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SchoolData Management System on School Management in Rwanda

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Abstract
Background: Data is needed for accurate financial management including budget and expenditure, planning new schools, teacher management and development, monitoring of the learning and teaching process, assessment of students' learning outcomes, school system performance measurement, and distribution of teaching/learning materials.
Material and Method: The purpose of this study was to explore the contribution of School Data Management System (SDMS) on public school management in Rwanda. The study was guided by descriptive research design, simple random and purposivesampling techniques were used to select 76 participants consisting of head teachers, deputy head-teacher in charge of studies (DOS) and teachers in Gisagara District, 64.5% of men and 35.5% of women aged 38 years old average participated in this study. Both qualitative and quantitative data were collected through questionnaire and interview guide. Collected data were descriptively analysed through IBM-SPSS 22nd Version.
Results: Throughout the findings the study established that SDMS is helpful in the public-school management especially in school activities planning and monitoring students' data and progress. Furthermore, it was found out that government, educational planners and private sectors are three main categories that are benefiting much from the use of SDMS in public schools. Finally, the study revealed that lack of training, weak or lack of internet connectivity remain as strong challengesagainst the effective use of SDMS in public schools of Rwanda.
Conclusion: Pre-determined purpose of SDMS (i.e. to improve efficiency and effectiveness in government financial management and increase the availability of comprehensive financial information, planning and budgeting process at school level) is still largely absent. In light of these results, recommendations are therefore suggested to improve the use of SDMS in public schools as a major strategy to achieve an effective public-school management to achieve the pre-established teaching/learning objectives.
Keyword: School Data Management Information System (SDMS), School management

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I. INTRODUCTION

1.1 Background

The contribution of School Data Management System (SDMS) towards efficiency and effective school management has been gradually documented by different researchers since the end of 20th century. By the nature of concern, the computer-based software adopted in education was solely used to store human resource and students' data (Carnoy,2004). Relative to these findings, the study conducted by Visscher, Wild, & Fung (2001) indicates that the most concern of computer based applications in educational institutions was data entry and collation against data transfer and data analysis. The most currently obvious and important is the point that SDMS is supporting in processing information and innovations (Bellum, 2003), disseminating information to the outer stakeholders or information sharing among personnel inside the institution (Pegler, 1992). Counter to such contribution of the SDMS in educational management, some hindrances against smooth exploitation of SDMS have been identified including fragile technological infrastructure in some schools (Demir, 2006; Mumtaz, 2000), inadequate of technical support (Yee, 2000), lack of user-friendly software for analysingresults at the school level (Carnoy, 2004).

The theoretical basis of this study was derived from administrative management theory which emerged as a scientific management focusing on how to create an organisational structure with high efficiency and guidelines for managing complex organizations. Its founder Jules Henri Fayol (1949) a French industrialist, economist, engineer, entrepreneur, and a prominent European management theorist, introduced the idea of organisational managerial practices which serve as important factors in driving predictability and efficiency in organisations. Such managerial organisational practices were introduced in his three categories namely: the six types of organisational activities, six functions of management, and 14 principles of management. Administrative management theory was adopted in this study due to its much applicability in exploring the contribution of current adopted school data management system as one of management tool to ensure efficient and effective school management in Rwanda. In essence, this administrative management theory directs much attention on principles which could be used by managers in effectively coordinating the internal activities of a given organization including schools. A fact consonants with the purpose of SDMS which lies in improving efficiency and effectiveness in government financial management and increases the availability of comprehensive financial information, planning, and budgeting process at school level.

So far as conceptual background is concerned, school data management system (SDMS) is simply a digital tool designed to collect, store, analyse, and report comprehensive student records in a structured format (and Learning, 2009). In a similar light,SDMS can be thought of as an integrated solution that ensures easier oversight of school management, learning management and student information management in a user-friendly and responsive web-based platform(QLESS, 2021).Subsequently, Watson et al (1987) explains SDMS as an organisational method of providing all necessary information of both internal and external intelligence whereby it assists a given organisation in planning and controlling all operations by supplying consistent & timely information for the effective decision making. Of a related concern, Telem (1999) believes that SDMS is a system which has been designed to link all school departments so as to achieve the organisational goal. For the purpose of this study, the second definition advanced by Watson et al. (1987) that SDMS refers to an organisational software package technologically used to provide all the required information related to both internal and external intelligence so as to assist a related organisation to plan and control all operations by giving consistent and timely information for decision making, was adopted to guide the current study. The SDMS will therefore be characterised by school profile, staff profile and student profile.

