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Perceived Importance of Information Technology Governance for Ethiopian Higher Educational Institutions

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Abstract – *Recently, information technology (IT) is a matter of existence for organizations to compute with the other competitor organizations. The organizations are becoming critically dependent on IT. This critical dependency in turn necessitated effective Information Technology Governance (ITG) to better leverage the value out of IT investments.*

The objective of this study was to investigate the perceived importance of ITG for Ethiopian Higher educational institutions (EHEIs) in terms of ITG Structure, ITG Process and ITG Relational Mechanisms. Simple random sampling method was used to select two private universities and twenty public universities for this study. A total of 66 self-administered questionnaires were distributed for those 22 universities targeting senior IT professionals, IT Directors and University higher officials and 83.3 return rate was achieved. The analysis of collected data was done using SPSS version 26 and Microsoft Excel 2021.

The result of the study revealed that the perceived importance of ITG for EHEIs was rated 4.3 based on the generic scale from 1(Strongly Disagree) to 5(Strongly Agree). The analysis result of the study is between Agree and Strongly Agree, this shows a great agreement on the perceived importance of ITG for EHEIs. The finding of this survey shows that the need of ITG for Ethiopian higher educational institutions is high.

Based on the result, it can be concluded that there is an agreement on the importance of ITG, this result can be used as a baseline to conduct research on the maturity of ITG in the higher educational institutions in Ethiopia. So, the higher educational institution should start implementing a formal ITG that fits their business strategy to get the best results from IT investment. The analysis result of the study can help researchers theoretically as a baseline for future study and this analysis result can be used as a standing point for the higher educational institutions as a practical implication to start applying ITG in their respective organizations.

Keywords: ***Information Technology Governance, Higher Educational Institutions***

1. Introduction

IT has become one of the most critical factors for the growth and sustainability of an organization including educational institutions[1]. The main role of IT in educational organizations was supporting the education system but recently, the role of IT is changing from supporting to a strategic factor for the success of an educational organizations. The growth of IT in educational institutes is witnessed in the last two decades. Use of IT in educational organizations brings lots of benefits for the institute, while there are some challenges too[2].

The impact of IT is almost at every level of the educational organization, from board members, executives, managers, employees, vendors and customers. The impacts of IT decisions should not be undervalued.

Information Technology Governance(ITG) is an instrument that is used to control and manage the IT resources such as infrastructure, technology and people in any kind of organizations, including universities[3]. An effective implementation of ITG in an organization encourages and leverages the ingenuity of employees in the organization who are using IT and it ensures the organizations business IT alignment.

The pervasive use of IT in the organization has created critical dependency on IT, this critical dependency on IT should be supported the implementation of ITG for those organizations. ITG consists of the leadership, organizational structures and processes that ensure the organization's IT sustains and extends its business strategy and objectives. An effective implementation of ITG in universities is strongly associated with a high level of ITG maturity practice[4].

The country Ethiopia is not using IT as it is required level in every organization. The use of IT in the higher educational institutions of the country is not promising. Even though the adoption of IT in Ethiopian Higher Education Institutions (EHIs) is not at it its required level, recent initiatives by the government are promising in the years to come. Building an IT enabled services in Ethiopia is considers as one of the pathways to transform the country. EHEIs are given the most attention in the government of Ethiopia plan to support the IT enabled services[5].

The government of Ethiopia has given a great emphasis on the use of IT in Ethiopian education sector in its development plan. The implementation of better IT usage in

the Ethiopian education sector will be done by expanding and improving ICT infrastructure at all levels, producing and widely distributing digital education resources and building the ICT skills and capacity of teachers and leaders to support curriculum delivery[6].

The policy documents and development plans of Ethiopia shows that the use of IT is a must to attain the development goals in different sectors. The government of Ethiopia understood the benefit of IT for any organizations, and included in this different policy documents and development plans. It is well pointed in education-oriented policies and development plans those higher educational institutions are given greater emphasis to use IT in their day-to-day business operations.

2. Problem Statement

Organizations are using IT to do their business and connect with partners in a best way. IT is already a business strategic partner in some organization. An organization which uses IT can increase a value chain for the business and can sustain a competitive advantage with its business competitors. An organization should have an appropriate ITG implementation to have all these benefits from IT [7].

