A study on the Impact of Management Information Systems on Quality of Service provided at OCMT

[1]Karthik Mohandoss, [2]Mahammad Mastan

ABSTRACT--The dependency level of the Higher Education Institutions (HEI's) over the MIS is gradually increasing in the present scenario. This has made us to carry out a research at OCMT (Oman College of Management & Technology) to study the impact of MIS over the quality of service from the perspective of academic and administrative staff members. To establish this study, we developed a survey questionnaire and distributed to the staff of OCMT, Sultanate of Oman via an online survey mechanism. The analysis of survey questionnaire results are submitted to the college for enhancing the quality of the system by considering the indicators and the results.

Keywords--Higher Education Institutions (HEI's), Management Information Systems, Quality of Service (QoS), Information Technology, Computer, OCMT (Oman College of Management & Technology)

I. INTRODUCTION

The topic of IT techniques is one of the core issues that the researchers sought to highlight and study various aspects thereof, in order to enrich the subject and take advantage of the results of studies and research that is being reached in the development of applications in various business organizations [1]. The continuous demand of organizations for MIS, includes universities, has led organizations to pay much attention in the characteristics of good quality software. MIS functions care in the process of collecting, processing, storing and producing relevant information to support the managerial operations in any organizations [2][3].The topic of IT techniques is one of the core issues that the researchers sought to highlight and study various aspects thereof, in order to enrich the subject and take advantage of the results of studies and research that is being reached in the development of applications in various business organizations [1]. The continuous demand of organizations for MIS, includes universities, has led organizations to pay much attention in the characteristics of good quality software. MIS functions care in the process of collecting, processing, storing and producing relevant information to support the managerial operations in any organizations [2][3].

Management information system has changed the physical layout of offices to accommodate local networks and departmental integrated systems. It is also a formalized procedure to provide management at all levels and in all functions with appropriate information from all relevant source to enable them make timely and effective decisions for planning, directing, evaluating, and controlling the activities for which they are responsible. A major task also facing management in almost every field of Endeavour is to plan carefully so that the quantity and quality of information obtained will be adequate to meet its needs [4]. The departments of MIS have always had a service

[1] *Oman College of Management & Technology, Halban, Sultanate of Oman.*

[2] *Oman College of Management & Technology, Halban, Sultanate of Oman.*

role because they assist users in converting data into information. Users frequently seek reports that sort, summarize, and present data in a form that is meaningful for decision making. The conversion of data to information has the typical characteristics of a service. It is often a customized, personal interaction with a user [5].

Quality assurance is an integrated approach covering all the processes in a higher educational institutions which supports improvements in these processes. The success of a quality assurance system dependence on the support of the management [6] MIS also enhance job performance throughout an institution. At the most senior level it provides the data and information to help the board and management to make strategic decisions(top management decisions or long lasting decisions) and at other levels of management MIS provides the means through which the enterprise activities are executed, monitored, controlled and information are distributed to management, supervisors, employees and customers [7].

Oman College of Management & Technology (OCMT) established in 2004 with six majors in Academic Departments; Computer Science(CS), Management Information Systems (MIS), Business Administration(BA), Accounting, Financial & Administrative Sciences and Interior Design(ID) for two level of qualification (Diploma &BA) and the Administrative departments has Deanship, Quality Assurance, Human Resources, Technical Support, Admission & Registration, Library, Financial Affairs, Student Affairs, Marketing & Public Relations, Service & Supply and the Clinic. Its permanent campus was opened officially in 2018 February, with latest technology in term of the hardware, software, security and Internet service. This offer a good opportunity for the staff to implement MIS applications easily and effectively. The college buildings are very stylish and modern with 17 computer LABs, each classroom equipped with PC, Projector, high Internet speed connection.

II.   LITERATURE REVIEW

MIS is an idea of the most recent decade or two. It has been comprehended and depicted in various manners. As per Deoda (2015), it is otherwise called the data frameworks, the data, and choice framework, the PC based data frameworks [8].

As saw by Saad (2000), great data to be pertinent for a reason, adequately precise, complete, and emerging from a solid source, imparted to the perfect individual in time and which is point by point enough for client's cognizance is urgent in staff work execution[9].

