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ICT Integration, Medical Activities and Methods of Storage of Medical Information in Tracking Administration of Malaria Drugs in Uganda

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ABSTRACT: The aim of this study was to examine how ICT integration, medical activities and methods of storage of medical information can influence tracking administration of malaria drugs in health units in Uganda. The specific objectives were to investigate how ICT integration, medical activities and methods of storage of medical information affect tracking administration of malaria drugs in Uganda. A descriptive and co-relational research design engaged survey on 465 health units of Masaka, Rakai, Kalungu and Kampala districts. Descriptive statistics was used during data analysis. Findings: drugs allocation and schedules of the national Medical Stores (NMS) are accessed through electronic ways by the health workers and health units, drugs and medicines labelled by government are satisfactorily prominent in both public and private health units thus drugs meant for government hospitals leak to some private health units, labelling reduces drug misrouting, thefts and drugs administration errors. Some health workers were not sure whether they would differentiate between counterfeit malaria drugs regimens and genuine brands and whether malaria drugs are being categorized basing on the prophylaxis (prevention and control) and therapeutic approaches (ways of providing treatment of disease) before dedicated for administration to patients is more in private health units than public ones. Public health units administer second agent drugs (Fansidar) in combination with artemisinin combinations than in privates to avoid re-occurrences of malaria (recrudescence) in patients. Malaria drug classification and application is fairly conducted (overall mean = 3.37) within health units. Management of medical records and documents electronically is low in public than private health units. Malaria drugs administration reporting is principally managed by using paper based stock cards (mean = mean = 3.05) and simple computerized databases for storage of information fairly distributed. Paper based file system is the popular method of storage of medical data and more prominent in the public health units than private ones. Conclusions, there exists a significant ($P < 0.05$) positive correlation between integration of ICT and TAMD ($B = 0.202$), and ICT integration influences strongly the TAMD by 39.8% since Beta (β) values was positive at 0.398 and the two variables (R^2) predicting 15.4% of worthiness. Intension and Actual Use of ICT in tracking administration of malaria drugs in health units cause a highly significant (P value = .000) positive correlation on the net benefits of ICT integration ($B = 0.705$), and impacts very strongly TAMD by over 70% ($Beta = 0.715$) hence integration of ICT accounted the TAMD by 71% ($Adjusted R^2 = 0.709$). Recommendations: refresher knowledge programs should be made for all groups of health workers, improvements in computer skills training and other ICT related components to facilitate easy knowledge discovery for health workers. Health units should design a holistic plan for storage and management of data routed daily to enhance decision making and planning.

KEYWORDS: ICT Integration, Medical Activities, Methods of Storage, Medical Information, Health workers, Tracking Administration of Malaria Drugs (TAMD).

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I. INTRODUCTION

II.

Health institutions generate voluminous chunks of data daily concerning administration of drugs which can be converted into sources in terms of operational and managerial decisions for good malaria management to improve medical care service delivery during the roll back of malaria in Uganda. Application of ICT in this cause further reduces the issues associated with challenges of manual systems [5] [15] [16] in tracking administration of malaria drugs as a result of medical activities and methods of storage of medical information in health units within the country. The term medical activities was coined to mean the ways or activities (malaria drugs' records and stock monitoring, drugs administration reporting, drugs selection and allocation, labeling and storage, drugs classification and application and finally methods of drugs storage and retrieval) [1] performed to support ease of drugs tracking and identification in the health units, and thus establishing how the intention and the actual use of ICT can influence them during tracking administration of malaria drugs.

II. METHODOLOGY

Descriptive and co-relational research design were used. A sample of 215 respondents from a total population of 465 of medical doctors, nurses, midwives, laboratory assistant, pharmacists, dispensers and clinicians from Masaka, Rakai, Kalungu and Kampala Districts were considered using clustering, simple random sampling and purposive sampling method. Data was analysed using SPSS 25.0 and the research instrument was reliable at 0.9 and CVI of 0.66. Descriptive statistics and multiple regression were used during data analysis to establish the extent of the relationships and the levels of responses for both health workers and health units.

III. RESULT

The results depict the findings of the objectives which involved examining how ICT Integration based on medical activities and storage and retrieval of medical information and intention and actual use of ICT can influence tracking administration of malaria drugs in health units in Uganda.

