



## **FACTORS AFFECTING EFFECTIVE IMPLEMENTATION OF INTEGRATED FINANCIAL MANAGEMENT INFORMATION SYSTEM (IFMIS) IN THE MINISTRY OF FINANCE, ETHIOPIA**

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### **Abstract**

*Public financial management plays pivotal role in improving financial control systems. Integrated Financial Management Information System (IFMIS) is an information system to track financial event and summarize the financial information. It is an integrated public financial management system being implemented by Federal Government of Ethiopia (FGE) to improve the public expenditure management processes, enhance greater accountability and transparency across Federal Ministries, Agencies, Regions, City Administrations, Zones and Woredas. The general objective of the study is to identify factors affecting effective implementation of IFMIS in the Ministry of Finance (MoF). The specific objectives of this study are to examine the information communication technology infrastructure, management commitment, system administration support and end-user commitment, as well as to determine ongoing support activities and human capital development that affects effective implementation of IFMIS. The study adopts a descriptive research design. A random sampling method was used. Primary and secondary data were collected by means of interview and questionnaires, document review, observation, and it was analyzed by using descriptive statistics SPSS version 25. Management of MoF is committed, uses ICT technological infrastructures required for the implementation of IFMIS, but human capital development issues, adequacy and availability of IFMIS support staff are questionable, computer literacy and awareness are big issues identified. Accordingly, MoF should consider the mechanism to retain IFMIS trained staffs, and to have adequate number of system administration staff. MoF should fix the problems related to infrastructural and network connectivity issue by continuous follow up with stakeholders like Ethiopian Telecommunication, and Ethiopian Electric Corporation.*

**Keywords:** *Integrated Financial Management Information System (IFMIS), Management Commitment, ICT Infrastructure, Human capital development, skills of IFMIS Users.*

### **Introduction**

The Integrated Financial Management Information System (IFMIS) is an integrated public financial management system, designed to make use of modern information and communication technologies. IFMIS is implemented by Federal Government of Ethiopia (FGE) to improve the public expenditure management processes, enhance greater accountability and transparency across Federal Ministries, Agencies, Regions, City Administrations, Zones and Woredas. The IFMIS implemented by FGE is the latest version of Oracle E-Business Suite (EBS) comprising 9 modules including: cash management, payroll, accounts payable, accounts receivable, public sector budget, inventory, fixed asset, procurement and general ledger.

### **Background of the Study**

Ministry of Finance has been implementing different financial management tools in order to maintain consistency and accuracy of financial information. These tools include: Budget Information System (BIS) which is upgraded to BDA (Budget and Disbursement Account) whereby replaced by IBEX



(Integrated Budgetary and Expenditure system) earlier and now IFMIS. IFMIS is an information system to track financial event and summarize the financial information. It is an integrated public financial management system being implemented by Federal Government of Ethiopia (FGE) to improve the public expenditure management processes, enhance greater accountability and transparency across Federal Ministries. It is designed to make use of modern information and communication technologies.

Studies conducted by two international organizations: International Monetary Fund (IMF, 1993) and a World Bank sponsored research, strongly recommended computerizing the entire auditing and accounting systems in developing countries. The rationale behind the computerization is to produce a credible financial statement: to check and manage public deficits, to estimate or monitor cash flows to ensure that effective financial control to be achieved (Kinyua, 2003). This research study tried to identify factors affecting the implementation of IFMIS in the Ministry of finance. This study runs on a zero budget and all activities listed in the research schedule are done by the researchers of this paper.

### **Objective of the Study**

Factors affecting effective implementation of integrated Financial Management Information System in the Ministry of finance in general and successes of IFMIS, management commitment, ICT infrastructure, on-going support, end user commitment and system administration support.

### **Scope of the Study**

The scope of this study is limited to the implementation of integrated financial management information system in the Ministry of Finance. This study focuses on the users of IFMIS in each department/directorate of MOF.

### **Significance of the Study**

The study aimed at finding out factors affecting effective implementation of IFMIS, so the finding of this study will help the MoF to formulate appropriate strategy to overcome the identified problems. The MoF is the main beneficiary from the study, the responsible government organization of IFMIS implementation, on how they can form a foundation for enhancing effective implementation of IFMIS throughout the country. It is hoped that the findings of the study would make valuable additions to the existing literature and stimulate further interest in similar area of the study.