ITG is used in an organization to increase the business performance and to decrease IT related risks in the organization[8]. Identifying the best fit ITG practices for applying to the specific organizational context is a complex task, ITG is dependent on the organization's size, country, industry and type of organization. Higher educational institutions are complex organizations which require an adequate IT applications and Infrastructure to fulfil their mission. IT in the universities consists of a variety of applications, different platforms, academic systems and cloud applications [4].

As it is the case in other organizations, ITG is essential for higher educational institutions. There are lots of benefits for the university which will be gained by implementing ITG. Some of the benefits are, the return on investment of IT will be high, user satisfaction of the universities IT systems and infrastructure will be very high and the corporate image of university will outreach in IT[9].

The effective and efficient use of IT is critical for the success of the organization. Since it is unable to function with using IT for universities these days, Ethiopian universities are expending lots of money to develop a better IT infrastructure. The universities should have a special focus on the effectiveness of IT, to control the effectiveness of IT there should be some governing framework. Here, ITG comes in action.

ITG is a hot research issue around the world. There are few literatures in the area of ITG in higher education in other countries. The perceived importance of ITG in higher education is studied in different countries. But the perceived importance of ITG is time and context dependent, the perceived importance of ITG will be different when the organization applies different IT application and infrastructure. The context of Ethiopia is different from other countries around the world. There are some local researches on the perceived importance and maturity of ITG in different organizations. Some research conducted in Ethiopia about ITG discussed below.

A Research with a title "Maturity of Information Technology Governance in the Financial Sector of Ethiopia; a Comparative Study" was conducted with main objective of understanding the perceived importance and the maturity level of ITG in the financial sectors of Ethiopia. All public as well as private financial institutions in Ethiopia was target of this research. The finding of this research shows that the perceived importance of ITG for financial sectors of Ethiopia was rated 4.2 out of 5. The analysis result of this research shows that there is an agreement on the perceived importance of ITG for financial sector of Ethiopia. The researcher recommends for future research to conduct this research with different organization[10].

Another research with a title "Assessment of Information Technology Governance Maturity at Ethiopian Agricultural Business Corporation" with a main objective of understanding the perceived importance and maturity level of ITG for Ethiopian Agricultural Business Corporation. The research targeted the main office of Ethiopian agricultural corporation which is located in the capital Addis Ababa. Depending on the analysis result of the research, the perceived importance of ITG for Ethiopian Agricultural Business Corporation was rated 4.4 out of 5. This finding of this study shows there is an agreement on the perceived importance of ITG for Ethiopian Agricultural Business Corporation. One of the recommendations mentioned by the researcher is attempting the research with different organization[11].

As discussed above, these are some of the researches conducted in Ethiopia about the perceived importance of ITG and the maturity level of ITG. There are lots of related researches around the world while there are some researches in Ethiopia in this concept. Since the concept of perceived importance of ITG is time and context dependent, this research area is always open to conduct research. When we come to Ethiopia, the country has different context from other countries. The main difference is the infrastructure developed in different countries. In the case of Ethiopia, the researcher didn't find research that is done to assess the perceived importance of ITG for EHEIs. Besides, other researchers who had conducted their research in this topic recommends future research in different organizational context.

2.1. Research Question

Hence, this research tries to answer the following question:

What is the perceived importance of Information Technology Governance for Ethiopian Higher Educational Institutions?

3. Objective

The general objective of the research was to investigate the perceived importance of ITG for EHEIs.

Having this general objective, the following were the specific objectives of the research.

- To assess the decision-making right and accountability practices (Governance structure).
- To assess the level of standardization and institutionalization of IT Governance practices (Governance Processes).
- To assess the level of formal communication and cooperation between IT Governance stakeholders (Relational Mechanisms).

4. Literature Review

Recently, IT is playing an important role in the organizations business operation including educational institutions. The advancement of IT functionalities that organizations get from IT requires adopting new forms of resource governance, if one considers the importance and contribution of IT in achieving the strategic objectives of an organization[12].

Different literatures explains the word governance in a variety of ways since different authors using this word for a variety of purposes in a number of disciplines for a variety of contexts as well[13].