Correspondingly, school management refers to an act of running a school towards the desired educational policies by considering all school aspects such as policies; material, financial & human resources; programs; equipment; activities etc. and integrates all of them into a fruitful whole (Arockiasamy, 2018). Subsequently, Indian school of Business management and administration (2018) refers to school management as a coordination of activities of various systems using both human, financial, material and time resources in relation to its objectives, through effective and efficient manner with view to get maximum advantages for a school. Besides, school management has been explained by Karnataka (2012) as a process of leadership towards a school development through the use ofoptimum &proper coordination & adjustment of human resources, physical resources principles and concepts which contribute in the achievement of all objectives of the school. The definition of school management adopted in this study is the one advanced by (Arockiasamy, 2018) describing school management as an act of leading a school towards the desired educational policies through the consideration of all school aspects including policies, programs, equipment activities as well as material, human and financial resources and integrate all into a fruitful whole. In this study school management will be characterised by Planning, organizing, directing, controlling, evaluation and reporting.

So far as contextual background is concerned, School profile refers to an outline of all characteristics of a given school like school details, schools programs, school location, etc. which is technologically saved or saved in hard registers and made available for the policy makers, higher authorities in charge of education and the community as well. School profile helps the school managers to reflect upon the schools' background, realities as well as achievements and challenges in light of preparing for the school development review and planning stages. On the other hand it helps the government under the ministries in charge to effectively plan for its budgets and other long-term strategic planning for the school development.

Subsequently, staff profile refers to an important file containing all details of the school staff including personal identification of staff members, their job positions, duties and responsibilities qualifications and training, working experience, their salaries and other related incentives, etc. Staff profile serves as a crucial document helping the school managers and higher education directors in updating all issues related to staff management like retirement, recruitment, deployment etc.and planning for necessary training and professional development.

At last, students profile means a file of all details of all students enrolled in a given school. Student profile contains the total number of students enrolled therein by gender, grade, major subjects, as well as all personal information of a student, academic records, discipline records etc. This student profile helps in tracing accurate information in case of changing schools due to different reasons. Of a particular concern, it helps

directors of education to keep the genuine data and information related to internal efficiency which in turn assists in educational data and information based planning.

Even though SDMS has been acknowledged to play a significant role in collecting, retaining, analysing, presenting, retrieving, and reporting/sharing all these details concerning school, staff and student profiles easily and increases effectiveness at work, there are still claims that school managers report inaccurate data/information to the higher education authorities which affect efficient and effective planning. Therefore, a need to explore the role of school data management system in public schools of Rwanda.

1.2 Problem Statement

Data are needed for: accurate financial management including budget and expenditure, planning new schools, teacher management and development, tracking of the learning and teaching process, assessment of students' learning outcomes, school system performance measurement, and distribution of teaching/learning materials (Government of Rwanda, 2020).

In this light, the overall purpose of SDMS is to improve the efficiency of school management, administration and planning as well (Shah, 2013). On a related note, in Rwanda the purpose of SDMS is to improve efficiency and effectiveness in government financial management and increase the availability of comprehensive financial information, planning, and budgeting process at school level. In so doing, SDMS is a hope for strengthening the Public Financial Management Systems. Its introduction in Rwandan public education system was in regard to improving the students' management, processing of school financial transactions and allow easy and timely access to reliable information for the allocation of capitation grant and school feeding fund to schools (Republic of Rwanda, 2019).

However, Rwandan public schools are still facing a serious delay of capitation grant as well as school feeding support due to a long time ministry in charge (MINECOFIN) wait trying to reach the accurate number of students enrolled in each school. Another emerging feature of such a delay is a contention that some heads of schools use to report the number of students higher than the actual number of enrolled students for the intention of gaining more fund for their personal use since both capitation grant and school feeding support are granted proportionately to the number of students (Emmanuel, 2020).

Consequently, such a coined number of students significantly contributes to a deficit of budget allocated to education sector as total public spending as percentage of total public expenditure and GDP (Jean de Dieu et al. 2022). Thus, a shortcoming in provision of necessary teaching/learning resources resulting in the existing educational challenges in Rwanda like poor quality of education, high dropout rate, low motivation, nutrition and feeding requirements for students from low social economic status families just to mention a few (Government of Rwanda, 2020).To this end, this current study aimed to explore the impact of SDMS on School management in Rwanda.