### **Literature Review**

Let us see about a few African countries experience. Currently, most of the African countries implementing IFMIS like Tanzania, Uganda, Kenya, South Africa and Malawi are some of countries that adopted and implemented IFMIS system.. As of 2005, the World Bank had funded IFMIS projects in 27 countries at a cost of USD 1.1 billion. However, the implementation of IFMIS has proven very demanding, especially for developing countries and according to the Bank's own account, has not always been successful.

According to the 2005 IMF working paper, Uganda chose to implement a comprehensive financial management reform program to improve budget and expenditure processes both at the central and decentralized levels.

According to the 2005 IMF working paper, the IFMIS in Tanzania appears to be the most successfully implemented system in an Anglophone African country. Within the framework of an ambitious public



finance management reform initiated in 1994, Tanzania decided to introduce IFMIS in 10 ministries, departments and agencies in 1998.

As cited by (Emilie Combaz, 2015), in Kenya, an IFMIS piloted in 2002 had stalled by 2005, due to technological deficiencies (Diamond & Khemani, 2005: 19). Pilot implementation had raised a number of issues. The engagement of audit staff was inadequate, resulting in limited quality control assurance. The program management lacked strategic direction, leadership and communication.

Emilie Combaz, 2015, in 1995, the government of Malawi decided to computerize government accounting and finances (Diamond & Khemani, 2005: 18). The IFMIS conceptual framework (including technical specification) was completed in time, and the governance structure of the project (including a steering committee and a management team) was adequately set.

### Research Methodology

The study area for this research is focused on the Ministry of Finance. According to the data from human resource department of MoF, the ministry has more than 1,100 employees working at different positions; among which 130 staffs are involved in a different role in the implementation and use of IFMIS. From those staff's 10 of them are on managerial position and the rest are on technical position. The target population of this study was the MoF directorate that is using IFMIS as a system of record which means Top Management offices, Finance and Procurement directorate, Planning directorate, Property Admin directorate, on-going support, System administration, and IFMIS project office.

In this research simple random sampling technique was used to give all individuals an equal chance of being selected and a total of 98 samples were selected from the different departments in the MoF. Inclusion criteria to select the participants were those who were involved in the implementation of IFMIS at MoF and taking different responsibilities and roles.

The study focuses on assessment of factors affecting the implementation of IFMIS in MoF; hence the sample frame of the targeted population was only the IFMIS users of each directorate which is 130. After the samples of each directorate who use the system have been determined, the researchers planned to use the following sample size determination formula to determine the sample size. The researchers used Taro Yamane (1967) formula to determine the sample size of the population in MoF. It was calculated as follows:

|  |                                   |
|--|-----------------------------------|
| Where:<br>N - population size<br>n - sample size and<br>e- level of precision or sampling error = (0.05) | $n = \frac{N}{1 + N(e)^2}$        |
|  | $n = \frac{130}{1 + 130(0.05)^2}$ |
|  | $n = 98$                          |

Hence, the total sample size is 98. Since the number of people in each department is not the same, the number of samples for each department was calculated by the following formula:

|  |                      |
|--|----------------------|
| Where:<br><b>n1</b> is total number of sample in each directorate/<br>department<br><b>n</b> is total number of sample | $n1 = \frac{nN1}{N}$ |
|  | $n1 = \frac{nN1}{N}$ |



|  |                      |
|--|----------------------|
| N1 is total number of population in each directorate/<br>department<br>N is total number of population | $n1 = \frac{nN1}{N}$ |
|--|----------------------|

**Table 1 Respondent distribution**

| No    | Department                | Number of responsibilities | Number of user | Sample size |
|-------|---------------------------|----------------------------|----------------|-------------|
| 1     | Top management user       | 10                         | 10             | 8           |
| 2     | System administrator user | 23                         | 19             | 14          |
| 3     | Financial user            | 30                         | 26             | 20          |
| 4     | Property administration   | 8                          | 11             | 8           |
| 5     | Human resources           | 6                          | 8              | 6           |
| 6     | Procurement user          | 4                          | 8              | 6           |
| 7     | IBEX/IFMIS project user   | 22                         | 15             | 11          |
| 8     | Budget/planning user      | 24                         | 18             | 14          |
| 9     | On-going support user     | 15                         | 15             | 11          |
| Total |                           | 142                        | 130            | 98          |