According to [14], the workable definition of Governance is the process of establishing a chains of responsibility, authority and communication and establishing measurement, policy, standards and control mechanisms to enable people to carry out their role and responsibilities.

Governance in business context is a series of rules, processes and actions that organization undertakes to determine organization strategies and operate the organization in a determined manner to help organization achieve its goals. While ITG refers to organizational structures and processes to ensure that the organization's IT fully support the organization goals[15].

4.1. Information Technology Governance (ITG)

ITG is one of the top-level agendas of many organizations, many organizations are implementing ITG practice into their day-to-day business process. There are a number of definitions for ITG; however, there is no single universally agreed definition of ITG; different authors and institutions defined ITG differently. As defined in the book written by Peter Weill and Jeanne W. Ross, the definition of ITG is "Specifying the decision rights and accountability framework to encourage desirable behavior in the use of IT"[16].

It is an instrument for controlling and managing IT resources such as infrastructure technology and human resources in all types of organizations, including universities or colleges[17]. The basic concern of ITG is the way IT delivers value and IT risk management which are associated with it which can be brought about through the strategic alignment of business and IT, resource management and performance management [18].

4.2. Elements of ITG

ITG is an instrument to control and manage an IT resource in the organization. The resource that should be controlled and managed with ITG includes infra-structure, technology and people in any kind of organizations[17]. ITG helps the corporate governance of the organization by assisting the strategy of the organization and achieving objectives and mission. A framework of ITG may be deployed with a set of the mechanisms such as structures, processes, and relational mechanisms[19].

4.2.1.ITG Structure

ITG structures includes the structural mechanisms for connecting the business and IT in the organization. This structure enables horizontal or liaison, contacts between business and IT management (decision-making) functions[20]. The organizations IT structure which has a clear as well as defined roles and responsibilities is one of the elements of ITG structure.

Most of the governance work is carried out by committees, this committees are assigned by the board members, executives and senior management. ITG is a collaborative process; hence IT Governance committees should be as inclusive as possible. According to [21], effective ITG structure consists of direct reporting between CIO and CEO. The direct reporting between CIO and CEO ensures that IT is part of executive team where most strategy discussions begin and end.

4.2.1 ITG Process

ITG processes are the formalization and institutionalization of IT decisions that are made by stakeholders. These include Strategic information system planning (SISP), IT investment proposal, architecture exception processes, allocation of IT costs to business units through chargeback mechanism, introducing IT performance measurement and monitoring mechanisms forcing all IT demands through a single point

where demands can be consolidated, prioritized, evaluated and fulfilled through portfolio management.

4.2.2.ITG Relational Mechanisms

ITG relational mechanisms are about the active participation and collaborative relationships among corporate executives in the organization, IT management and business management. They are crucial for attaining and sustaining business and IT alignment, even when the appropriate ITG structures and processes are in place. An active communication and collaboration between business and IT is a critical success factor for ITG, by creating a mutual understanding and formulating shared goals between business and IT.

5. Research Methodology

Information systems as a discipline has two prominent research paradigms, design science paradigm and the behavioral science paradigm[22]. This research used the behavioral science paradigm to explore the perceived importance of ITG in EHEIS and the status of information technology governance in EHEIs.

5.1. Research Design

The design of a research describes the research methodology that will be followed in the research process, the target population of the research, sample size of the study to be conducted and the data collection tools to be used in the research. The general function of a research design is to ensure that the evidence obtained enables the researcher to answer the research questions as unambiguously as possible[23]. Descriptive research specifically survey method was used for this research.

5.1.1.Research Approach

According to [23], there are three approaches to conduct a research, qualitative, quantitative, and mixed. Since the research area needs a rigorous analysis, the study followed a quantitative approach mainly a survey method was employed to assess the perceived importance of ITG for EHEIs and maturity of ITG in EHEIs. The survey result was complemented and triangulated with interview with IT leaders.

5.1.2.Study Setting

According to literatures, a research setting can be viewed as the location site, environmental, social and cultural site in which the researcher conducts the study[24]. The research explores the perceived importance of ITG for EHEIs. The location site of this research was all over the places in Ethiopia where the EHEIs are located.

