhadap kinerja keseluruhan organisasi perawatan kesehatan menurun.

## 1. INTRODUCTION

The design and implementation of an effective internal control system are regarded as the critical success or failure factors of organizations. An effective internal control system is one that reduces risk to an acceptable level, reasonably assures the achievement of an entity's objectives, and ensures the presence, functioning, and integration of all the five components and the related principles (COSO,

2013). For that reason, the design of internal control should be aimed to provide reasonable assurance regarding prevention and timely detection of unauthorized access, usage, or disposition of an entity's resources (GAO, 2004).

A strong internal control system can provide reasonable assurance to the achievement of the objectives of an entity. Even, the survival of an entity to stay in business depends on the effectiveness of

\* Corresponding author, email address: enyewm1@gmail.com

its internal control system (INTOSAI, 2004). Internal control can help to reduce business risks, prevent fraud, and boost business performance, improve efficiency and effectiveness, ensures conformity with internal policies and procedures established by businesses, and compliance with laws and regulations passed by authorities (Tuan, 2020). Internal control also helps to create organizational value (Said *et al.*, 2020).

There are several factors that make internal control either effective or weak. The effectiveness of internal control can be reduced due to a number of factors such as poor design, errors in judgment, carelessness in implementation, resource constraints, organizational change, management attitude, and external factors (INTOSAI, 2004). Yet, weaknesses in the internal control system can be caused by bad financial conditions and complex business transactions (Omri & Nefissa, 2011).

The absence of a strong internal control system has been mentioned as one of the major factors that contribute to the failure of most businesses (Oseifuah & Gyekye, 2013). A deficiency in the internal control system causes higher audit fees (Hogan & Wilkins, 2008; Akhtaruddin & Ohn, 2016), higher executive compensation payments (Hajiha & Bazaz, 2016), reduced access to external financing (Pevzner & Gaynor, 2016), and unpredictable cash flows and accruals (Lu, Richardson, & Salterio, 2011; Suh & Fernando, 2013). A study by Ashbaugh-Skaife *et al.* (2009) also confirmed that firms with a material weakness in their internal control will have a higher idiosyncratic risk, systematic risk, and increased cost of equity. Alam (1995) also indicated that a failure in the internal control system of a firm causes corruption and misuse of resources. So an entity should carefully design and implement all of the components of internal control at the entity, division, business unit, and functional levels (INTOSAI, 2004).

The healthcare industry is experiencing an increase in size, complexity, and associated risks. In order to successfully deal with these changes in the healthcare business environment, an effective internal control system is vital (Schandl & Foster, 2019). The American Society for Healthcare Risk Management (ASHRM) identified eight risk domains for the healthcare industry. These include operational, clinical/patient safety, human capital, strategic, financial, legal/regulatory, technology, and environmental and infrastructural hazard. In order to manage these risks, there should be a strong, continuous, and flexible enterprise risk management practice (ASHRM, 2016).

The COVID-19 outbreak is causing an increasing impact on the world's economy, from which different sectors including the healthcare sector, are adversely affected (Craven *et al.*, 2020). The pandemic caused an immediate effect on many sectors including the healthcare sector. The degree of the effect differs across different sectors. The number of financially distressed firms has significantly increased after the outbreak (Amankwah-amoah, Khan, & Wood, 2020). The pandemic had significantly affected the resources of healthcare organizations and their internal audit activities. It created an imbalance between the number of significant risks and the amount of resources dedicated to risk management activities. These risks are of a new kind that the healthcare organizations have not been prepared, which include telemedicine, supply chain breakdowns, high cost of physicians, compliance to new legislations and regulations, employee fraud in new and temporary facilities (Scott, Eric, & Rebecca, 2020), the risk of employee infection, stress, and shortage of protective materials (Sim, 2020).

In order to limit the spread of the pandemic and create additional capacity for the growing number of patients with coronavirus disease 2019, many healthcare organizations is closing outpatient departments and other measures that reduce their earnings. These measures potentially threaten their financial condition (Khullar, Bond, & Schpero, 2020). Both private and public healthcare organizations are affected by the coronavirus pandemic and the related lockdown. The sector is facing a double burden. The first one is the additional investments made to be prepared for the necessities created by the pandemic and the second one is a decrease in cash flows from elective surgeries and patients from far places (FICCI, 2020).