Data were obtained from both primary sources and secondary sources. Primary data was collected from employees of the ministry of finance (MoF) using structured questionnaires based on the 5- point Likert Scale because each variable comprises a series of questions that fit with the simple purpose of using a rating scale and it allows respondents to express both the direction and strength of their opinions about the topic. The research evidence was gathered using a simple form with both close-ended and open-ended questionnaires. The data was collected using a five-point Likert Scale with ratings of strongly disagree (1), Disagree (2), Neutral (3), Agree (4), and Strongly Agree (5). The secondary data for this research purpose was obtained from IMF and the government IFMIS project implementation strategies published IFMIS implementation review reports by the World Bank, the IBEX/IFMIS project office reports available for the year 2016-2019 and other IFMIS project-related data.

Because of the risk of the covid-19 pandemic in the country, the researchers designed an electronic questionnaire with Google formats. The Questionnaires have been distributed using emailing system, after securing the consent and email address of the voluntary study participants. The questionnaire has three parts. Part one is aimed to collect personal information, part two was about to determine the factors that affect the implementation of IFMIS offered using a 5 -point Likert Scale, the remaining part three presented one open-ended and close-ended question regarding the topic. The secondary data were collected from organization reports such as the MoF strategic document and IBEX/IFMIS project assessment report and literature review was sourced from libraries, websites, and journals.

To assure the quality of data, it was checked for completeness, coded, and entered in to SPSS Version 25 software using the descriptive statistical methods and results are presented by tables, frequency distributions, and percentages to give a condensed picture of the data. Regression analysis was used to depict the most important factors.

### Data Analysis and Interpretation

To evaluate the raw data collected from the sample program implementers at MoF directorate IFMIS users from IBEX/IFMIS project, Top Management, Financial, Procurement, Property Administration,



System Administrator, and Setup team, the researchers used SPSS 25.0 version and employed Correlation Analysis, Multiple Regression Analysis.

The analysis was conducted based on the responses with supplements of secondary data to interpret and elaborate more to discover the determinants of IFMIS implementations on the MoF. Here only Correlation Analysis, Multiple Regression Analysis, ANOVA and Regression coefficients are applied to make the analysis self explanatory to fulfill the objective of this research paper, as follows:

### Correlation Analysis

According (Marczyk, Dematteo and Festinger, 2005) Correlations are perhaps the most basic and most useful measure of association between two or more variables. This study employs correlation analysis, which investigates the strength of the relationships between the studied variables.