Both Arrawatia and Meel, (2012); and Nowduri, (2011) [10] consistently concurred that MIS alludes to a framework that uses data so as to guarantee the proper organization of associations. Basically, all parts of MIS work related to guarantee the proficiency of the whole framework. Along these lines, disappointment in one section results to the all-out disappointment of different parts as they are totally intended to work in a sound way (Davenport, and Short, 1990)[11].

Kumar (2006) and Gabriel (2012), individually united in conclusions that characterizing the executive's data frameworks would initially require parting the subject into three aspects of Management, Information, and Systems separately. In like manner, Kumar (2006), characterized the board as the procedure through which arranging, sorting out, starting, and controlling tasks inside the business is completed. Additionally, the board was

characterized as the procedure that manages strategies and methods of proficiently and adequately utilizing the association's assets to accomplish set outcomes (Ottih, 1995) [12] [13].

As indicated by Dantes and Hasibuan, (2011) MIS is a conventional term for the PC frameworks in an association that gives data to its business forms as it is used to allude to people who deal with these frameworks [14]. Commonly, the expression "MIS" or "MIS office" is utilized by enormous associations to allude to a focal or midway planned arrangement of PC experience and the executives, transcendently including focal PC frameworks, yet in addition including the full system of PC assets of the organization (Gikang, 2016) [15].

Framework quality is additionally a key factor that influences the adequacy of data frameworks and improving hierarchical execution (Al-mamary, Shamsuddin, and Aziati, 2014). Petter et al., (2008) [16] accentuated that the alluring attributes of the framework yields are the place the data is of high caliber and satisfies the client's necessities (Kaiser and Ahlemann, 2010)[17] . Data frameworks are produced to flexibly significant data for dynamic for individuals and gatherings by putting away, keeping up, preparing, and overseeing assets of data (Lee and Yu, 2012). Kroll, (2015) [18] [19] clarified that the connection between the utilization of data frameworks and their effect on hierarchical execution is a positive relationship and a noteworthy improvement in the authoritative execution of the associations.

III.   PURPOSE OF STUDY

OCMT is a very fast-growing college in Sultanate of Oman that is continuously support a reliable technological environment to their Staff. OCMT has adapted the MIS applications in both academic and administrative departments, which leads to the needs of investigating the quality and effectiveness of the factors that can influence the staff experience of MIS through an empirical study. Thus, the main objective of this study is to examine the factors that affect the enhancement of quality in MIS and acceptance by the staff at OCMT. This research intends to survey the OCMT staff' perception about the MIS in the following areas and the summary of the criterion is shown in the table:

a)   Quality of System being used

b)   System utilization

c)   Quality of data and its security

d)   User satisfaction.

Table 1: MIS indicators summary items

Criterion	Items
Quality of System being used	1. Hardware and programming used at the college are up to date.
	2. Hardware at college is periodically maintained by the Technical Support Department (TSD).
	3. Hardware is utilized adequately with the elements of the college.
	4. Hardware utilized at the college help lessen the effort in the correspondence procedure.

System utilization	1.	Senior administration at the college follows up on the technical advancements in market to refresh the equipment utilized at college.
	2.	Software's reasonably needed for the essentials of the college is handy.
	3.	Applied programming help to achieve the work of college.
	4.	Staff of University keep up a progressing procedure of update the software's utilized.
	5.	Staff of the college is aware of using the current software's in the field of communication process.
	6.	Software's are accessible at the college to encourage the procedure of communication process between various departments.
Quality of data and its security	1.	Technical Support Department (TSD) of the college give security in managing data.
	2.	Technical Support Department (TSD) of the college keep up the privacy of data given to the senior position.
	3.	The college utilizes refined programming to keep up data security.
	4.	Technical Support Department (TSD) of the college gives a non-access feature for software's applicable only to authorized employees.
	5.	Software utilized at the college guarantee the capacity to anti-theft of information.
User Satisfaction	1.	Users can undoubtedly gain proficiency with the work innovative gadgets utilized in the college to achieve different capacities.
	2.	Hardware and programming utilized at the college help employees to tackle work issues.
	3.	Hardware and programming utilized at the college can essentially achieve different capacities.
	4.	The staff members can access the software's with ease.
	5.	Gadgets reachable at the Technical Support Department (TSD) of the college can be easily operated by non-experts also.