Ethiopia is reported as one of the most vulnerable nations to the socio-economic impacts of COVID-19 (Cancedda *et al.*, 2020). According to the report of the Ministry of Health, as of December 27, 2020, a total of 122,864 individuals are confirmed to be infected by the virus, from which 1,909 individuals died because of it. The number of infections and deaths is expected to be higher than this, considering the testing capacity of the country.

This study was aimed to evaluate the reliability of internal control system and the effect of the reliability condition in the five basic components of internal control on mitigating the impacts of risks emerged due to the COVID-19 pandemic in health care organizations in Ethiopia. The risks related with the COVID-19 pandemic are disastrous and the

healthcare providers were not well prepared for them. The pandemic created risks that are strange and difficult to manage with the available capacity. The impacts of these risks and the effect of the strength of healthcare organizations' internal control system on the mitigation of these impacts should be researched to get the best outcomes from COVID-19 control and prevention measures. To the best knowledge of the researcher, there is no prior research work on the effect of internal control components on mitigating COVID-19 risks. So this research is the first of its kind.

## **2. THEORETICAL FRAMEWORK AND HYPOTHESES**

The concept of internal control was first presented by the American Institute of Accountants (AIA) in 1949. The institute defined internal control as "a plan of organization and all of the coordinate methods and measures adopted within a business to safeguard its assets, check the accuracy and reliability of its accounting data, promote operational efficiency and encourage adherence to prescribed managerial policies" (Hay, 1993). Then, different institutions give their definitions of internal control. The International Organization of Supreme Audit Institutions (INTOSAI) defined internal control as an integral process that is affected by management and personnel. It is designed to address risks and to provide reasonable assurance in pursuit of the entity's mission. The general objectives of internal control are executing orderly, ethical, economical, efficient, and effective operations, fulfilling accountability in obligations, compliance with applicable laws and regulations, safeguarding resources against loss, misuse, and damage (INTOSAI, 2004).

The Committee of Sponsoring Organizations (COSO) of the Treadway Commission defined internal control as a process, affected by the board of directors, management and other employees of an entity. These processes are designed to provide reasonable assurance-but not absolute assurance, regarding the achievement of operational, reporting, and compliance objectives (COSO, 2013). The different theories that can explain the design and implementation of sound internal control procedures by a firm's management are presented below.

### **Agency Theory**

Agency theory is used to examine the relationship between principals like shareholders, who hire agents like managers and executives, and delegate

the responsibility of running the business. The theory suggests that there is information asymmetry between the principals and agents, i.e., agents have more information than principals. This condition adversely affects the principals' ability to control and monitor the activities of agents against their interests. The effect of information asymmetry can be minimized through the use of strong internal control systems, which enables to achieve quality reporting and transparency (Ajao & Oluwadamilola, 2020). In the healthcare sector, agency theory is employed to investigate doctor-patient relationship, hospital-doctor relationship, and the usual owner-manager relationship (Jiang, Lockee, & Fraser, 2012).

### **Contingency Theory**

This theory was developed by Woodward (1958). The basic premise of this theory is that there is no single best way of managing or running an organization, rather the best decision or course of action is determined by the situation. There is no standard way to lead an organization and their functions are contingent on the various internal and external factors. So a leader must identify the best course of actions for each particular situation. In this regard the need for internal control measures varies with specific firm characteristics. The management has to choose internal control systems that are suitable to their organization's objectives. The application of internal control measures is diverse (Jokipii, 2010). Internal control procedures need to be flexible to address the problems caused by unexpected disasters like COVID-19 pandemic.

### **Hypothesis Development**

The COSO Internal Control-Integrated Framework pointed out five integrated components of an effective internal control system. The first one is the control environment. The Institute of Internal Auditors (IIA) defined a control environment as the foundation of effective internal control and it helps to achieve an entity's strategic objectives. The control environment consists of standards, processes, and structures that provide the basis for the implementation of internal control across the organization. It is established by the board of directors and top management by indicating the importance of internal control, the expected standards, and code of conduct and enforces them at various levels of the organization. Control environment affects all other elements in the framework as well as the overall organization (Oseifuah & Gyekye, 2013).