**Table 2: Correlation Analysis**

|                       |                     | Correlations     |                       |                    |               |                  |                     |                      |
|-----------------------|---------------------|------------------|-----------------------|--------------------|---------------|------------------|---------------------|----------------------|
|                       |                     | Success of IFMIS | Management Commitment | ICT infrastructure | Human capital | On-going support | End user Commitment | System Admin Support |
| Success of IFMIS      | Pearson Correlation | 1                | .415**                | .547**             | .207*         | .626**           | .600**              | .337**               |
|                       | Sig. (2-tailed)     |                  | .000                  | .000               | .047          | .000             | .000                | .001                 |
|                       | N                   | 93               | 91                    | 88                 | 93            | 93               | 93                  | 91                   |
| Management Commitment | Pearson Correlation | .415**           | 1                     | .416**             | .372**        | .402**           | .187                | .165                 |
|                       | Sig. (2-tailed)     | .000             |                       | .000               | .000          | .000             | .077                | .122                 |
|                       | N                   | 91               | 91                    | 88                 | 91            | 91               | 91                  | 89                   |
| ICT infrastructure    | Pearson Correlation | .547**           | .416**                | 1                  | .370**        | .537**           | .438**              | .310**               |
|                       | Sig. (2-tailed)     | .000             | .000                  |                    | .000          | .000             | .000                | .004                 |
|                       | N                   | 88               | 88                    | 88                 | 88            | 88               | 88                  | 86                   |
| Human capital         | Pearson Correlation | .207*            | .372**                | .370**             | 1             | .106             | -.192               | -.313**              |
|                       | Sig. (2-tailed)     | .047             | .000                  | .000               |               | .313             | .066                | .003                 |
|                       | N                   | 93               | 91                    | 88                 | 93            | 93               | 93                  | 91                   |
| On-going support      | Pearson Correlation | .626**           | .402**                | .537**             | .106          | 1                | .673**              | .405**               |
|                       | Sig. (2-tailed)     | .000             | .000                  | .000               | .313          |                  | .000                | .000                 |
|                       | N                   | 93               | 91                    | 88                 | 93            | 93               | 93                  | 91                   |
| End user Commitment   | Pearson Correlation | .600**           | .187                  | .438**             | -.192         | .673**           | 1                   | .495**               |
|                       | Sig. (2-tailed)     | .000             | .077                  | .000               | .066          | .000             |                     | .000                 |
|                       | N                   | 93               | 91                    | 88                 | 93            | 93               | 93                  | 91                   |
| System Admin Support  | Pearson Correlation | .337**           | .165                  | .310**             | -.313**       | .405**           | .495**              | 1                    |
|                       | Sig. (2-tailed)     | .001             | .122                  | .004               | .003          | .000             | .000                |                      |
|                       | N                   | 91               | 89                    | 86                 | 91            | 91               | 91                  | 91                   |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Source: Survey Data Analysis (2021), SPSS 25.0



From Table 2 above shows that there were positive relationships between the success implementations of IFMIS System Admin Support, Management Commitment, ICT infrastructure, End user Commitment, On-going support but human capital are a negative correlation with success implementations of IFMIS and Human capital a correlation coefficient of 0.27 and a 95% precision level. The correlation was statistically significant since it had a P- Value < 0.005 at 0.47. End-user commitment and system had correlation coefficient of 0.187 and 0.165 respectively a 95% precision level. The correlation was statistically significant since it had a P < 0.05 at 0.07 and 0.122. In general, there were positive correlations between the success implementations of IFMIS with System Admin Support, Management Commitment, ICT infrastructure, End user Commitment, human capital, On-going support.

### Multiple Regression Analysis

In this study multiple regression analysis was employed to study the effect of System Admin Support, Management Commitment, ICT infrastructure, End user Commitment, human capital, On-going support on Effective implementations of IFMIS. Multiple linear regressions are the most common form of linear regression analysis.

Regression model, basically, specifies the relation of dependent variable (Y) to a function combination of independent variables (X) and unknown parameters ( )

$$y = \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \beta_6x_6$$

The predicted Model

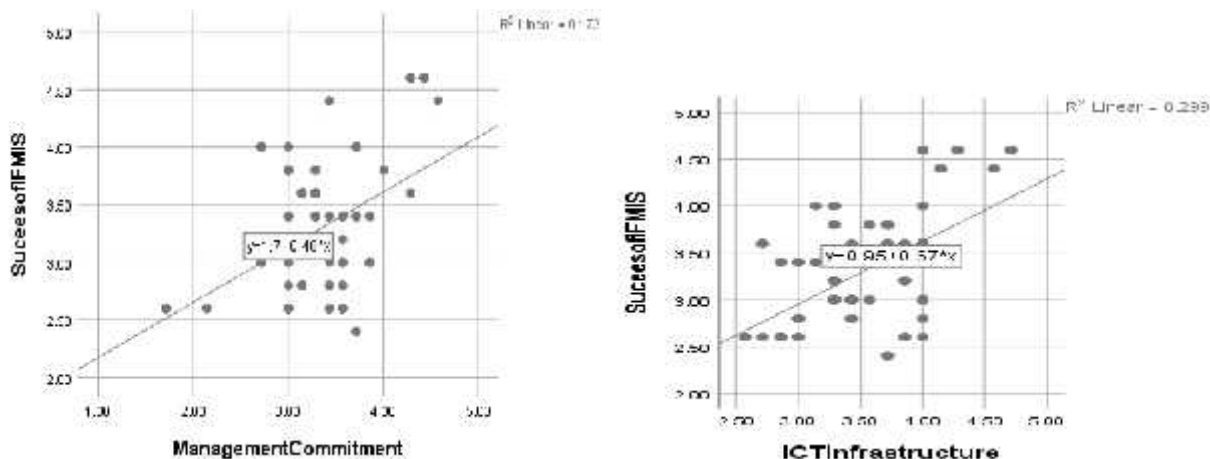
$$\hat{Y} = b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + \epsilon$$