5.1.3.Target Population and Sampling Method

In Ethiopia, there are 44 public universities and four private universities. The population for this study was these higher educational institutions in Ethiopia, 4 universities which are located in Tigray region was not included in the population of this study because of the Internet cutdown. 40 governmental universities and 4 private universities were included in the sampling for the study.

The researcher used a simple random sampling method for this study. Using simple random sampling half of the population which means 22 universities were included for the study. This sampling method was used for the private universities too and 2 out of 4 universities was included for the study.

Senior IT professionals, CIO/IT Directors and University higher officials were asked to fill an online questionnaire sent through their email address from March 9, 2021 to April 17, 2021. Once the questionnaire was distributed after a brief discussion with respondents, follow-up was made through telephone using contact person at each sample institutions.

5.1.4.Method of Data Collection

The researcher used both primary as well as secondary source of data for this study. The primary data was collected using close ended self-administered questionnaire. The secondary was collected using data sources like IT organization structure, corporate governance structure, job descriptions, IT strategy plan and policies.

5.1.4.1. Instrument Development

Questionnaire was used to collect data from senior IT professionals, CIO/IT directors and university higher officials who are working in EHEIs. The main questions of this data collection instrument were adopted from a book written by DeHeas and Van Grambergn (2015), 6 items were adopted from a thesis done by Tagel (2016), this questionnaire were sent for expertise for content validity.

5.1.4.2. Methods of Data Analysis

Data analysis is the critical stage in the research process. In this study, primary data which was collected using close ended self-administered questionnaire. This data was analyzed using descriptive statistics using statistical package for social scientists (SPSS) version 26 and Microsoft Excel 2021.

6. Data Presentation and Analysis

The researcher distributed a total of 66 self-administered online questionnaires for two private higher educational institutions and twenty public higher educational

institutions in Ethiopia to collect data on the perceived importance ITG for EHEIs and the maturity level of ITG in EHEIs.

There was different level of professionals who were included in this research, University higher officials, CIO/IT Directors and Senior IT Professionals. From these 66 questionnaires, 56 of the respondents responded whereas 10 of them did not respond. During the data encoding out of the 56 returned questionnaires, 55 of them were found useful and the remaining 1 questionnaire was found incomplete, so it was not included in the data analysis. This shows that the response rate of the questionnaire was 83.3%.

6.1. Demographic Data Presentation

Level of the respondent's higher educational status was asked in the questionnaire, there were not any missing value in this case. Depending on their response 28(50.9%) were Master's Degree holders, 18(32.7%) were Bachelor Degree holders, 5(9.1%) were College Diploma holders and 4(7.3%) were PhD holders. From the analysis result we can understand that most of the respondents were Master's holders.

The position of which the respondents were working was included in the study, depending on the response 29(52.7%) were Senior IT Professionals, 22(40.0%) were CIO/IT Director and 2(3.6%) were University Higher Official. The analysis indicates that most of the respondents were Senior IT Professionals and least of the respondents were university higher officials. Two respondents were unable to specify their current working position, so there were two missing values in this case.

The respondents were asked how long they had worked in their organization. All of the respondents had responded for this question, there were no missing values for this question. Depending on the analysis result, 30(54.5%) were experienced between 5 and 10 years, 15(27.3%) were experienced more than 10 years and 10(18.2%) were experienced between 2 and 5 years.

The training course related to ITG, taken by the respondents was one of the questions asked about the respondents' demography. The question was asked to say Yes/No, from all 55 respondents 18(32.7%) of them responded as they took the training while 37(67.3%) of them did not take a training related to ITG.

6.2. ITG Data Presentation

There was a total of 37 questions in the questionnaire, 14 questions were about governance structure, 12 were about governance process and 11 questions were about governance relational mechanisms.

6.2.1.ITG Structure in EHEIs

The following figure 1 shows the mean value of the perceived importance of ITG structure for EHEIs. The mean value of perceived importance of ITG structure for EHEIs was 4.39 based on the generic level from 1(Strongly Disagree) to 5(Strongly Agree). The mean value in this case was between Agree (4) and Strongly Agree (5), this mean value shows that, almost all the respondents Agreed on the perceived importance of ITG structure for EHEIs.