IV. MEDICAL ACTIVITIES FOR ICT INTEGRATION

Information system solution model which engages processes of integration focuses on bringing together information, process, services and/ or users of the system [10] that may be described as internal or external in the pursuit of the business logic of the medical organization. Therefore, this section focused on ways or activities for which those who manage drugs perform to support ease of drugs' tracking and identification in the health units and thus establishing how the intention and the actual use of ICT can be engaged during malaria drugs' records and stock monitoring, drugs administration reporting, drugs selection and allocation, labeling and storage, drugs classification and application and finally methods of drugs storage and retrieval as a means of tracking administration of malaria drugs. These different ways generally are contextualized as means and or/ tasks performed by majority of health units and health workers to generate information concerning drugs in the health establishments that can furnish improved medical care service delivery during the overall malaria management process in Uganda.

Malaria drugs' records and stock monitoring

Malaria drugs monitoring refers to the mechanisms employed by the health institutions to keep track of the drugs from the time of procurement, disbursement until it is dispensed to the patient with the intention of acknowledging how much is still in store rooms, supplied and or / expired during storage. As far as monitoring the stocks of malaria drugs is concerned, majority of health workers subscribe to the fact that they don't manage their records and documents electronically (freq. disagree = 111 representing 43.0%, strongly disagree = 47 representing 18.2% of the total response). The minority of 24.4% were agreeable to use of computers to manage their records and documents governing malaria drugs, but this skew more positively on the side of public health units, however, many revealed that

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they lack computers to this cause. This created a situation that 43.8% of the health workers hardly get to know the amount of drugs available or lacking while 22.5% absolutely are unaware of the contents of the stock in these health units. This fairly (mean = 2.42) revealed that 29.6% (disagree) and 6.5% (strongly disagree) the inventory system used is not sufficient to exclusively suggest the amount of drugs in expiry. In the event that computers were lacking in the majority of the health units, the assumption would be that they apply mobile phones to monitor, but more than half of 44.6% (disagree) and 30.8% (strongly disagree) of health workers disoriented this options, even when it came to sharing of data concerning administration of malaria drugs through SMS, 35.3% (disagree) and 32.2% (strongly disagree) were not in its favour of this option. The concept of data sharing concerning administration of malaria drugs using emails faced the same trend where 29.5% disagreed and 41.5 strongly disagreed using such method. This is generalized to the situation of having limited access to computers in the health facilities. Generally, public and private health facilities appeared to suffer the same challenge at the levels of monitoring stock during the administration of malaria drugs. Some of the infrastructures that are currently employed to track medical records in organizations are the health information systems (HIS). These systems are key instruments in the management of medical records of any health establishments such as hospitals and clinics [2] [11] [7] [3] although they are used for a number of tasks, they are effective in processing raw data (inputs) into usable forms of information for decision-making (outputs). However, in the interest to generate records, the fundamental activities are to capture, process, store, retrieve disseminate, output and communicate information for purposes of planning and management of healthcare services. The records therefore could depict patients' information, drugs and medicines in stock within hospitals, information about history of the patient and disease diagnosis. This information is effectively stored in a database and act as a knowledge base with the purpose of providing further knowledge for appropriated decisions. [11] Stresses that the adoption and application of computers is very useful but clarifies that a fully-fledged installation of such information system as a support platform in the hospital is lengthy and costly. [13] highlights further that, every day health facilities churn out enormous volumes of data about patients, such information is recorded in medical information systems referred to as Electronic Health Records (EMR) and Electronic Health Records (EHR). These databases are operated by a set of computers and servers that come handy during medical alerts and emergencies. However, [12] suggests that whereas such systems are interactive, they are designed to provide health professionals with medical alerts and decision making opportunities to influence their choices to improve health care services.