The second component is risk assessment. Risk is the possibility of an adverse occurrence, which can have an undesirable impact on the achievement of objectives. Risk assessment is a process of identifying and measuring risks and determining how they will be managed. The third one is control activities which include the policies, procedures, and actions performed at all levels of the organization, which can help to mitigate risks. Control activities can be preventive controls or detective controls and may be done manually or using computer systems (COSO, 2013). The fourth component of internal control is information and communication. Information is a resource necessary for implementing internal control responsibilities. It may be obtained from internal or external sources and communicated throughout the organization and for external parties. The fifth component is monitoring activities, which indicates the evaluation of the presence and functioning of the components and the principles within each component at different levels of the entity. Evaluations are made against established criteria (COSO, 2013).

The effectiveness of the internal control system is a result of the effective functioning of its elements, i.e., control environment, risk assessment, control activities, information and communication, and monitoring activities performed on the system itself (COSO, 2013). Effective control of internal and external risks needs proper implementation of internal control, a strong enterprise resource management framework, suitable information technology, and good governance (Li & Nadeem, 2010). A study by Akwaa-Sekyi and Gene (2016) concluded that internal control has a significant effect on credit risk. The control environment, control activities, risk assessment, and monitoring activities significantly affect credit risk.

Other studies by Ellu and Yerramilli (2013) and Tang, Tian, & Yan (2015) stated that strong internal controls help financial institutions to survive during the financial crisis and a material weakness in internal control increases credit risk. A study conducted by Joseph, Albert, & Byaruhanga (2015) indicated that the adequacy of internal controls has a statistically significant and positive effect on fraud detection and prevention. The study emphasized that effective and efficient internal control systems help to prevent and detect frauds. Chen et al. (2013) found that the quality of internal control has a positive effect on the quality of earnings, financial reporting, investor's confidence, and improvements

in the capital market

Internal control has a significant effect on the management of government healthcare organizations. To minimize or possibly eliminate fraud and reduce failure, healthcare organizations must have effective internal control systems. Internal control systems need to be monitored on a regular basis, to check their proper implementation (Mary, 2017). Liu (2018) noted that there is a high correlation between hospital management and internal control, which directly affects the performance of the hospital. Effective internal control guarantees the safety of hospital assets, improves operational efficiency, improves the quality of healthcare services, and warrants market share. Internal control components indicated in the COSO Model, have significant positive effects on the profitability and survival of small businesses in Nigeria (Monday, Inneh, & Ojo, 2014). Another study conducted by Tuan and Hung (2015) also showed that internal control has a significant effect on risk reduction.

Looking into the empirical findings of prior researches and the institutional guidelines on internal control, the researcher formulated the following hypotheses.

- H<sub>1</sub>:** The internal control system of healthcare organizations in Ethiopia is reliable.
- H<sub>2</sub>:** Control environment have a significant effect on impact of COVID-19 risks.
- H<sub>3</sub>:** Risk assessment has a significant effect on impact of COVID-19 risks.
- H<sub>4</sub>:** Control activities have a significant effect on impact of COVID-19 risks.
- H<sub>5</sub>:** Information and communication have a significant effect on impact of COVID-19 risks.
- H<sub>6</sub>:** Monitoring activities has a significant effect on impact of COVID-19 risks.

The conceptual framework of this study is presented on Figure 1. It shows that impact of COVID-19 risks is affected by internal control system covering control environment, risk assessment, control activities, information and communication, and monitoring activities, as suggested by COSO (2013).