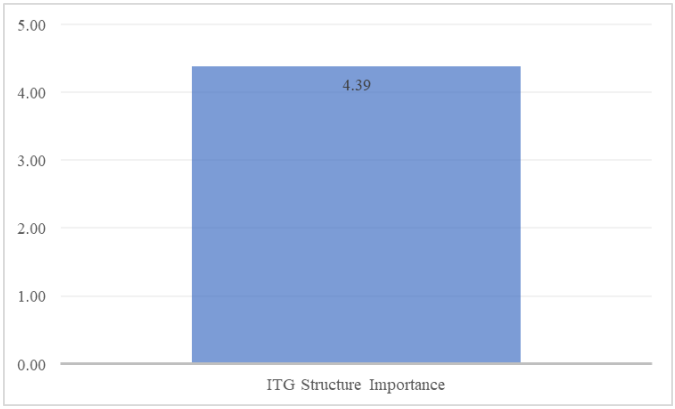

Figure 1 ITG Structure Importance

6.2.2.ITG Process in EHEIs

The following figure 2, shows the mean value of perceived importance of ITG process for EHEIs. As shown in the figure, the analysis results the perceived importance of ITG process for EHEIs is 4.3 based on the generic level from 1(Strongly Disagree) to 5(Strongly Agree). Depending on the analysis result of the perceived importance of ITG process for EHEIs, almost all the respondents were either strongly agreed of agreed on the perceived importance of ITG process for EHEIs. The analysis result shows that there is high demand for ITG process in the EHEIs. Higher educational institutions need to advance the implementation of ITG process, since it is shown that the ITG process is very important.

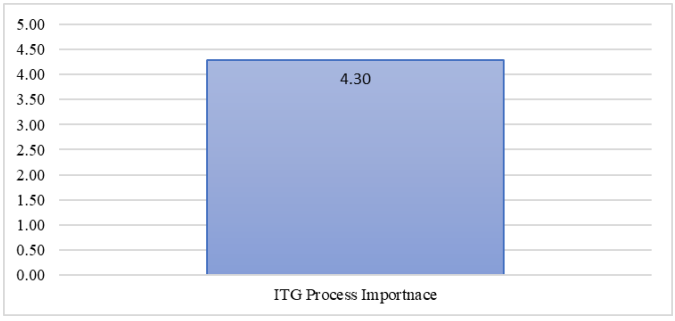

Figure 2 ITG Process Importance

6.2.3.ITG Relational Mechanism in EHEIs

The following figure 3, presented with the mean value of the perceived importance of ITG relational mechanism for EHEIs. Depending on the analysis result the mean value of perceived importance of ITG relational mechanism for EHEIs is 4.18 based on the generic level from 1(Strongly Disagree) to 5(Strongly Agree). The result shows that the respondents agreed on the perceived importance of ITG relational mechanisms for EHEIs.

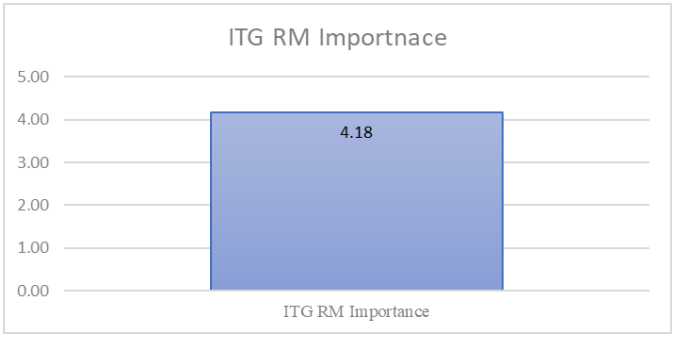

Figure 3 ITG Relational Mechanisms Importance

6.2.4.ITG in EHEIs

The analysis results of the three different elements of ITG were presented above with three different sections. These three elements had three different mean values for the perceived importance of ITG for EHEIs. The mean value of ITG Structure was the most rated with the mean value of 4.39 out of 5, and ITG relational mechanism was the least rated with the mean value of 4.18 out of 5.