Drug Administration Reporting

This type of reporting involves providing information concerning the details showing movements of drugs and medicines, how they have been used in management of malaria in Uganda [9]. This can be viewed in terms of stating locations where they have been deployed, the amount of drugs received at the health facility, how much was given to patients including excesses or deficiencies and that is expired or not. Results revealed that more than half of the health units use Health Information System (HIS) as the key instruments in carrying out reporting at all levels of health care (24.3% of the health workers strongly agreeable, 32.4% agreed to it). This reflects the health units which claimed to have computer systems which help them to manage their records and documents, however, 24.7% greater than those who agreed had a negative response to this statement. This more likely represented those health units which claimed lacking computers in their health units. The variation in this correspondence rated at 36.8% which virtually appeared to be high indicating that public health facilities were affected more than the private domain. Furthermore, 39.4% of the health units indicated that they send drugs requisitions, budgets and reports to MoH electronically in order to avoid delays and the same time receiving feedback using the same platforms (in agreement was 23.3%) as compared to 25.5% and 32.3% who rejected this options respectively. This was observed to take place in public health units than in their private counterparts. Assessing drugs availability status by checking drug stock outs and excesses electronically, was rejected by majority of the health workers (disagreement rated at 32.3% while strong disagreement appeared at 12.8% whereas those who were certain about it were 23.3% of the total response). Although drugs administration reporting was not electronically favoured, results indicated that neither non electronic reporting system during monitoring of malaria drugs administration details was favourable to the health units and workers (freq. disagree = 102 representing 39.5%, strongly disagree = 26 representing 11.2% while those who were undecided made up 23.6% of the total response). On average therefore, malaria drugs administration reporting was fairly managed (mean = 3.05 and at a variation of 39.1% between public and private health units) using almost paper based stock cards ([9]. In order to

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provide a comparative assessment of this medical activity, we can benchmark some grounds such as these; the [14] suggested that ICT and e-governance applications are essential tools and mechanisms where poor communities in local authorities could hold both policy makers and service providers accountable for sustainable supply of services. Viewed this way, e-governance applications represent a mechanism for delivering services more directly to poor people and to provide feedback to their queries. However the study did not address the concerns of malaria, but gives perspectives and impressions of how equally ICT can influence tracking of the administration of malaria drugs in the management of malaria in the different parts of the country through examining the effectiveness of technology. This approach represents a better means of putting people at the center of medical service, and at the same time, giving them a voice to tailor services towards their real medical needs. Many techniques around the world have been adopted for prediction of the outcome(s) like stress and depression using tailored softwares [4] thus ICT integration in tracking administration of drugs can provide a positive influence on malaria management if handled in the similar ways. According to [6], innovations like Health Management Information Systems (HMIS) are key tools in health facilities for medical reporting. Health units (more especially public ones) are required to compile reports on a monthly basis indicating how credit lines drugs and medicine including funds received and spent for primary health care (PHC) in local governments [1]. On the other hand, use stock cards to track the movements and balance all medicines and determine the extent of (monthly) stock outs. On the other hand, [8] points out that, to be able to take prompt decisions at appropriate times, require a holistic view of how public and private hospitals are mandated for integrated information system deployment across the hospital processes because they have been envisaged not only help the administrators at higher levels to have better monitoring and control of the functioning of hospitals around the country, but also assist the doctors and medical staff improve health services delivery by referencing patient data and work flow. This enables less usage of papers during the patient management cycle and monitoring / tracking administration of drugs. Further, HMIS enables monitoring of health activities and enhances reporting processes possible so that hospital management and MoH administrators are able to take strategic decisions. The existing reporting system is not favourable for providing enough information concerning details of the drugs and medicines used in management of malaria in Uganda [9]. This can be viewed in terms of failure to state the amount of drugs received at the health facility, how much is given to the patients, which one is left, expired, not expired, period and area(s) of endemicity and so on. So this does not empower the health worker/ officers of lower levels do what they want at convenience for improved quality service delivery

Drugs selection and allocation

During the process of drug selection and allocation, results suggest that National Medical Stores (NMS) gets to know well the health units where malaria drugs are required and satisfactorily responds to it (freq. strongly agree = 34 representing 13.1%, agree = 136 representing 52.3% of the total response) in time after requisitions have been made (strongly agree at 15.8% and agree at 52.7%) mostly through distributing the drugs to health units / hospitals and or/ regional collection centers (strongly agree at 25.1%, agree at 51.0%). The electronic access to the drugs allocation and schedules of the NMS through the website by the health workers in the health units and hospitals is the fair reason for quick response to the drugs' needs experienced in the health establishments. This suggests that ICT satisfactorily (mean = 3.45 and CoV = 31.6%) enhances medical communications in as far as drug allocations and distribution to areas where there is need for drugs thus increasing the tracking role of the malaria drug administration.