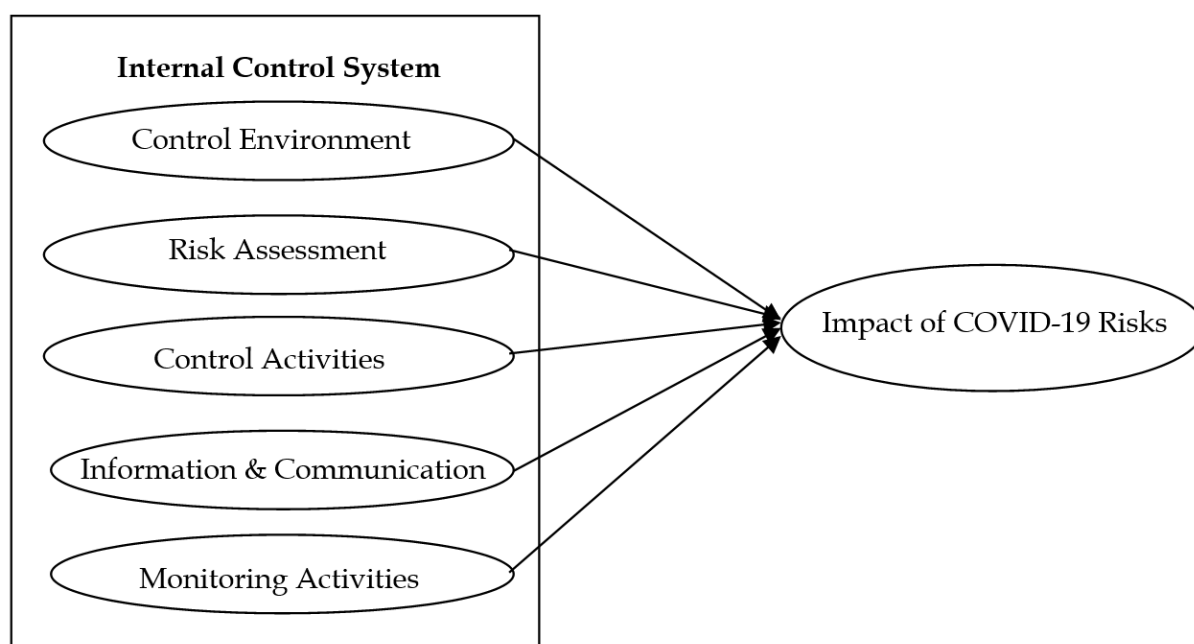


Figure 1. Conceptual Framework

### 3. RESEARCH METHOD

In order to achieve the objective of the study, both descriptive and exploratory research design was used. The target population of the study consists of healthcare organizations found in Addis Ababa, the capital city of Ethiopia. Addis Ababa was selected because it is the most COVID-19 infected area in the country and the impacts of COVID-19 risks are higher in the area. Primary data was collected from 241 healthcare provider organizations using a structured questionnaire.

The study employed the standardized model for Internal Control Evaluation (ICE) developed by O'Leary (2005). This model is selected because it is logically developed, efficient and its overall usefulness in evaluating internal control. The model uses a scale of 1 to 9 within which the reliability of internal control systems is evaluated. Each component of internal control is measured by the weighted average of the related principles and procedures. A score of 1 indicates a highly unreliable internal control system and 9 indicate a highly reliable internal control system (O'Leary, 2005). The components of internal control and the related principles and procedures are referred from "Internal Control Implementation Guide for the

Healthcare Provider Industry", a document prepared by the collaboration of the COSO of the Treadway Commission, Crowe, and Common Spirit Health. The collected data was analyzed using descriptive statistics to examine the reliability of internal control systems and ordered logistic regression analysis was used to examine the statistical effect of the five major components of internal control system on mitigating the impacts of COVID-19 risks. The impact of COVID-19 risks on the overall performance of healthcare organizations was measured using a five-point Likert scale (1 = insignificant impact, 2 = minor impact, 3 = moderate impact, 4 = major impact, and 5 = severe impact). The complete research instruments are presented in the appendix.

### 4. DATA ANALYSIS AND DISCUSSION

#### Descriptive statistics

Table 1 encompasses the descriptive statistics of study variables. The data was collected from 241 healthcare organizations found in Addis Ababa, Ethiopia. The calculations were computed using Stata 12 software. A structured questionnaire was distributed to a total of 250 samples and 9 of them are failed to respond.

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Covid-19 Risk Impact	241	4.158	1.057	3	5
Control Environment	241	6.951	1.609	2	9
Risk Assessment	241	5.996	2.211	3	9
Control Activities	241	7.261	1.780	2	9
Info. & Comm.	241	6.124	1.986	1	9
Monitoring Activities	241	7.092	1.557	2	9

Sources: Primary data, processed.

The mean value of the dependent variable indicates that the average COVID-19 impact on the overall performance of healthcare organizations in Ethiopia is 4.158, which entails that, on average, the pandemic caused a major impact on the performance of healthcare organizations. The minimum impact is found to be moderate and the impact goes up to a severe level and the impacts deviate from the mean with 1.057. Looking into the explanatory variables,

the average value for the Control environment is 6.951, risk assessment (5.996), control activities (7.261), information and communication (6.124), and monitoring activities (7.992), which indicates that their reliability condition is moderate. The mean value for the overall internal control system is 6.6848. Therefore, it can be stated that internal control in healthcare organizations in Ethiopia is moderately reliable.

