Strategic Information Systems Planning (SISP) Practices in Health Care Sectors of Rwanda

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Abstract. Strategic Information Systems Planning (SISP) is an area of great value in information technology as concerns and interests to Information Systems. SISP has consistently been ranked the top issue for IS executive since 1970’s in developed and non-developed countries. Studies show that Strategic Information Systems Planning (SISP) can help the manager to design information systems, develop IS strategy and distribute resources for IS strategy. However, in Rwanda, the use of SISP in healthcare sectors is still limited and under-researched. The key goal of this research is to find out the positive impact and the gain for putting into practice the SISP to Developing countries, particularly Rwanda Health sector. qualitative approach used to conduct this research where articles, report was our instrument The research is aimed at proving the limitations of the existing Information Systems within the healthcare sector of Rwanda, where by the health administration do not see the gap between the information system and communities. The IS are not stating to initial stages where by Rwanda Communities Health workers still use manual system to collect and to report the data. There are a need of mobile application for Communities health workers can be a solution. Furthermore, Hybrid SWOT approach will be used to give solutions to the challenges faced in the implementation of SSIP for health sectors in Rwanda.

1 Introduction

The present clients are more well informed, increasingly assorted, and more exacting than any other time compared. Currently, the basic distinction between the present IT and the IT of 10 or 20 years prior is how much innovation is being utilized to drive the key objectives of a business. Key IT works close by speciality units to help drive destinations with operation regardless of its going about as an establishment, the extent of the business, the vertical business or the dispositions of upper administration. In any case, the move towards Strategy is a general wonder that has influenced all organizations and driven them to another worldview. Depending on the IT capacity to offer the help that enables them to play out their occupations with more prominent productivity. The assessment demonstrated that the worldwide data innovation industry will reach $5 trillion in 2019[1]. The US is the biggest tech showcase on the world with 31% of the aggregate, around $1.6 trillion for 2019. Proof additionally, the indicates shows that 94% of overview of the staff concurred that IT-based frameworks are significant in the conveyance of their hierarchical procedure [2]. Also indications demonstrate that the Information System strategy should likewise be viewed as being continuous and routinized, essentially reliant on gaining from tinkering and unintended outcomes of key choices just as from the more purposeful that the IS should put into implantation [3].
1.1 Information System for E-health Case of Rwanda

Not too long ago, Research has appeared an expanded enthusiasm for advancement of Information system. E-Health is relied upon to contribute in handling difficulties for healthcare systems. If it remains the way it is, it may probably additionally cause difficulties. Financing techniques embraced at national and local dimensions generally influence E-Health long-term manageability [4]. An ongoing exploration has affirmed that the significance of IS methodology in medicinal service segments is majorly operating in the major towns of Rwanda [5].

The Administration of Rwanda has set a high need on IS strategy in healthcare and e-Health strategy, which is reflected in the ICT Strategy 2009-2013 for the long time vision for e-health in Rwanda. The key advantages which are imagined through an exhaustive e-health methodology include enhancement of healthcare service accessibility and availability; Improvement of healthcare services quality, security and results, Expanding administration proficiency, profitability and cost viability that fulfills natives, patients and suppliers, improving instructing strategies encouraged by e-learning frameworks, arrangement of proof based data required to make fitting, convenient and educated clinical choices concerning patient consideration; arrangement of progressively far reaching reports that empower better educated choices in healthcare administration arranging, improvement of supply of medical and lastly improvement of financial accessibility to healthcare services [5].

The Health Sector Strategic Plan (HSSP III) 2012-2018 distinguishes the Community health network system as a key of health sector that contributes incredibly to the conveyance 42 of health administrations to most of the population that lives and works in the community[6]. Numerous private and government hospitals in Rwanda are presently at cross streets as far as system information (IS) strategy is concerned as various systems for the advancement of IS support for the human services association in low and medium pay nations remain uncomputerized[7]. Furthermore, IS technique is the most significant procedure for social insurance in creating any nation’s development. Expanding the utilization of data framework methodologies can improve gathering of information as well as help the board to offer basic leadership skills in Rwanda [8]. Furthermore, Senior administration power over association, upper hands, cost sparing, higher IS venture need, better fit between specialist co-op and recipient destinations, nitty gritty arrangement of activities and lessen danger may be guaranteed by IS strategy[9].