Where:

- Y= Effective implementations of IFMIS, X1= Management Commitment
- X2= ICT infrastructure, X3= Human Capital, X4= On-going support
- X5= End user Commitment, X6= System admin support

### Figure 1: A scatter plot of effective implementation of IFMIS with the Independent Variable

First assumption multiple linear regressions require the relationship between the independent and dependent variables to be linear. The linearity assumption can best be tested with scatter plots.



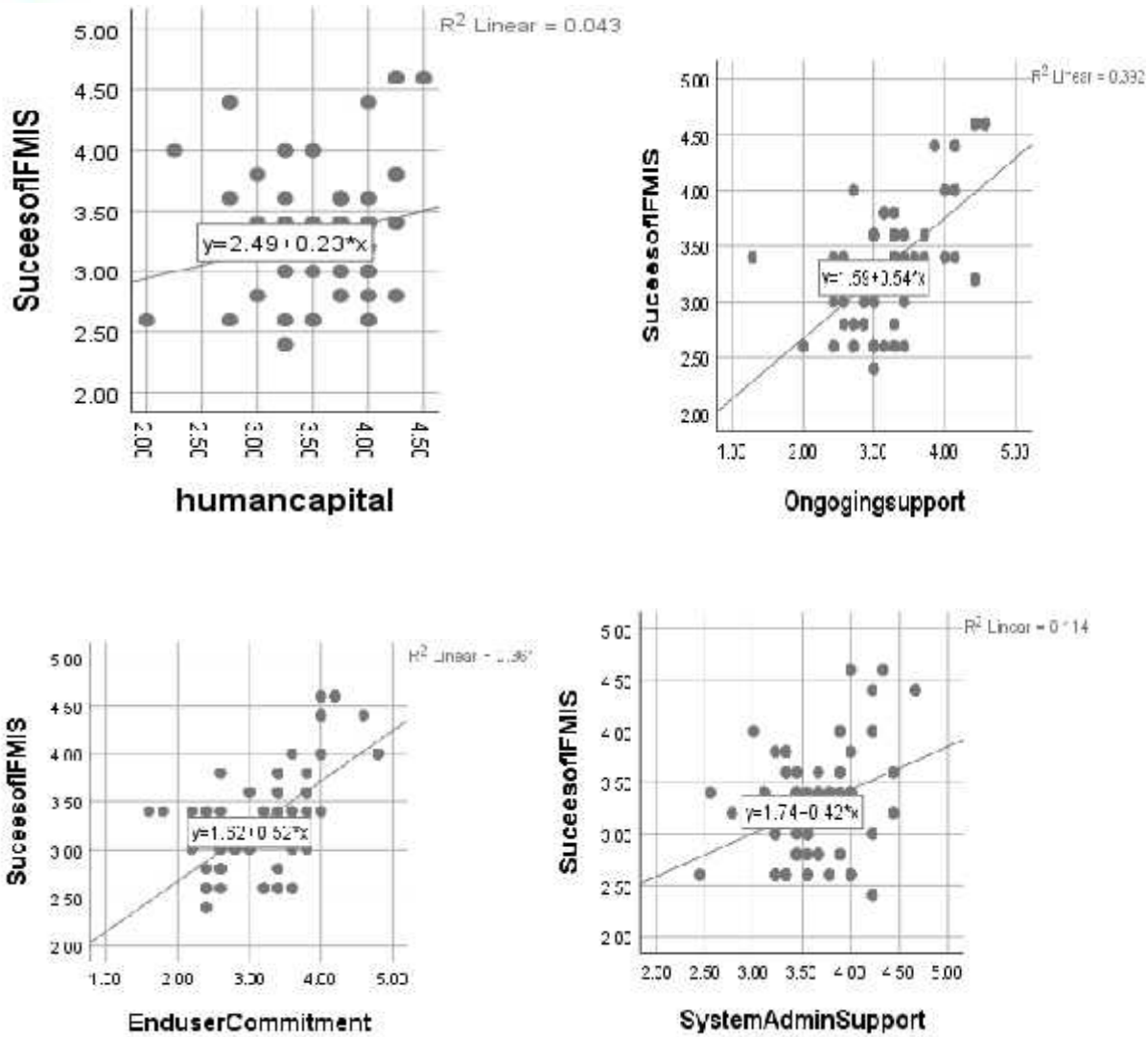
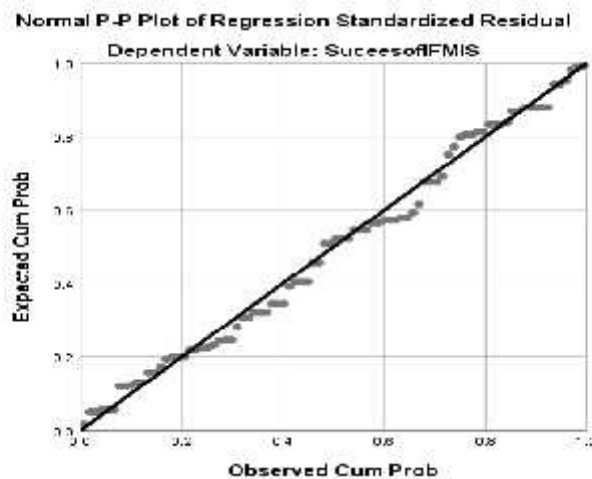
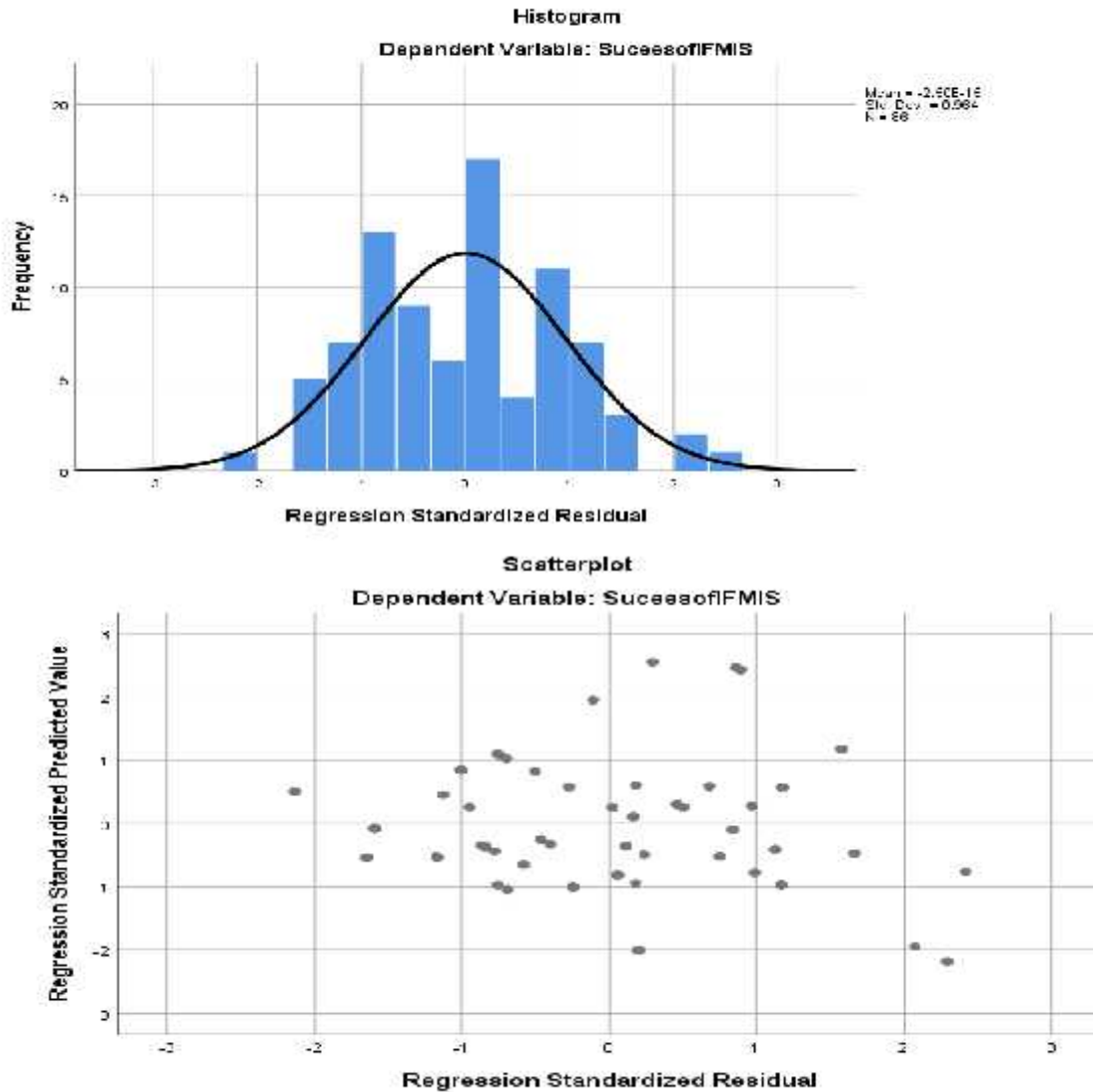