Table 2. Correlation Analysis of Study Variables

Variables	1	2	3	4	5	6
1. Covid-19 Risk Impact	1.000					
2. Control Environment	-0.756	1.000				
3. Risk Assessment	-0.891	0.391	1.000			
4. Control Activities	-0.826	0.122	0.430	1.000		
5. Info. & Comm.	-0.812	0.289	0.331	0.179	1.000	
6. Monitoring Activities	-0.645	0.201	0.540	0.527	0.593	1.000

Sources: Primary data, processed.

Table 2 shows the correlation matrix for all the variables of the study. The correlation coefficients indicate that the explanatory variables are strongly negatively correlated with the outcome variable. In addition, the explanatory variables are positively correlated each other, which supports the interconnectedness and interdependent nature of internal control components, as it is represented by the COSO internal control cube. This indicates that an improvement in one of the components of internal control have a positive effect on the other components. None of the explanatory variables have correlation coefficient above the usual rule of thumb of 80 percent, which enables us to conclude that there is no multicollinearity problem.

### Regression Estimates

Ordered logistic regression can only be if the

dependent variable is measured in ordinal terms. The dataset of this study fulfils this assumption. The outcome variable "COVID-19 risks impact" is an ordinal variable measured using a five point Likert scale. The scale is structured as (1 = insignificant impact, 2 = minor impact, 3 = moderate impact, 4 = major impact and 5 = severe impact).

The Assumption of proportional odds dictates that the coefficients that describe the relationship between each pair of outcomes is the same. The null hypothesis states that slope coefficients are the same across each pair of response categories. As it can be observed from Table 3, the test statistics for proportional odds assumption indicates that the  $P > \chi^2$  values are not significant. This enables us to accept the null hypothesis and conclude that the parallel regression assumption is fulfilled.

Table 3. Test of the Parallel Regression Assumptions

	Chi-Square	df	P-value
Wolfe Gould	21.680	12	0.081
Brant	1,192.000	12	0.750
Score	14.900	12	0.247
Likelihood ratio	21.680	12	0.143
Wald	6.450	12	0.892

Sources: Primary data, processed.

The existence of multicollinearity problem is tested by the variance inflation factor. The mean VIF result of less than 10 is desirable to assure the data set have no multicollinearity problem. Table 4 shows that

the mean VIF result of the dataset is 1.84. This indicates that there is no evidence for the existence of perfect correlation among the explanatory variables of the study.

Table 4. Variance Inflation Factor (VIF) Test

	VIF	1/VIF
Control Environment	1.269	0.788
Risk Assessment	2.165	0.462
Control Activities	1.435	0.697
Info. & Comm.	2.372	0.422
Monitoring Activities	1.947	0.514
Mean VIF	1.840	

Sources: Primary data, processed.

Table 5. Ordered Logistic Regression Analysis

Ordered logistic regression			Number of obs = 241			
			LR chi2(5) = 551.52			
			Prob > chi2 = 0.0000			
Log likelihood = -70.349587			Pseudo R2 = 0.7967			
Covid19 Risk Impact	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Control Environment	-0.941	0.251	-3.750	0.000	-1.434	-0.449
Risk Assessment	-2.284	0.320	-7.140	0.000	-2.911	-1.658
Control Activities	-1.577	0.277	-5.690	0.000	-2.121	-1.034
Info. & Comm.	-0.595	0.230	-2.580	0.010	-1.047	-0.144
Monitoring Activities	-0.741	0.240	-3.080	0.002	-1.212	-0.270
/cut1	-47.429	5.755			-58.708	-36.150
/cut2	-39.369	4.722			-48.623	-30.114
/cut3	-28.674	3.522			-35.577	-21.772
/cut4	-17.911	2.459			-22.7301	-13.093

The regression output shown on Table 5 indicates that the model used is fit with the data with a significance value of 0.0000. the R<sup>2</sup> of the model is 0.7967, which indicates that the model explained

about 79.67 percent of the variation in the outcome variable. The P-values of the explanatory variables imply that control environment, risk assessment, control activities, information and communication,

and monitoring activities have statistically significant effect on impact of COVID-19 risks, at 95 percent confidence interval. The coefficients of all of the explanatory variables is negative, which entails that as the reliability of internal control components increases by one unit, the impacts of COVID-19 risks on the overall performance of healthcare organizations will be reduced by the corresponding coefficients.