IV. METHODOLOGY

MIS is a set of interconnected components that collect, retrieve, store, process and distribute information to support decision making [20]. MIS is one of the most significant accomplishments in the area of effectiveness & quality of system, which seeks to supply reliable, exact, relevant and complete information to Management towards increasing the organizational performance. Also, MIS assists the functioning and monitoring of organization [21]. Below figure shows the research framework employed to measure the quality of MIS.
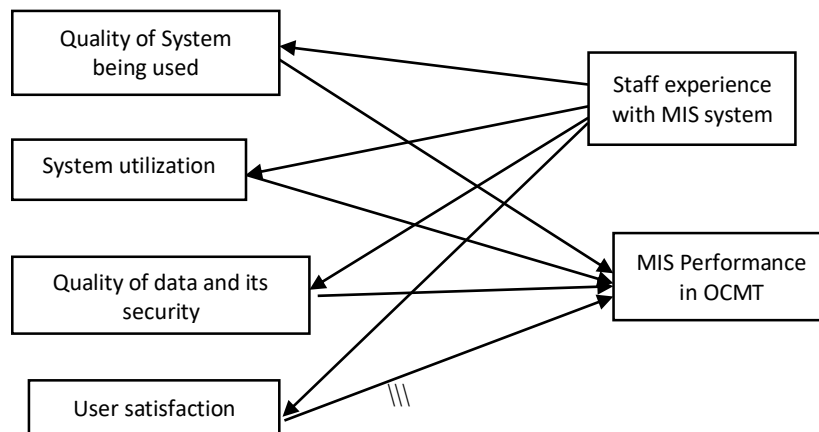
Figure 1: Research framework to measure the quality of the MIS

We used survey research design because this best served to the purpose of the research and developed questionnaire based on previous studies with some minor suggestions. The revised version of the questionnaire was used for data collection. A Likert scale with five points was employed to codify the responses. Rather than the seven point scale, the five point scale enable the respondent to answer with better understanding what option he or she should choose. Three point scale do not have the option neutral whereas the five point scale have. The ranges was from 1 (strongly disagree) to 5 (strongly agree). All respondents were Staff of OCMT as mentioned earlier. Nevertheless, staff "often have convenient access to the Internet and the computer skills required for conducting various online activities [22]. Based on these considerations, we decided to conduct the research with staff of OCMT, who are also current and potential users of MIS at different level using simple random sampling to participate in the online-based survey.

V. DATA ANALYSIS & DISCUSSION

The collected data for this study was analysed via Jamovi version .1.2.6. Three main tests were conducted; Descriptive Statistics, Reliability and Correlation analysis. The Descriptive Statistics used to test the distributions of the variables/items through Frequencies, Percentages, Mean and Standard deviation. In order to determine the internal consistency of the collected data; the Reliability was conducted, then Correlation analysis used to measure the significant relationship between the variables/items which prepared for the instrument tool.

VI. DEMOGRAPHIC VARIABLES

Demographic variable for the respondents were analysed by Descriptive statistics and the Frequencies, Mean and Standard deviation presented as shown in table 1. The majority of the respondents were male (80.9%, n=17) whereas the female (19.1%, n=4), and this is very reasonable because the staff in OCMT 78% of them are male.

Table 2: Gender of the Staff

	Frequency	Percent

Female	4	19.1
Male	17	80.9
Total	21	100.0

Approximately 80.9% of the respondents were Academic department, and whereas 19.0% were from Administrative department.