Depending on the analysis result presented with the figure 4 below, the mean value of the perceived importance of ITG for Ethiopian higher educational institutions was rated 4.34 out of 5. The analysis result about the perceived importance of ITG for EHEIs shows that there is an agreement on the perceived importance of ITG for EHEIs.

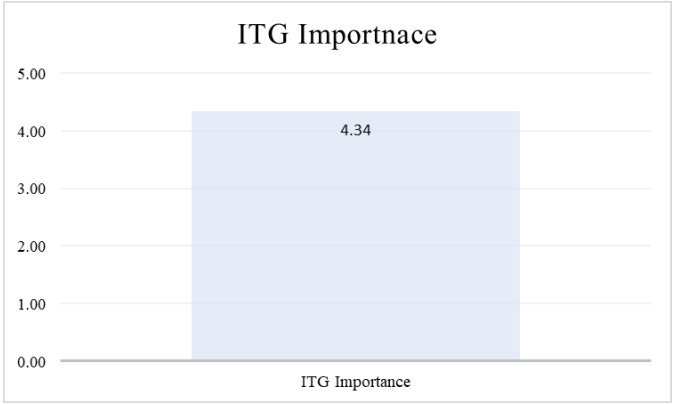

Figure 4 ITG Importance

7. Results and Discussion

The analysis result of the research will be discussed with respect to the research question.

What is the perceived importance of ITG for EHEIs?

What is the perceived importance of ITG for EHEIs?

This was research questions for the study asked to understand the perceived importance of ITG for EHEIs. To get an answer for this question, the researcher used 37 questions to be answered by the respondents. The mean result of perceived importance of ITG structure for EHEIs was 4.39, which was the highly rated when compared with other elements of ITG, the mean result of perceived importance of ITG process for EHEIs was rated 4.3 out of 5 and the mean result of perceived importance of ITG relational mechanisms for EHEIs was rated 4.18 out of 5.

As shown in figure 4 above, the mean value for the perceived importance ITG in the Ethiopian higher educational institution was 4.3 based on a 5-level generic scale from level 1 to level 5. This result shows, almost all the respondents of this research were either agreed or strongly agreed on the perceived importance of ITG for EHEIs, there were little number of respondents who doesn't agree on the perceived importance of ITG for EHEIs.

The perceived importance of ITG for the Ethiopian educational institutions which was rated 4.3 was less than the perceived importance of ITG for the Agricultural Business corporation which was rated 4.4 with research conducted by Yohannes[11]. The two researches which were conducted in two different time and different organizations shows that ITG in very important for organizations to have a better return on investment from IT. This comparison is depending on the survey results conducted by researchers in these two different organizations in different time.

The perceived importance of ITG for Ethiopian higher educational institutions was rated 4.3, while the perceived importance of ITG for Ethiopian financial sectors was rated 4.2 in the research conducted by Tagel[10]. The comparison between the perceived importance of ITG for EHEIs and the perceived importance of ITG for financial institutions of Ethiopia clearly shows, the respondents of the research conducted on the perceived importance of ITG for EHEIs gives a better rating than the respondents of the research conducted on the perceived importance of ITG for financial institutions of Ethiopia. Two of the researches shows that ITG is very important for organizations.

8. Conclusions

The survey result shows that ITG is very important for EHEIs, most of (93%) the respondents of this study agreed on the perceived importance of ITG for EHEIs. The IT

function in the universities (with different names such as IT Directorate, Office and Department) is located under the vice president of the university in the organizational structure of universities. It organizes the role and responsibilities of IT for the universities with clear goal. Even though all of the IT directorates shared responsibility. The IT functions are reporting to the business and development vice president of the university.

The ministry of education has prepared directive to guide a better use of IT in the Ethiopian universities. The IT directorates in the universities uses the directive of ministry of education to measure the successfulness of IT projects. There are some committees like steering committee, but this committees are not clearly steering committee. This committees used to handle some particular IT projects and this committees will dissolve with the completion of the project.

In some of the universities, there is a horizontal information sharing undertaken by the IT executive and other business departments about the strategic and tactical IT project implementations. This horizontal communication encourages the understanding of tactical and strategical IT projects by the business units of the university.

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