Referring to the regression coefficient of control environment in Table 5, we can say that keeping the other predictor variables in the model constant, if the reliability of control environment increases by one, there is a 0.94 decrease in the ordered log odds of impact of COVID-19 risks. This implies that by increasing the strength of control environment principles, procedures and guidelines, healthcare organizations can mitigate the impact of COVID-19 risks in their overall performance.

Likewise, a one-unit increase in the reliability of risk assessment causes a 2.28-unit decrease in the log odds impacts of COVID-19 risks. The implementation of strong, appropriate and flexible risk assessment and analysis procedures can reduce the impact of COVID-19 risks in healthcare organizations. This indicates risk assessment responsive to major environmental changes is vital. If the reliability of control activities increases by one, the impact of COVID-19 risks will decrease by 1.58. The implementation of control activities like clear separation of duties, proper authorization procedures, physical protection of assets, reliable financial reporting and internal audit activities can reduce the adverse effect of COVID-19 risks in healthcare organizations.

In addition, for a one-unit increase in the reliability of information and communication, there is a predicted decrease of 0.59 units in the log odds of impacts of COVID-19 risks. The provision and usage of quality information for the decision making process have a significant impact on the mitigation of risks borne by COVID-19 pandemic in the healthcare industry.

Finally, if the reliability of monitoring activities increases by one unit, the log odds of impacts of COVID-19 risks will decrease by 0.74 units. This shows a periodic evaluation of the performance of the overall internal control system and taking corrective measures as per the observed deficiencies helps to reduce the effect of COVID-19 risks in the performance of healthcare organizations.

## 5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

This study examined the reliability of internal control systems in healthcare organizations and the effect of its key components on mitigating the impacts of COVID-19 risks in their overall performance. The results of descriptive statistics show that internal control system in healthcare organizations in Ethiopia is moderately reliable. In addition, the regression results show that control environment, risk assessment, control activities, information and communication, and monitoring activities have statistically significant and negative effect on impacts of COVID-19 risks. This implies as the reliability of internal control components increases, the impacts of COVID-19 risks on the overall performance of healthcare organizations will be reduced. Among the predictor variables, risk assessment is found to have the highest effect on reduction of the impacts COVID-19 risks.

This study primarily contributes to healthcare organizations as it provides evidence on the reliability of their internal control system. In order to improve the reliability of their internal control, managers of healthcare organizations should revise its design and implementation as per the framework and implementation guidelines provided by COSO of the Treadway Commission. On the other hand, the mitigation of the impacts of COVID-19 risks on their performance needs an improvement in each component of their internal control systems. In addition, this study contributes to existing literature on the topic of internal control in the healthcare business. The major limitation of this study is healthcare organizations in the countryside are not included in the sample. The impacts of COVID-19 in the countryside are expected to be less, because the number of infections is less there.

## REFERENCES

- Ajao, O. S., & Oluwadamilola, A. O. (2020). Internal control systems and quality of financial reporting in insurance industry in nigeria. *Journal of Finance and Accounting*, 8 (5), 218 – 226
- Akhtaruddin, M. & Ohn, J. (2016). Internal control deficiencies, investment opportunities, and audit fees. *International Journal of Accounting and Finance*, 6(2), pp. 127-144.
- Akwaa-Sekyi, E. K., & Gené, J. M. (2016). Effect of internal controls on credit risk among listed Spanish banks. *Intangible Capital*, 12(1), 357-389.