Figure.2: A histogram, P-P plots and Q-Q plots on the residual of regression





### Model Summary

The following table 3, presents the results of multiple regressions analysis. Here the squared multiple correlation coefficients ( $R^2$ ) that tells the level of variance in the dependent variable (Effective implementations of IFMIS) that is explained by the model.

**Table 3: Model Summary**

| Model Summary  |                   |          |                   |                            |  |
|--|-------------------|----------|-------------------|----------------------------|--|
| Model  | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |  |
| 1  | .695 <sup>a</sup> | .483     | .444              | .41488                     |  |
| Source: Survey Data Analysis (2021), SPSS 25   |                   |          |                   |                            |  |
| a. Predictors: (Constant), System Admin Support, Management Commitment, ICT infrastructure, End user Commitment, human capital, On-going support |                   |          |                   |                            |  |
| b. Dependent Variable: Success of IFMIS  |                   |          |                   |                            |  |

The results of multiple regressions, as presented in table 3 above, the adjusted  $R^2$  of 0.444 indicates





44.4% of the variation in Effective implementations of IFMIS can be explained (predicted) by the System Admin Support, Management Commitment, ICT infrastructure, End user Commitment, human capital, On-going support and The remaining 55.6 % of the variation of Effective implementations of IFMIS that can be explained by other variables.

**Table 4 ANOVA**

| ANOVA <sup>a</sup>   |            |                |    |             |        |                   |
|--|------------|----------------|----|-------------|--------|-------------------|
| Model  |            | Sum of Squares | Df | Mean Square | F      | Sig.              |
| 1  | Regression | 12.695         | 6  | 2.116       | 12.292 | .000 <sup>b</sup> |
|  | Residual   | 13.598         | 79 | .172        |        |                   |
|  | Total      | 26.293         | 85 |             |        |                   |
| Source: Survey Data Analysis (2021), SPSS 25   |            |                |    |             |        |                   |
| a. Dependent Variable: Success of IFMIS  |            |                |    |             |        |                   |
| b. Predictors: (Constant), System Admin Support, Management Commitment, ICT infrastructure, End user Commitment, human capital, On-going support |            |                |    |             |        |                   |

From the table 4, above shows that accepting at least one of the System Admin Support, Management Commitment, ICT infrastructure, End user Commitment, human capital, On-going support had a significant influence on the implementations of IFMIS that can be explained by other variable. The F-stat is 12.292 with a p-value of 0.000 less than (<) the implication value of 0.005.