Labeling and storage

The labeling process of malaria drugs implies that these drugs can be easily identified during storage within the health units / hospitals and at the same time to facilitate quick monitoring by the health official to ensure compliancy and complacence to the policy frame work which governs drugs management in the health sector. The results in this section suggest that majority of the health workers receive drugs and medicines when they already labelled from government (freq. strongly agree = 112 representing 43.6%., agree = 55 representing 21.4% of the total response). This was more evident in the public health units (freq. strongly agree = 83 and private health units to 29 while in the case of agree public health units had 35 and private rated at freq. of 20. The government of Uganda labels her medical drugs and medicines to be distributed to public health units, the findings suggest that drugs meant for government hospitals leak to some private health units whereas in terms of rejecting receipt of labeled malaria drugs from government, private health units took the lead showing that they don't get these drugs (freq. disagree = 30 as compared to 8 of public,

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strongly agree = 20 as compared to 1 for public). However, this practice of receipt of labeled drugs was satisfactorily prominent in both public and private health units (mean = 3.77) and it didn't exhibit a big variation between public and private health units (CoV = 36.0%). In the same way, a good number of the health workers express that they are fairly able (mean = 3.38) to distinguish between counterfeit malaria drugs and those that are genuine (freq. strongly agree = 45 representing 17.8%, agree = 97 representing 38.3%). Nevertheless, 10.0% of the health workers were not sure whether they would differentiate between counterfeit malaria drugs regimens and genuine brands. This puts a very big challenge on the process of rolling back malaria because the effort to fight it is disenchanted by knowledge of the fighting force. This is further revealed by the fact that 31.6% of the health workers disagree with their ability to easily distinguish between counterfeits and genuine drug regimens for malaria. The results indicate that, this is more frequent in private health units (freq. UD = 20, disagree = 37) although such high numbers appeared in public health units/hospitals (freq. disagree = 43, strongly disagree = 4). This therefore suggests that refresher knowledge programs in health units / hospitals target to a few if not specific groups of health workers, therefore improvements in knowledge (computer skills) training and other ICT related components to facilitate easy knowledge discovery in this respect. Further as far as storage of malaria drugs, results suggest that health workers were agreeable to having fair (mean = 3.13) computerized databases for details about malaria drugs (strongly agree = 10.0%, agree = 39.6% highest as of the total response), although 30.6% were opposed to it. The operationalization of computerized database for malaria drugs appeared distributed fairly (mean = 3.13) on both types of health units. This explains the reasons why both public and private health units have electronic records of malaria drugs in and out of stock (freq. strongly agree = 96 representing 36.1%, agree 132 representing 50.8% of the total response). In this case, private health units appeared to be more responsive than the public counterpart. In spite of the fact that, drugs labelled by government have satisfactorily (mean = 3.56) good quality in terms of effectiveness (freq. strongly agree = 44 representing 17.1%, agree = 121 representing 47.1%), health workers observe that labeling of malaria drugs satisfactorily (mean = 3.76) reduces drug misrouting and thefts (freq. strongly agree = 55 representing 21.4%, agree = 134 representing 52.1%) although to some extent these drugs leak into the hands of private health units. This was revealed by all health units as the calculated coefficient of variation was as low as 26.8%. Labeling malaria drugs by government exhibited additional advantages on top of reducing misrouting and thefts, and this includes, reducing drugs administration errors towards malaria patients in the event that health workers unsatisfactorily (mean = 2.25) subscribe to the rationale that they can acknowledge what the drug cures even if it is poorly labeled by the manufacturer (freq. strongly agree = 100 representing 39.5%, disagree = 74 representing 29.2%). In short, labeling and storage as an integration process is fairly represented as a factor that moderates applying the overall controls to the net benefits of ICT integration in the tacking of administration of malaria drugs in health units / hospitals in Uganda