- Alam, M. S. (1995). A Theory of Limits on Corruption and some Applications. *KYKLOS*, 48, 419-435.
- Amankwah-amuah, J., Khan, Z. & Wood, G. (2020). COVID-19 and business failures: The paradoxes of experience, scale, and scope for theory and practice, *European Management Journal*. Elsevier Ltd.
- Ashbaugh-Skaife, H., Collins, D. W., Jr., W. R. K., & Fond, R. (2009). The effect of sox internal control deficiencies on firm risk and cost of equity. *Journal of Accounting research*, 47(1), 1-43.
- ASHRM. (2016). *American Society for Healthcare Risk Management*. Retrieved from ASHRM: [https://www.ashrm.org/system/files%3Ffile%3Dmedia/file/2019/06/ERM-Tool\\_final.pdf](https://www.ashrm.org/system/files%3Ffile%3Dmedia/file/2019/06/ERM-Tool_final.pdf)
- Cancedda, A., Minardi, C., Wolsey, J., Vinci, V., & Abdella, A. (2020). COVID-19 socio-economic Vulnerability Assessment of Ethiopia. UNICEF
- Chen, H., Dong, W., Han, H., & Zhou, N. (2016). A comprehensive and quantitative internal control index: construction, validation, and impact. *Review of Quantitative Finance and Accounting*, 49(2), 337-377.
- Committee of Sponsoring Organizations of the Treadway Commission (COSO). (2013). *Internal control-integrated framework*.
- Craven, M., Liu, L., Mysore, M., & Wilson, M. (2020). COVID-19: Implications for business. McKinsey and Company.
- Ellul, A. & Yerramilli, V. (2013). Stronger risk controls, lower risk: Evidence from U.S. bank holding companies. *Journal of Finance*, 68(5), 1757-1803.
- FICCI. (2020, April 14). *Coronavirus impact on healthcare sector*. Retrieved from The Economic Times: <https://economictimes.com/markets/stocks/news/coronavirus-impact-on-healthcare-sector/articleshow/75136714.cms>
- GAO - Government Accountability Office. (2014). *Standards for Internal Control in the Federal Government - GAO 14-704G (The Green Book)* (Issue September).
- Hajiha, Z. & Bazaz, M. S. (2016). Impact of internal control material weaknesses on executive compensation: evidence from Iran, *International Journal of Accounting, Auditing and Performance Evaluation*, 12(1), 70-84.
- Hay, D. (1993). Internal control: How it evolved in four English speaking countries. *Accounting Historians Journal*, 20(1), 79-102.
- Hogan, C. E. & Wilkins, M. S. (2008). Evidence on the audit risk model: do auditors increase audit fees in the presence of internal control deficiencies? *Contemporary Accounting Research*, 25(1), 219-242.
- Institute of Internal Auditors. (2015, March). *Global technology Audit Guide*. Retrieved from The Institute of Internal Auditors North America: [na.theiia.org/standards-guidance/recommended-guidance/practice-guides/pages/GTAG3.aspx](http://na.theiia.org/standards-guidance/recommended-guidance/practice-guides/pages/GTAG3.aspx)
- INTOSAI. (2004). *Guidelines for internal control standards for the public sector*. Budapest: International Organization of Supreme Audit Institution.
- Jiang, H.J., Lockee, C. & Fraser, I., 2012. Enhancing board oversight on quality of hospital care: an agency theory perspective. *Health care management review*, 37(2), pp.144-153.
- Jokipii, A. (2010). Determinants and consequences of internal control in firms: A contingency theory based analysis. *Journal of Management and Governance*, 14(2), 115-144.
- Joseph, O. N., Albert, O., & Byaruhanga, J. (2015). Effect of internal control on fraud detection and prevention in district treasuries of kakamega county. *International Journal of Business and Management Invention*, 4(1), 47-57.
- Khullar, D., Bond, A. M., & Schpero, W. L. (2020). COVID-19 and the Financial Health of US Hospitals. *JAMA - Journal of the American Medical Association*, 323(21), 2127-2128.
- Li, S., & Nadeem, M. (2010). *Risk Management and Internal Control: A Case Study of China Aviation Oil Corporation Ltd.* [University West]. In Chambers' Corporate Governance Handbook. <https://doi.org/10.5040/9781784514471.chapter2>
- Liu, X. (2018). Discussion on Internal Accounting Control in Hospital. *Research in Medical and Engineering Sciences*, 3(3), 230-231.
- Lu, H. A. I., Richardson, G. & Salterio, S. (2011). Direct and indirect effects of internal control weaknesses on accrual quality: evidence from a unique Canadian regulatory setting. *Contemporary Accounting Research*, 28(2), pp. 675-707.
- Monday, J. U., Inneh, G. E., & Ojo, V. O. (2014). Internal controls and operating performance of small businesses in Lagos Metropolis. *International Conference on Accounting, Finance and Management*, March, 237-256.
- Mary, A. I. (2017). Impact of effective internal control in the management of mother and child Hospital Akure, Ondo State. *Journal of Finance and Accounting*, 5(1), 61-73.