Table 3: Descriptive Statistics

Descriptives						
	Gender	**Department**	**Quality of System being used**	**Quality of data and its security**	**System utilization**	**User Satisfaction**
N	Female	Academic Department	2	2	2	2
		Administrative Department	1	1	1	1
	Male	Academic Department	14	14	14	14
		Administrative Department	3	3	3	3
Mean	Female	Academic Department	4.88	4.8	4.92	4.8
		Administrative Department	4.5	4.4	2.83	4.73
	Male	Academic Department	4.43	4.43	4.42	4.35
		Administrative Department	3.67	3.27	3.39	3.38
Median	Female	Academic Department	4.88	4.8	4.92	4.8
		Administrative Department	4.5	4.4	2.83	4.73
	Male	Academic Department	4.5	4.8	4.67	4.55
		Administrative Department	4	3.4	4.17	3.57
Standard deviation	Female	Academic Department	0.177	0.283	0.118	0.283
		Administrative Department	NaN	NaN	NaN	NaN
	Male	Academic Department	0.592	0.67	0.63	0.719
		Administrative Department	1.28	1.01	1.35	1.26
Variance	Female	Academic Department	0.0313	0.08	0.0139	0.08
		Administrative Department	NaN	NaN	NaN	NaN
	Male	Academic Department	0.35	0.448	0.396	0.517

		Administrative Department	1.65	1.01	1.81	1.59
Skewness	Female	Academic Department	NaN	NaN	Inf	-Inf
		Administrative Department	NaN	NaN	NaN	NaN
	Male	Academic Department	-0.982	-0.633	-0.714	-0.385
		Administrative Department	-1.09	-0.586	-1.73	-0.659

VII. RELIABILITY AND VALIDITY

Reliability and validity been measured by Cronbach's Alpha, it showed is (α=0.963) for the 12 items/questions, this shows that our research questionnaire is reliable with high internal consistency as the threshold is above 0.5.

Table 4: Scale Reliability Statistics

Scale Reliability Statistics			
	mean	**sd**	**Cronbach's α**
scale	4.29	0.765	0.963

We can see also, if we delete the question" Quality of system being used", then the Cronbach's Alpha will become (α=0.957). However, the deletion should not be considered if the current Cronbach's Alpha is accepted, and no much change would be gained from the deletion. Item reliability statistics and correlation heat map shown below.

Table 5: Item Reliability Statistics

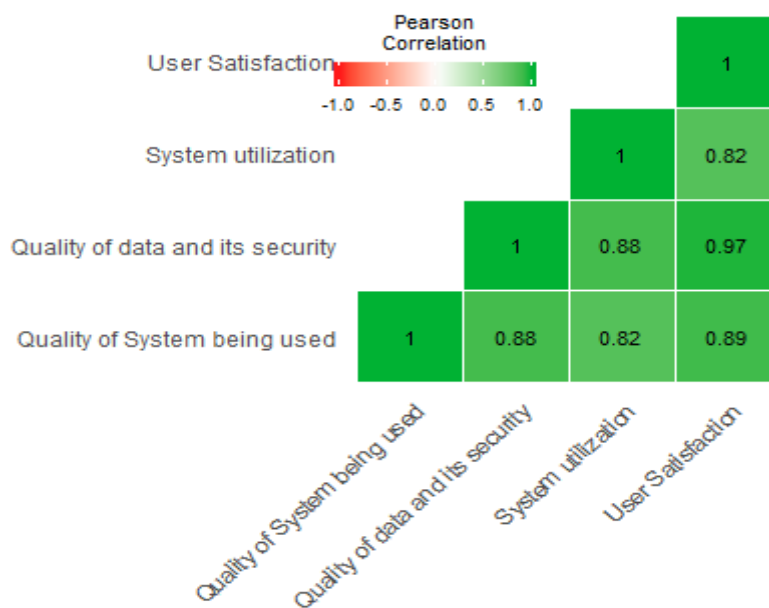| Item Reliability Statistics			
	mean	**sd**	**If item dropped Cronbach's α**
Quality of System being used	4.36	0.723	0.957
Quality of data and its security	4.29	0.791	0.937
System utilization	4.23	0.868	0.968
User Satisfaction	4.26	0.834	0.944

Figure 2: Correlation Heatmap

VIII.   RESPONDENTS' RESULT

The following section will show the result of the all questions based on the respondents' answers for each question. The questions were categorised in four categories.