Drugs Classification and Application

Classification of drugs in this case was coined to mean the ways how malaria drugs are categorized into groups based on the prophylaxis (prevention and control) and therapeutic approaches (ways of providing treatment of disease). On assumption that the malaria drugs having reached health units from any source majorly the NMS, are sorted, grouped and shelved for storage waiting redirection with the intention that internal tracking is simplified. Results therefore reveal that, majority of the health workers were satisfactorily (mean = 4.05) agreeable to this practice (freq. strongly agree = 80 representing 31.0%, agree = 126 representing 48.8% of the total response). This appeared to exhibit coherent ratings for both public and private health units, although, 15.1% of health workers were not sure whether malaria drugs are being categorized or not, private health units had more of these as compared to the public counterpart. On the other hand, almost 16.9% in public health units were in disagreement with the opinion that malaria drugs are categorized before being dedicated to consumption by patients. This could implies that the traces of drugs expiry while in health units / hospitals is based on poor internal tracking and drugs management. Further results indicate that majority of the health workers administer parenteral malaria drugs (with greater antimalarial activity) to patients (freq. Strongly agree = 69 representing 26.5%, agree = 115 representing 44.2% of the total response) whereas 16.9% of them express noncompliance to this practice, it is skewed more on the side of public health units (freq. strongly disagree 13 as compared to 3 in private and a tie of 22 for disagree in both types of health units). The interpretation is that both public and private health units are faced with the tasks of handling complicated malaria, thus engagement of parenteral malaria drugs requires a lot of humility and diligence on the side of the health worker in order to avoid death and other

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side effects because of the greater antimalarial activity, otherwise the recurrent resistance of malaria parasites to malaria drugs during and after their administration to the patients has a positive correlation (Pearson's R value = 0.088) with the type of health unit. More than half of the health workers subscribe to the fact that they administer second agent drugs (Fansidar) in combination with artemisinin compounds to avoid re-occurrences of malaria (recrudescence) in patients. This was seen to reflect that 11.2% being in strong agreement and 35.9% being just in agreement to this fact but more agreeable to public health units than private ones in each case. It is further reflected that single agent drugs are fairly (mean = 2.79) safe and effective anti-malarial for children between 5-11 Kg of weight (strongly disagree was 23.3% and disagree was 22.1% to the total response). In short therefore malaria drug classification and application is fairly (overall mean = 3.37) done within health units thus affects tracking administration of malaria drugs

V. METHODS OF STORAGE AND RETRIEVAL OF MEDICAL DATA ON ADMINISTRATION OF MALARIA DRUGS

Storage of medical data about tracking administration of malaria drugs involves selecting suitable media platforms on which it can conveniently be kept either temporarily or permanently until required basing on the prevailing information needs, while retrieval is just conceived to mean mechanisms to regain access of the same data, several methods health units engage in storage of its medical data include paper files housed in cupboards as the most popular approach, use of simple office applications such as spreadsheets and word processors, keep preserved samples of specimens in archives and laboratories which this study did not pin. The results below indicate that a response "No" represent a total number of all the "No" responses of both public and private health units as the frequency (freq.) in each construct item. This format applied to the "Yes" response as well to each and individual construct item. The method of storage which is more prominent in keeping medical data concerning administration of malaria drugs within public and private health units is the paper based file system. The records and documents are housed in paper files which are stored in cupboards (freq. Yes = 198 representing 76.2%). This was identified to be more prominent in the public health units (freq. Yes = 104 of 198) than in private ones. This suggests that retrieval of such data / information in public is more challenging than in private as this kind of storage method faces intricate storage challenges such as data loss, duplication / redundancy, insufficient security and takes a lot of time to retrieve / access the much needed data sets basing on eminent user needs. This was supported by the fact that, health workers rejected the concept of taking little time in retrieving malaria drugs information from the paper files (freq. No = 162 representing 62.8%. Results further suggest that a lot of information cannot be stored in the paper files and in a very small space within a short time as would be the case when using customized database management systems (freq. No = 208 representing 80.0%. Although the health units and health workers expressed such intricacies, results indicated that they make very clear records catalogue, which are easily interpreted by other user (freq. Yes = 188 representing 72.3% of the total response). Furthermore, more than half of the health workers expressed that the confidentiality of information concerning administration of malaria drugs not guaranteed by this system (No = 56.2%), nevertheless a substantial number of health workers appeared satisfied with confidentiality (secrecy in term of security) provided by the paper file storage system (freq. Yes = 113 representing 43.8%), however, 57.7% further complain of the eminent data loss that exist every time records are posted for storage in this kind of environment. Generally, the storage and retrieval of medical information concerning administration of malaria drugs in health units / was found to be beyond very unsatisfactory meaning that it was extraordinarily bad (mean = 0.49). This situation cannot furnish absolute and quick decisions making about malaria related issues because of the very poor design of data and or / information storage.