- O'Leary, C. (2007). Developing a standardised model for internal control evaluation. *Journal of Nuclear Cardiology*, 11(2), 35-57.
- Omri, M. A. & Ben Nefissa, G. E. M. (2011). Determinants of weaknesses in internal control in Tunisian context. *International Journal of Managerial and Financial Accounting*, 3(3), 219-236.
- Oseifuah, E. K. & Gyekye, A. B. (2013). Internal control in small and microenterprises in the Vhembe District, Limpopo Province, South Africa. *European Scientific Journal*, 9(4), 241-251.
- Pevzner, M. & Gaynor, G. (2016). The impact of internal control weaknesses on firms 'cash policies'. *International Journal of Accounting, Auditing and Performance Evaluation*, 12(4), pp. 396-421.
- Said, J., Alam, M. M., Radzi, N. B. M., & Rosli, M. H. (2020). Impacts of accountability, integrity, and internal control on organisational value creation: evidence from Malaysian government linked companies. *International Journal of Business Governance and Ethics*, 14(2), 206-223.
- Schandl, A. & Foster, P. L. (2019). *COSO Internal control – integrated framework: An Implementation Guide for the Healthcare Provider Industry*.
- Scott, G. C., Eric, J. R., & Rebecca, W. M. (2020, June 30). *Top Risks for Healthcare Organizations in 2020*. Retrieved from Crowe: <https://crowe.com/insights/healthcare-connection/top-risks-healthcare-organizations-2020>
- Sim, M. R. (2020). The COVID-19 pandemic: major risks to healthcare and other workers on the front line. *Occupational and Environmental Medicine*, 77(5), 281-282.
- Suh, S. & Fernando, G. D. (2013). The effect of reporting internal control weakness on predicting future performance using discretionary accruals. *International Journal of Accounting, Auditing and Performance Evaluation*, 9(4), pp. 307-325.
- Tang, D.Y., Tian, F. & Yan, H., 2015. Internal control quality and credit default swap spreads. *Accounting Horizons*, 29(3), 603-629.
- Tuan, N. & Hung, D. N. (2015). A theoretical model studying the Impact of Internal Control on Performance and Risks of Vietnam Commercial Banks. *International Conference on Accounting*, 5(12), 1-13.
- Tuan, T. T. (2020). The effect of internal control on the performance of Vietnamese construction enterprises. *Accounting*, 6(2020), 781-786.
- Woodward, J. (1958). *Management and Technology*, HM Stationery off, (3).

## APPENDIX

### Part I: Internal control Evaluation

#### 1. The Control Environment

Criteria	1	2	3	4	5	6	7	8	9
The company's standards of behavior reflect integrity and ethical values									
Exercises oversight responsibility (there is continuous supervision)									
There is clear assignment of authority, responsibility and enforces accountability									
The company demonstrates commitment to competence									
The company have documented policies, procedures and guidelines of activities									
The overall control environment is suitable, cost effective and help the company to achieve its goals									

#### 2. Risk Assessment

Criteria	1	2	3	4	5	6	7	8	9
Specifies suitable objectives (vision, mission, goals)									
Designed an appropriate strategy of identifying risks and analyze their effect									
Your company assess and analyze fraud risk regularly									
Identifies and analyzes significant changes in the environment									
Designed a system to offer appropriate response to risks									
There is involvement of each organization layers in risk assessment and response activities									
The company assessed and analyzed the risks related with COVID-19									
The company prepare plans for contingency risks									

#### 3. Control Activities

Criteria	1	2	3	4	5	6	7	8	9
The organization designed policies and procedures to produce reliable financial reports									
The organization applies separation of duties									
The organization uses proper authorization of activities and documents									
The company's Assets are physically controlled									
The acquisition, recognition, depreciation and disposal of assets are strictly followed and properly recorded									
Prepare bank reconciliation, uses petty cash fund, and assign appropriate independent personnel to perform them									
Conduct independent internal audit									

#### 4. Information and Communication

Criteria	1	2	3	4	5	6	7	8	9
Uses relevant, reliable and timely information for decision making									
The company communicates well with internal parties									
The company communicates well with external parties									
Access information to authorized users only									
Timely record transactions and prepare financial reports									

**5. Monitoring Activities**

Criteria	1	2	3	4	5	6	7	8	9
Perform periodic evaluations of employees' performance									
Perform periodic evaluation of the strength and weakness of the organization's internal control system									
Evaluation results and deficiencies are communicated									
Use appropriate measures to correct deficiencies and weaknesses									
Monitor and evaluate the effectiveness of internal control in attaining organizational objectives									

**Part II: The effect of COVID-19 risks on the overall performance of healthcare organizations**

	Insignificant Impact	Minor Impact	Moderate Impact	Major Impact	Severe impact
How severe is the effect of COVID-19 risks on your company's overall performance					