1. Quality of System being used
2. System utilization
3. Quality of data and its security
4. User satisfaction.

Table 6: Correlation Matrix

Correlation Matrix								
		Quality of System being used		**System utilization**		**Quality of data and its security**	**User Satisfaction**	
Quality of System being used	Pearson's r	—						
	p-value	—						
	95% CI Upper	—						
	95% CI Lower	—						
System utilization	Pearson's r	0.816	***	—				

	p-value	< .001		—						
	95% CI Upper	1		—						
	95% CI Lower	0.633		—						
Quality of data and its security	Pearson's r	0.879	***	0.876	***	—				
	p-value	< .001		< .001		—				
	95% CI Upper	1		1		—				
	95% CI Lower	0.75		0.743		—				
User Satisfaction	Pearson's r	0.889	***	0.816	***	0.968	***	—		
	p-value	< .001		< .001		< .001		—		
	95% CI Upper	1		1		1		—		
	95% CI Lower	0.769		0.633		0.929		—		

Note. H_a is positive correlation

Note. * p < .05, ** p < .01, *** p < .001, one-tailed

1. *Quality of System being used:*

This first group of items measured to how extent the staff feel quality of system being used. The following par-charts shows the respondents' perceptions.


Quality of System being used
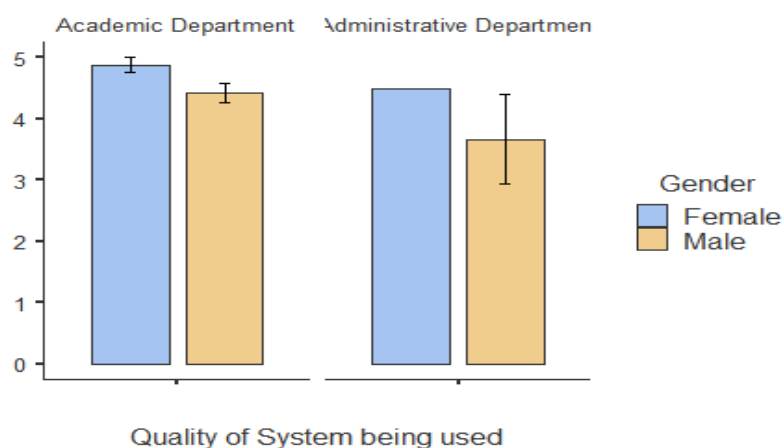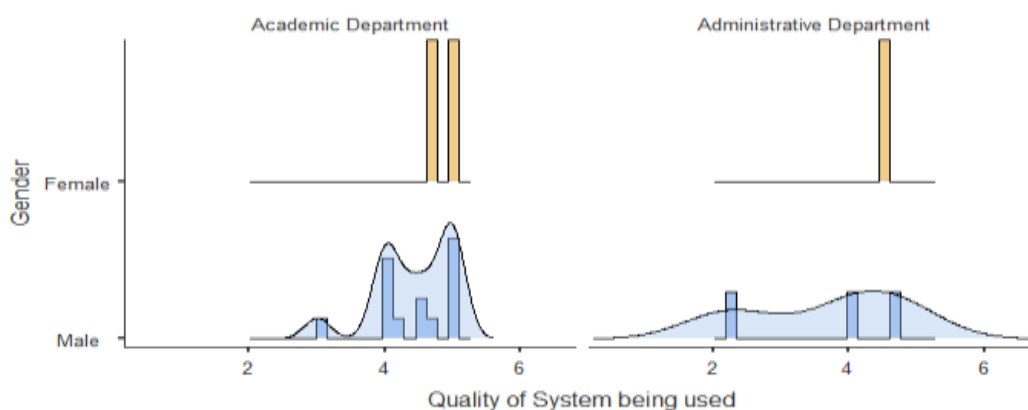
Most of the respondents were "Strongly agree" with the all questions and "Agree" for the questions. This is an interesting output, which could explain the perception of both academic & administrative Staff views. Apparently, most of the Staff were familiar with MIS applications and its services, therefore they did not find challenges when MIS applications.