VI. INTENTION AND ACTUAL USE OF ICT IN TRACKING ADMINISTRATION OF MALARIA DRUGS

The concept intention to use ICT, was conceived to mean the major purpose for the real engagement of this technology, thus in this case, it was intended to guide facilitation of tracking information during administration of malaria drugs whereas the actual use meant the real applications, that is to say, how it is used to achieve the tracking of information during administration of malaria drugs. In order to achieve the above collectively, the parameters as construct items which were operationalized included perceived ease of use, technology effectiveness, and skills exhibited by the users in this case health workers, the need to apply the technology, speed of the technology, sharing data, accuracy. In this

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case of intention and actual use of ICTs, majority of the health workers satisfactorily supported (mean = 3.76) that, ICTs are easy to use while keeping records about malaria drugs (freq. strongly agree = 66 representing 25.9%, agree = 120 representing 47.1% of the total response). Whereas more support of ease of use using ICTs skewed more on the side of the public health units (freq. agree: strongly agree for public and private respectively were 66:54 and 30:36), a relatively similar number from private health units also supported this. This induce induced very small variation in terms of agreement in the concept of ease of use of ICTS (CoV = 29.6%) The perceived ease of use of ICTs, reflected that health workers believe they are also effective (mean = 3.71) during the processing of data about malaria drugs (freq. strongly agree = 67 representing 25.8%, agree = 126 representing 48.5% of the total response). Although ICTs were revealed effective in processing data concerning tracking malaria drugs in health units, the results therein exhibited that majority of the health workers have limited skills (mean = 2.68) to use ICT systems to track malaria drugs in health units / hospitals (freq. disagree to have ICT skills = 107 representing 42.8%, strongly disagree = 39 representing 15.6% of the total response). Lack of skills to use ICTS in health units was discovered to more existent in public health units than in their private counterparts. Results further suggested that health workers were more agreeable to the fact that ICTs are satisfactorily needed (mean = 4.03) to execute tasks that are key in our daily operations (freq. strongly agree = 78 representing 31.3%, agree = 123 representing 49.4%). This simply implies that although health workers have limited skills in use of ICTs in the process of tracking malaria drugs in health units, they look at it as a necessary tool to execute their daily routines and tasks basing on the fact that they exhibit generally increase the speed (mean = 4.07) at which work is done at the stations (freq. = strongly agree = 100 representing 39.1%, agree = 104 representing 40.6% of the total response). Whereas more than half of the health workers accept that they apply ICTs to share data among themselves (freq. strongly agree = 69 representing 26.6%, agree = 79 representing 30.4%), 20.8% disagree with use of this method to share medical data, this appeared to more on the side of public health units than in the private ones. The reasoning to mediate this rationalization comes from the results revealed about skills of use of ICTs in health Unit / hospital which suggested that training and refresher courses in terms of use of ICTs is limited with health units. It is also revealed that however that, ICTs satisfactorily simplifies communication (mean = 3.93) within and outside health units / hospitals = (freq. strongly agree = 71 representing 28.0%, agree = 128 representing 50.4%) and at the same time, more than half of the health workers find satisfactorily cheaper (mean = 3.58) to manage flow of information about malaria using ICTs than using paper or books (freq. strongly agree = 69 representing 27.2%, agree = 91 representing 35.8% of the total response). It is also revealed that health workers retrieve accurate data about malaria drugs every time they use ICTs (strongly agree = 64 representing 24.9%, agree = 116 representing 45.1% of the total response). On average therefore, intention to use and actual use of ICT in tracking process for the administration of malaria drugs in health units / hospitals was ranked satisfactory. This implies that much can be achieved with more improvement in engagement of such a technology.

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The fig.1 below represents the conceptual model for ICT integration in tracking administration of malaria drugs in Uganda, where the conceptual part of ICT integration indicates the medical activities mentioned in the integration process that would invoke the intension and actual use of ICTs intended for a benefits in the process of tracking administration of malaria drugs in order to improve health care service delivery in health units.