**Coefficients**

Regression coefficients information shows the un-standardized beta coefficients, which tells us the unique contribution of each factor to the model. A high beta value and a small p value (<0.05) indicate the predictor variable has made a significance statistical contribution to the model

**Table 5: Regression Coefficients**

| Coefficients                            |                       |                              |            |                           |       |      |
|---|-----------------------|------------------------------|------------|---------------------------|-------|------|
| Model                                   |                       | Un-standardized Coefficients |            | Standardized Coefficients | T     | Sig. |
|   |                       | B                            | Std. Error | Beta                      |       |      |
| 1                                       | (Constant)            | -.007                        | .642       |                           | -.011 | .000 |
|   | Management Commitment | .145                         | .106       | .130                      | 1.365 | .176 |
|   | ICT infrastructure    | .206                         | .134       | .177                      | 1.546 | .002 |
|   | Human capital         | .130                         | .123       | .125                      | 1.055 | .295 |
|   | On -going support     | .167                         | .101       | .199                      | 1.655 | .042 |
|   | End user Commitment   | .297                         | .104       | .353                      | 2.845 | .004 |
|   | System Admin Support  | .036                         | .138       | .028                      | .257  | .798 |
| a. Dependent Variable: Success of IFMIS |                       |                              |            |                           |       |      |

Source: Survey Data Analysis (2021), SPSS 25

From the above regression model in Table 5, holding all the factors constant implementation of IFMIS in MoF organization would be 0.007. The study found that ICT Infrastructure and On-going support and



End user commitment, have a significant positive influence on Effective implementations of IFMIS at 95% confidence level, since their p-values (0.002 and 0.042 and 0.004 for ICT infrastructure and End user commitment responsiveness) less than the significance level 0.05. All the other variables such as management commitment, human capital, system admin support factor are insignificant and don't affect the success of IFMIS project.

## Conclusions

Based on the findings in the study the following conclusions are drawn:

- Management is actively involved and supportive of the implementation process and assists & encourages employee in IFMIS adoption. In addition to this top Management at all level of the MoF, monitoring the progress in implementation of IFMIS project closely and about easily accessible functional, well established managerial system to deal with challenges encountered during implementation of IFMIS.
- The study noted there are adequate technological infrastructures required for the implementation of IFMIS in terms of software, hardware. However, there is system inconsistency due to telecommunication network and power interruption which affect their day to day tasks. Despite the problems, there is adequate support from technical team when there is system disconnection in the organization.
- A human capital development issue seems not dealt properly. Although, the project provides adequate and regular training on IFMIS, there are no regularly planned practical skills upgrading on IFMIS and there is high turnover and low motivation to retain IFMIS trained staff.
- On-going support activity is the major factor which can determine the sustainability of the IFMIS in which it determines the effectiveness of the implementation of IFMIS system. The result shows that adequacy and availability of IFMIS support staff is questionable. Respondents prefer neutral position about IFMIS support staffs as they aware of to inform users about issues and adequate number of IFMIS support staff to cover all support issues. So, the implementation process is affected by these conditions.
- End user commitment is also the major determinant to make IFMIS system functional. The study found that computer literacy and awareness are issues to make the implementation process successful.
- System administration support is another important factor for successful implementation of IFMIS. The finding shows that there are adequate system administration supports in MoF but there is a system inconsistency support due to little staff number of support. And also IFMIS promote good governance for user and also reduces bureaucracy in financial process that affects their day to day tasks. The finding implies that there is adequate system administration support from technical team when there is system disconnection and technical issues happen in the MoF.

## Recommendations

- It is important to know that management commitment is basic task for every project to deliver successfully so that MoF should consider the mechanism to retain IFMIS trained staffs.



- The above finding shows that the main factors in IFMIS implementation is ICT infrastructural challenge so that MoF should overlook the infrastructural and network connectivity issue by continuous follow-up with stakeholders like Ethiopian telecommunication, and Ethiopian Electric corporation.
- The inadequacy number of system administration staff is the major factor and the project office need to increase the support staffs because of the proportion of support staff with end users will be decreased when there is new user joined the system. The availability of all support staff is also one challenge that the respondents try to describe. Thus, onsite support and central support structure must be redesigned to satisfy the end-users support demand
- The strong political commitment and leadership at the ministerial or directorial level is vital to push IFMIS implementation forward. Top management of the organization must know the benefit of IFMIS and promote the system to their end user in order to find accurate data for their decision making purpose.

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