2. *System* utilization

The system being utilized at the college is being evaluated by the statements hereunder, Hardware is utilized adequately with the elements of the college, Hardware utilized at the college help lessen the effort in the correspondence procedure, Senior administration at the college follows up on the technical advancements in market to refresh the equipment utilized at college. The following par-charts shows the respondents' perceptions.
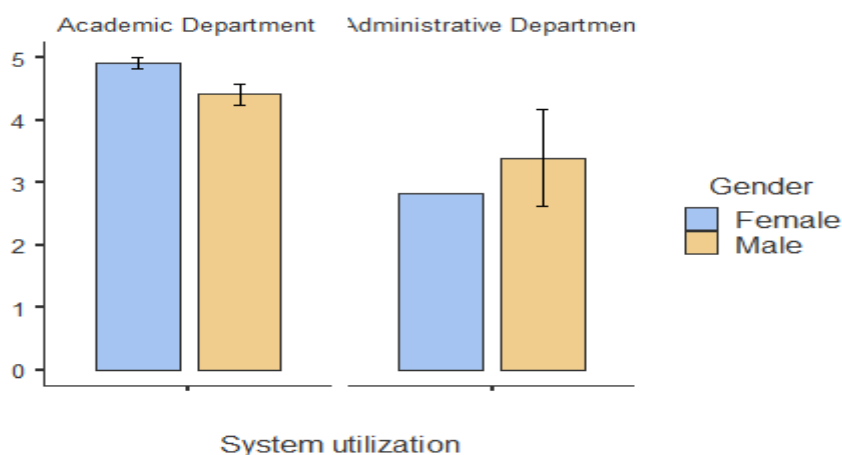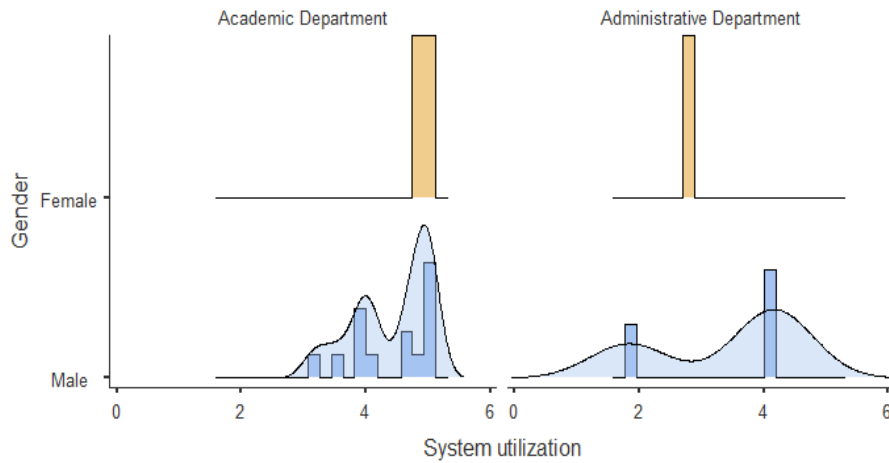
The results are very well evident about the staff members satisfaction is above average in the utilization of system. Yet there is a negligible amount of respondents who feel that the hardware utilized at the college is not helping them in lessoning the efforts of the correspondence procedures, which has to be analyzed upon to be sorted out.

3. *Quality of data and its security*

The college utilizes refined programming to keep up data security. Technical Support Department (TSD) of the college give security in managing data are analyzed under this section and the following are the outcomes of the survey.
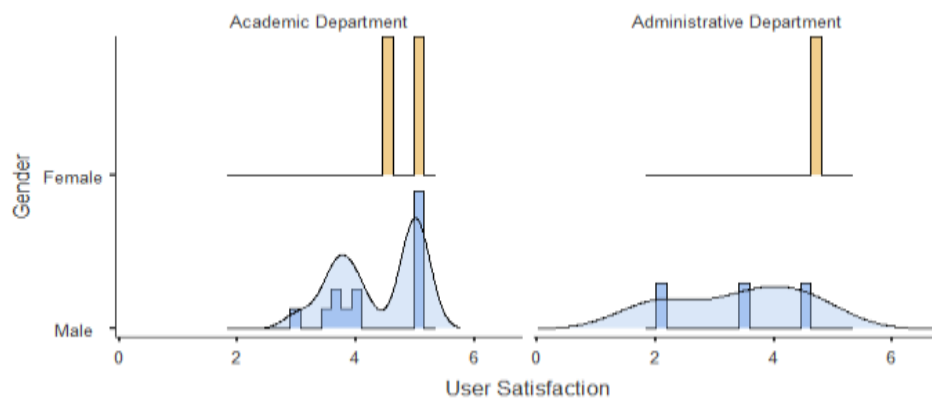