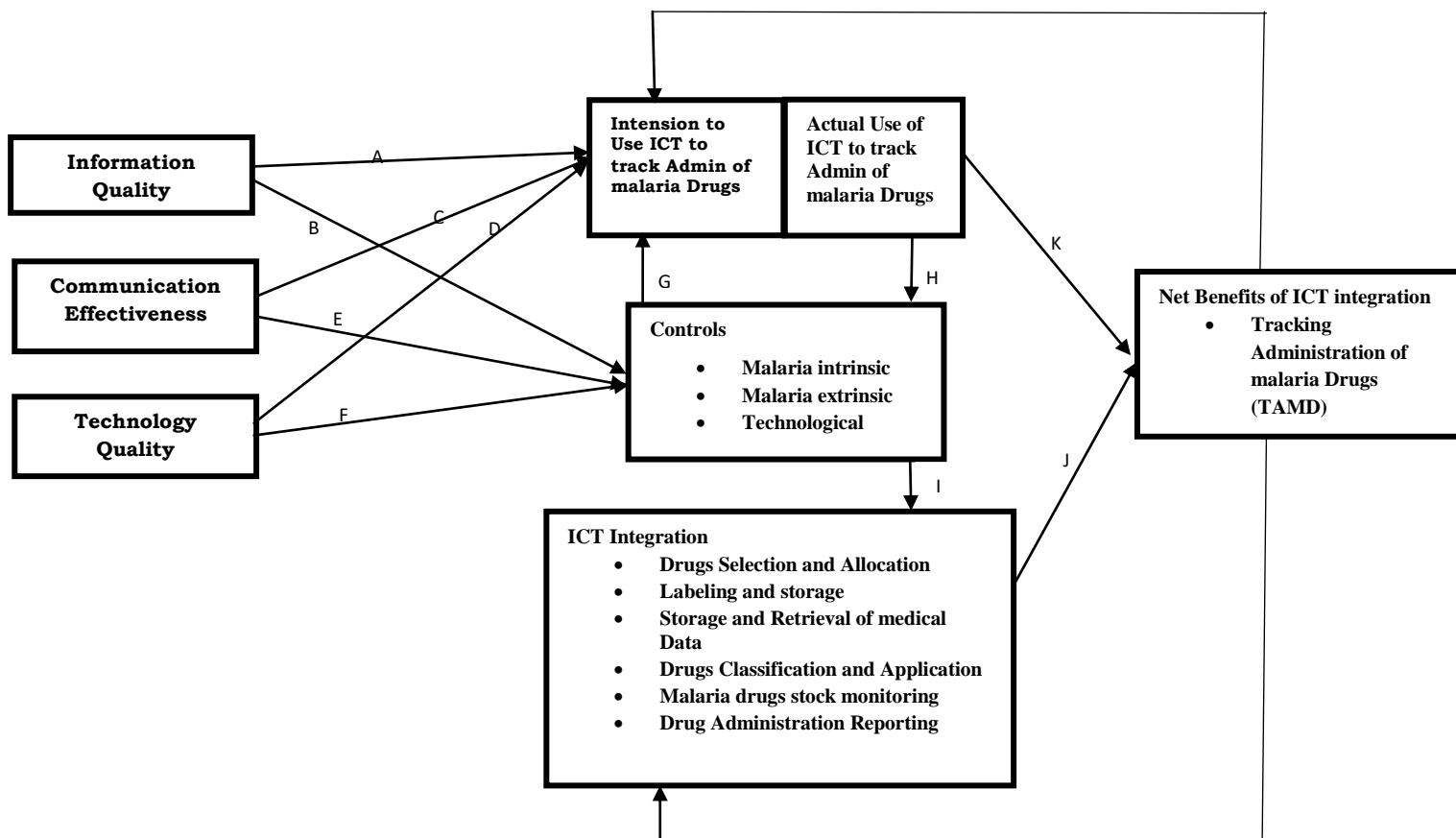


Fig. 1 Source: TAMD Model (2019)

The tables represented below generally verify the output of the regression analysis performed during the process of identifying the degree and or/ the extents of correlation between ICT Integration, Intension and Actual Use of ICT and Net benefits of tracking administration of malaria drugs.