Even though, the use of IS approach in healthcare sectors in growing nations like Rwanda is underutilized and under-researched. Therefore, the objective of this research is to take a look at the advantages of IS strategy in healthcare Sectors in developing nations in general and Rwanda specifically to provide views on IS for Healthcare Centres that exist.

The study is based on the present practices and the challenges of SISP in the healthcare sector of Rwanda and also the financial situation for IS strategy. Furthermore, Hybrid SWOT approach used gives the solution of the challenges faced in implementation of SISP for health sectors in Rwanda.

2 Literature Review

Information System (IS) strategy start from the writing on key administration which is questionable because of the absence of built up structure and hypothetical establishment [10]. As of not too long ago, analysts are not in agreement as far as finding a uniform meaning
of IS methodology [11],[12]. IS technique is characterized as a data procedure, a data innovation methodology, a data that executes procedures. This definition outlines that these parts all in all speak to the IS methodology required in overseeing data frameworks in an association. [13] It characterizes IS procedure as the hierarchical point of view on the interest in organization, use and the executives of Information System. On this departure, it is much easier for IS to be of great significant.

It features the assets, position, plan and point of view of IS system. As an overview of 260 population demonstrates that the normal organization uses $9.6 million every year on IT benefits which comprise 15% of the all out expense for Research and development and 0.3% of all out deals [14]. The adequacy of these ventures relies upon vital getting ready for IT/IS [15], notwithstanding Data Framework technique never will be an arrangement for everything.

Suitable techniques, for example, SISP and opportune usage are required for progress. SISP is characterized as the way toward choosing the goals for hierarchical registering and distinguishing potential PC applications which the association should execute [16]. SISP is characterized as the procedures of recognizing an arrangement of PC based applications that will boost an association's marketable strategy, along these lines empowering the association to adjust its data frameworks to its organization's wants and desired main goal.

[17]. SISP has been a point of significance and enthusiasm to IS experts since the 1970's and reliably positioned as a top issue for IS administrators in both rich and poor nations [18]. Studies have demonstrated that SISP can help supervisors in characterizing the IS, create IS system, and provide assets for IS technique [19].

2.1 Information Systems Strategy in Healthcare Sectors

Information System (IS) strategy is as of now set up in Healthcare services parts in creating the stable health policy of Rwanda. the IS strategy was put in consideration because the development of technology which lead to development in rivalry and innovation dissemination [9]. At the point when association like social insurance understood the advantages of IS system. They next step to understand is the set of IS strategies plan, the time needed and the reason they actualize for better health services segments in deelopment nations. This area portrayed the strategies for IS technique Strategic Information Systems Planning (SISP) in Healthcare parts with regards to creating nations like Rwanda.

2.2 The current technology which are boosting health service care in Rwanda for Community Health Workers (CHWs)

1. Community Health Information System (SISCOM) in Rwanda

A Community Health information system (SiSCom) was set up and institutionalized by Rwanda Ministry of Health(MoH). It is a point on making the accessibility of information gathered by CHWs at their towns, cells and this supplements the health sector office based information in the national health information system [20].

The Community Health Information System (SISCOM) gathers, stores, recovers and spreads basic program and patient data identified with consideration and treatment. Information driven basic leadership and approach plan have expanded the effectiveness of the program and improved the administration's ability to screen the nature of health care services.
Fig 1: Data flows between Rwandan entities involved in data collection and dissemination [21]

2. Rapid SMS

RapidSMS is a free and open source system for portable device system developed in Python and Django, which was altered for application to maternal and young children health in Rwanda.