Most of the respondents are happy with the data security and they have either "Strongly agreed" or "Agreed" for all the questions. This outcome depicts the level of security provided by the college for its employees. However 6.7 % of the respondents strongly disagree. Though the percentage is very less to be ignored, the reason for the people to disagree has to be reviewed and sorted out by the management.
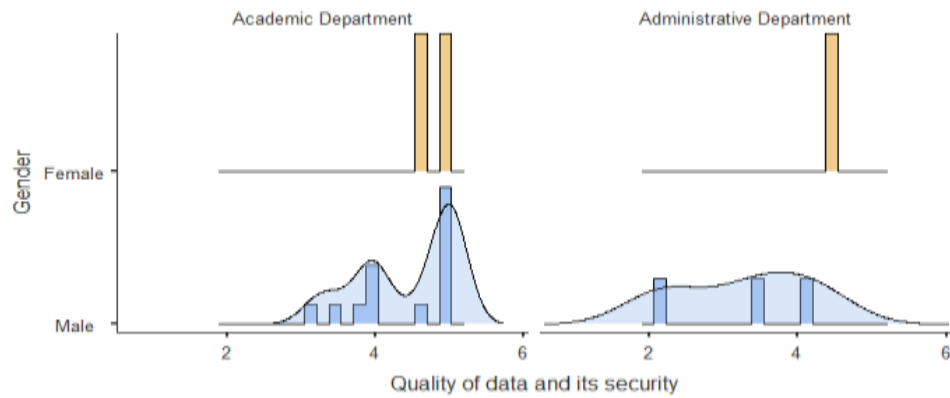
4. *User satisfaction*

The whole analysis in general shows a higher degree of satisfaction. The below par-charts shows the respondents' perceptions clearly.

Most of the respondents are highly satisfied with the MIS being in practice. However there are meager amount of respondents who are also highly dissatisfied.

IX.   CONCLUSION

The consequences of numerous specialists have shown a positive connection between qualities of system used, system utilization, data quality and security and the user satisfaction. The discoveries of this examination obviously show that MIS has improved educating and learning and it has additionally upgraded or adjust the learning procedure. The need to stay up with innovative advancements in the field of data frameworks quality and to guarantee the utilization of present-day hardware, and propelled programming because of their positive sway in improving the nature of administration, preparing of faculty in the educational field. The college shall also provide them with the certified and prepared capabilities they have to build the productivity and viability of these frameworks so as to stay aware of the fast mechanical improvements in this field. There are certain area where any institution must keep an eye round the clock, such as the data security, privacy in communication process etc.

REFERENCES

1. H. S. Ensour and T. M. Alinizi, "The Impact of Management Information systems(MIS) Technologies on the quality of Services provided at the university of TABUK," Int. J. Netw. Secur. Its Appl., vol. 6, no. 2, pp. 1–20, 2014, doi: 10.5121/ijnsa.2014.6201.

2. A. Samer and M. Rawan, "Evaluating the Role of Management Information System Characteristics in Managerial Decision-Making: A Study of Mutah University," Int. J. Acad. Res. Bus. Soc. Sci., vol. 8, no. 5, pp. 183–194, 2018, doi: 10.6007/ijarbss/v8-i5/4094.

3. K. C. Laudon and J. P. Laudon, Management Information Systems Managing The digital Firm Thirteen Edition Global Edition (SIB). 2014.

4. T. Dinesh and V. R. Ragel, "The Impact of Management Information System on Employee Performance," vol. 01, no. 04, pp. 1–13, 2015.

5. L. F. Pitt, R. T. Watson, and C. B. Kavan, "Service Quality : A Measure of," vol. 19, no. 2, pp. 173–187, 2016.

6. T. C. Kahveci, Ö. Uygun, U. Yurtsever, and S. İlyas, "Quality Assurance in Higher Education Institutions Using Strategic Information Systems," Procedia - Soc. Behav. Sci., vol. 55, pp. 161–167, 2012, doi: 10.1016/j.sbspro.2012.09.490.