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Table 1: Correlation between Intention and Actual Use of ICTs, Tracking administration of malaria drugs, ICT Integration and Net benefits

Correlations			
Variables	Intension and Actual Use of ICT (IUAU)	ICT Integration for TAMD	Net Benefit of ICT TAMD
Intension and Actual Use of ICT	1.000		
Tracking Administration of malaria drugs basing on ICT Integration	0.363**	1.000	
Net Benefit of ICT Integration	0.750**	0.501**	1.000

** . Correlation is significant at the 0.01 level (2-tailed). TAMD → Tracking Administration of Malaria Drugs

The alphabetic letters below in table.1 represent the meaning of the hypothetical relationships between constructs of the conceptual frame work above in fig.1. The numeric value in the brackets indicate the correlation /relationship while the asterisk (*) indicates the value of significance at which the correlation which takes place such as either at 0.05 or at 0.01

The table below represents values of the coefficients of relationships tested for ICT integration and Intension and actual use of ICT and their influence to the net benefit of integration

J: An increase in tracking administration of malaria drugs using of ICT cause a high significant positive increase in the net benefits of ICT integration (TAMD) (0.501**, p = 0.000) in tracking administration of malaria drugs.

K: Increase in intension to use and actual use of ICT cause an appreciably higher positive increase in the net benefits of ICT integration (TAMD) (0.750**, P = 0.00) in tracking administration of malaria drugs.

Table. 2: Coefficients of relationships between ICT Integration, Intension and Actual Use of ICT and Net benefits of TAMD

Relationship	Variables		B	SE	Beta (β)	Adjusted R ²
J	ICT Integration	Net Benefits of Integration (TAMD)	0.202	0.032	0.398	0.398
K	Intension and Actual Use of ICTs		0.705	0.047	0.715	0.709

Key:

B: Unstandardized (B) coefficients of the correlation of the Unstandardized variables for defining the degree and direction of the correlation

β: Standardized coefficient of the correlation of the standardized variables that estimates the strength of the predictor variable on the predicted one.

SE: Standard error measure of the distance between the regression line and the points that make it.

R: The measure as a magnitude of variation of correlation between observed variables and predicted ones

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Table 3: Multiple regression of the ICT Integration in tracking administration of malaria drugs on the Net

Model	Unstandardized		Standardized coefficient	t	Pvalue / Sig	Decision on Hypothetical relationship	Direction
Constructs	B	SE	Beta (β)				
Constants	11.910	2.654		4.488	0.000		
ICT Integration	0.202	0.032	0.398	6.233	0.000	Significant	Positive
Dependent Variable: Net benefits of ICT Integration							
R	0.398						
R Square	0.158						
Adjusted R ²	0.154						
F	38.856						
Sig	0.000						

benefits

Results revealed that there exists a significant (Pvalue = 0.000) positive correlation between integration of ICT and net benefits (B = 0.202). It further suggested that the integration influences strongly the net benefits by 39.8% basing on the fact that Beta (β) values was positively rated at 0.398, this represents further the same value for which the ICT integration in tracking administration of malaria drugs accounted for in the model development. The generated variance between the two variables (R²) is 0.154 thus predicting 15.4% of worthiness.

Table 4: Multiple regression of Intension and Actual Use of ICT on the Net benefits

Model	Unstandardized		Standardized coefficient	t	Pvalue / Sig	Decision on Hypothetical relationship	Direction
Constructs	B	SE	Beta (β)				
Constants	4.441	1.567		3.834	0.005		
Intension and Actual Use	0.705	0.047	0.715	15.105	0.000	Significant	Positive
Dependent Variable: Net benefits of ICT Integration							
R	0.715						
R Square	0.511						
Adjusted R ²	0.709						
F	228.167						
Sig	0.000						

Intension and Actual Use of ICT in tracking administration of malaria drugs in health units cause a highly significant (Pvalue = .000) positive correlation on the net benefits of ICT integration (B = 0.705). The results further revealed that intension and actual use of ICT impacts very strongly the net benefits by over 70% (Beta = 0.715) thus the independent variable accounted the dependent variable by 71% (Adjusted R² = 0.709)

VII. CONCLUSIONS

There exists a significant (Pvalue = 0.000) positive correlation between integration of ICT and TAMD (B = 0.202), and ICT integration influences strongly the TAMD by 39.8% basing on the fact that Beta (β) values was positively rated at 0.398. The generated variance between the two variables (R²) is 0.154 thus predicting 15.4% of worthiness.

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Intension and Actual Use of ICT in tracking administration of malaria drugs in health units cause a highly significant (Pvalue = .000) positive correlation on the net benefits of ICT integration (B = 0.705), and impacts very strongly TAMD by over 70% (Beta = 0.715) thus the Integration of ICT accounted the TAMD by 71% (Adjusted $R^2 = 0.709$).

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