Below is the figure showing the theory of Change for the Rapid SMS Program in Rwanda
For CHWs utilize the cell phones to empower them to gather and utilize continuous data on key maternal, neonatal and child indicators, this is gathered during the principal 1000 days of life (pregnancy until birth, and infant until 2 years) and incorporates a wide scope of territories: antenatal consideration, conveyance, post-natal consideration, development observing, just as death pointers, for example, maternal and neonatal and tyke mortality. The continuous markers are recorded utilizing RapidSMS. The strategy at that point produces programmed updates for clinical arrangements, conveyance, and post-natal consideration visits, with the plan of expanding participation at antenatal consideration and postnatal consideration visits. Extra planned results incorporate the arrangement of a snappy connect to crisis obstetric consideration through supposed Red Alarms, and the making of a database of clinical records on maternal consideration delivery. RapidSMS Rwanda was built to track health-related data from Community Health Workers (CHWs), originally in the Musanze district, and eventually country-wide. Its initial features including Registration of pregnant mothers, Reminders sent out for pre-natal and ante-natal check-ups, Tracking of birth, death, and other vital statistics of the fetus and newborn Features currently in development are, Enhanced charting and mapping, Enhanced alerts and feedback. Additions for the “1000 days” project, tracking infant weight and height through 2 years of age.
As appeared in Figure 2, Rwanda focuses on three noteworthy pathways through which the yields of the RapidSMS program could have brought about the proposed program impacts. The first is the RED Ready notice framework that could have prompted a diminished reaction time and before intercession in crisis circumstances. Second, through improved following of pregnancies, infants, and kids, we estimated that RapidSMS could have affected procedures of consideration including the quantity of ANC visits, the extent of conveyances that occurred in human services offices, and other kid wellbeing results. Essentially, better following of babies through the initial 1,000 days of life could have brought about expanded PNC visit rates and follow-up visit rates, permitting the prior distinguishing proof of issues that may have prompted newborn child mortality and younger mortality. At long last, the improved information on maternal and kid wellbeing administrations could have prompted better basic leadership by policymakers. Restorative Items and Healthcare Advances: Quality control of pharmaceutical items, the capacity limit and accessibility of fundamental wares just as normal utilization of drugs have enormously improved. Exceptional difficulties incorporate frail pharmaco-carefulness framework and restricted limit of store network the board at various dimensions. Developments attempted before have borne results, for instance the presentation of automaton innovation has empowered brisk blood distribution[23]. Administration Conveyance including wellbeing foundation Key Heading By 2024, guarantee open, quality and effective conveyance of wellbeing administrations utilizing innovation, towards accomplishing All inclusive Wellbeing Inclusion.

3 Analysis of Addressing the Key Challenges of SISP

This analysis is with regards to social insurance association in Rwanda, distinguished Key difficulties are barriers to selection of EHRs incorporate mind-boggling expense of acquirement and support, poor system foundation and absence of solace among wellbeing specialists with electronic medicinal records. It is additionally realized that SISP approach is an exceptional mind boggling that is more innovation centered and tedious with regards to medicinal services in developing countries[24]. Researchers in social insurance parts in Africa sub-Saharan likewise discovered that Health care laborers are hard to find crosswise over sub-Saharan Africa, particularly in Rwanda. The World Health Organization (WHO) gauges that the nation ought to have a restorative workforce of about 92,000 Africa. WHO investigated and found out that over techno-driven methodology and system spotlight predominantly on mechanical angle, which is the primary purpose behind various e-Health and m-Health venture disappointment in low and center salary nations.

In Sub Sahara Africa, on interviewing the staff individuals, it was found that many have a poor mind set about the principal issues of healthcare and this indicates that many are discouraged by the ill minds and end up giving up in offering health care services.