7. M. Babaei, B. Branch, and J. Beikzad Banab branch, "Management information system, challenges and solutions," Eur. Online J. Nat. Soc. Sci., vol. 2, no. 3, pp. 374–381, 2013.

8. S. Nowduri, "Management information systems and business decision making: review, analysis, and recommendations," J. Manag. Mark. Res., pp. 1–8, 2011.

9. Y. Abdulkareem, a T. Alabi, C. O. Fashiku, and O. P. Akinnubi, "Management Information System and Senior Staff Job Performance in Polytechnics , Kwara State , Nigeria," vol. 3, no. 5, pp. 60–66, 2012.

10. P. Meel, "Application of Management Information Systems for Business Decision Making : Review , Study and Suggestions," vol. 8491, no. 2006, pp. 18–21, 2012.

11. T. Davenport and J. Sbort, "The New Industrial Engineering: Information Technology And Business Process R ...," Management, vol. 31, no. 4, pp. 11–27, 1990.

12. S. Nowduri and S. A.-D. DBA, "Management Information Systems and Its Support to Sustainable Small and Medium Enterprises," Int. J. Bus. Manag., vol. 7, no. 19, pp. 125–131, 2012, doi:

10.5539/ijbm.v7n19p125.

13. B. C. Onuoha, D. Student, R. State, and R. State, "Information System Management and Organizational Effectiveness of Banks in Rivers State," vol. 4, no. 7, pp. 1–20, 2018.

14. G. Dantes and Z. Hasibuan, "The Impact of Enterprise Resource Planning (ERP) System Implementation on Organization: Case Study ERP Implementation in Indonesia," IBIMA Bus. Rev. J., no. July 2010, pp. 1–10, 2010, doi: 10.5171/2011.210664.

15. S. G. Gikang, "Role of Management Information Systems on Strategic Decision Making among Tea Factories in Kenya," Jomo Kenyatta Univ. Agric. Technol., vol. 7, no. 2, pp. 415–432, 2016.

16. Y. Hasan Al-Mamary, A. Shamsuddin, and N. Aziati, "The Relationship between System Quality, Information Quality, and Organizational Performance," Int. J. Knowl. Res. Manag. E-Commerce, vol. 4, no. 3, 2014.

17. "Kaiser, M.G. and Ahlemann, F. (2010) Measuring Project Management Information Systems Success—Towards a Conceptual Model and Survey Instrument. Proceedings of the 18th European Conference on Information Systems, Pretoria, 1 January 2010, 1-12. - References - Scientific Research Publishing." [Online]. Available: https://www.scirp.org/(S(lz5mqp453edsnp55rrgjct55))/reference/ReferencesPapers.aspx?ReferenceID=1530253. [Accessed: 11-May-2020].

18. S. K. Lee and J. H. Yu, "Success model of project management information system in construction," Autom. Constr., vol. 25, pp. 82–93, Aug. 2012, doi: 10.1016/j.autcon.2012.04.015.

19. A. Kroll, "Exploring the link between performance information use and organizational performance: A contingency approach," Public Perform. Manag. Rev., vol. 39, no. 1, pp. 7–32, Jan. 2016, doi: 10.1080/15309576.2016.1071159.

20. S. Mehrotra, D. Indrakumar, and V. Saxena, Management Information System (MIS) of Indian Government's Flagship Programmes: Are they an adequate monitoring tool?, no. 5. 2012.

21. Y. Hasan Al-Mamary, A. Shamsuddin, and N. Aziati, "Factors Affecting Successful Adoption of Management Information Systems in Organizations towards Enhancing Organizational Performance ," Am. J. Syst. Softw., vol. 2, no. 5, pp. 121–126, 2014, doi: 10.12691/ajss-2-5-2.

22. \D. Andrews, B. Nonnecke, and J. Preece, "Conducting Research on the Internet : Online Survey Design , Development and Implementation Guidelines," Int. J. Hum. Comput. Interact., vol. 16, no. 2, pp. 185–210, 2003, doi: 10.1207/s15327590ijhc1602_04.