Patients recognize this hosing done by the staff and many view prosperity workers as unmotivated, unresponsive, and unaccountable. Various patients as such have a poor impression of the prosperity structure as a rule and concede searching for required consideration, look for health services just at medical clinics or pay for it directly by cash[25]. Where Rwanda has a place, clearly there is nobody single.Rwanda still lacks the strategic information practices therefore, IS, can be the best way to deal with the
existing Healthcare issues [26]. Also, a SWOT analysis can be embraced to assess the Strength, Opportunity, weakness and treats of the division or sub-segment as the case may be[27]. The SWOT elements are majorly used for knowing the insight of the healthcare sector in Rwanda basing on its ability. The four elements of SWOT are discussed in below table.

Table 1: Analysis of strengths, weaknesses, opportunities, and threats (SWOT) element.

| Strength | Weakness | Opportunities | Threats |
|----------|----------|---------------|---------|
| -characteristics of the organization/institution/program that give it an advantage over others | -characteristics that place the organization/institution/program at a disadvantage relative to others | -external chances to make greater success for the organization/institution/program | -external elements in the environment that could cause trouble for the organization/institution/program |

In spite of a few endeavors that have been made to address the health information accumulation difficulties utilizing versatile innovation, the interest for development is fundamental. The presentation of more up to date innovations opens new chances of progress. Coming up next are the holes found in the past method for gathering and detailing healthcare.

CHWs as the bridge between communities and health system, they still use manual reporting for earlier stage level (CHWs) for data reporting still use manual paper which can lead to errors, missing of the information no direct interaction between CHWs and the system.

Below is the table which summarize the analysis of Hybrid SWOT analysis for SISP Rwanda Health care case study. Researchers focused on the current situation based on general framework of the country.

Table 2: Hybrid SWOT analysis case study of Rwanda SISP in health care sector.

| Strength | Weakness | Opportunity | Treats |
|----------|----------|-------------|--------|
| characteristics of the organization that give it an advantage over others | characteristics that place the organization at a disadvantage relative to others | external chances to make greater success for the organization | external elements in the environment that could cause trouble for the organization |

| Ministry of Health (MoH) designed SISP | Mind-set of some health workers | Improvement of ICT infrastructure | Disaster |
| Distribution of equipment (computer, internet) | Lack of skills in IS | Education based medical technology | Environment Changes |
| Staff training About existing technology | Manual data collection in primary stage by CHWs | Distribution of Internet over all part of Rwanda | Technology changes |

The above table is an articulate of SWOT for SISP Practices in Health Care Sectors
of Rwanda. It portrays clearly how the government of Rwanda has advanced in initiating digital in advancing healthcare. However, much work still need to be done to seize all the available opportunities, suppress threats and excel beyond its weaknesses so that citizens can enjoy advanced healthcare services at all levels of the society. Based on the result of SWOT analysis a case study of Rwanda healthcare, there are a need of a mobile application or an automatic way for collecting data from earlier stages. Considering the research done by Agarwal S et al[28]. Where the research was aimed to address low contraceptive use in Tanzania, as pilot intervention using a mobile job aid developed to guide community health workers (CHWs) to deliver integrated counseling on family planning, HIV, and other sexually transmitted infections (STIs).

Conclusion

This paper portrayed the significance cause of failing for System Information Strategy Plan for third words country like Rwanda. SISP is as of now set up in healthcare segments in Rwanda where concentrated on CHWS information detailing, and spreading because of the changes, development in rivalry and dissemination of innovation. One of the more huge discoveries to rise up out of this investigation is that the solid connection between the achievement or disappointment of SISP and the achievement or disappointment of Information System in creating and transitional nations. In creating nations there are some intrinsic difficulties in building up an IS strategy for ak. In that regard, and so as to accomplish arrangement of technique+e between substances, the best answer for medicinal services association in creating nations is to present half breed approach as a method for depicting where SISP fits in the hierarchical procedure and adjusted SISP appropriately.

Practically, Rwanda is still at initial stage of implementing its SISP Practices in Health Care Sector. This study recommends future studies to focus at examining to what extent have the new system brought by advancement of IT has impacted the available and accessibility of healthcare in the country. The study should reveal to what level Rwanda healthcare system has made stride at realizing efficient and effective health service delivery.

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