1.3Specific objectives of the study

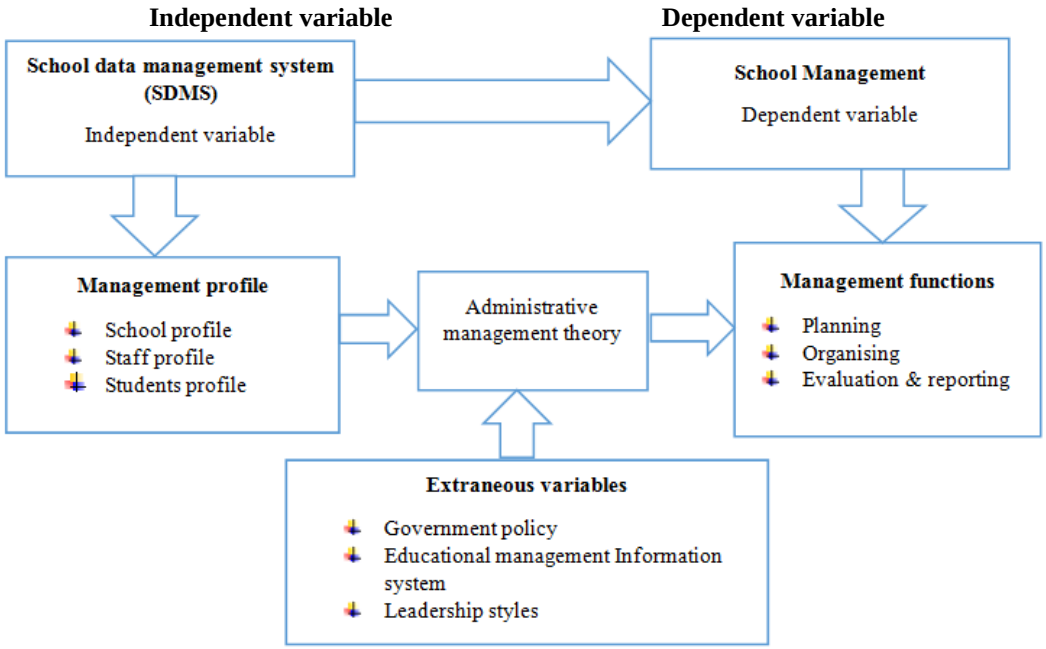
1. To determine the contribution of school data management system in school management.
2. To establish the contribution of school data management system on the external educational stakeholders.
3. To ascertain the challenges against the effective use of school data management system in school management.

1.4Theoretical framework: Administrative management theory

Administrative management theory was developed by an industrialist, economist, engineer, an entrepreneur, and a prominent European management theorist called Jules Henri Fayol (1949). His theory introduced the idea of principlesand organizational managerial practices coordinating the internal activities of an organisation as driving predictability and efficiency of a given organization. Such principles and practices are categorised in six types of organisational activities: Technical activities, commercial activities, financial activities, security activities, accounting activities, managerial activities. Subsequently six functions of management namely: planning, organizing, commanding, co-ordinating, controlling and forecasting. Then, 14 principles of management which are: division of work, authority and responsibility, discipline, unit of command, unity of direction, subordination of individual interest to general interest, remuneration, centralisation and decentralization, scalar chain, order, equity, stability of tenure of personnel, initiative and "esprit du corps". Of a particular concern, types of organizational activities in educational settings stands for technical activities (production), commercial activities (exchanging like teaching and learning), financial activities (search for and optimum, efficient and effective use of grant), security activities (safeguarding school resources including material, human, finance), accounting activities (provision of timely genuine financial information) and managerial activities (planning, organizing, leading and controlling which remain universal). SDMS was therefore initiated in line of technologically assist in timely collecting, retaining, and communicating all necessary information accounting to this organisational activities for the efficient and effective utilization of

available scarce resources and achieve organisational (school) goal. Administrative management theory was therefore selected to guide this study due to its philosophy of applying all the different internal organisational activities by the concerned managers to come up with an efficient and effective organisation which has been highlighted in Rwandan overall purpose of introducing theSDMS in all schools in Rwanda.

1.5 Conceptual framework



Source: Researchers (2022)

Figure 1 Conceptual framework

Figure 1 shows therelationshipbetween SDMS and school management. It indicates SDMS as independent variable which is related to the school management as dependent variable. So long as this conceptual framework is taken into account, various SDMS indicators: school profile, staff profile and students profile have been noted to attribute a significant impact on school management.

On the other hand, this research has also identified school management as dependent variable characterised by management functions like planning, organising, evaluation and reporting. Besides, Figure 1 depicts one of scientific management theories named an administrative management theory adopted to guide this current research since it holds the view of principles and organizational managerial practices coordinating the internal activities of a school as driving predictability and efficiency of a given school which can assist independent variable to influence dependent variable of this study. Furthermore, the conceptual framework presents government policy, educational management information system as well as leadership styles as extraneous variables which may support SDMS in enhancing school management in Rwandan public schools. Yet, these extraneous variables will be held constant for the consistency of this study.

III. RESEARCH METHODOLOGY

Referring to the point of Rubbin and Babbie (2016), a research design was defined as a plan or conditions for obtaining and analysing information in the way that intent to make a combination of relevant to research objectives with the economic and financial constraints during research process. This study adopteddescriptive survey design. Descriptive survey design was suitable because researchers were aimed at exploring behaviours and characteristics of the respondents about SDMS and its influence on school management in Rwanda.According to (Mugenda & Mugenda, 2008). target population refers to the entire persons or objects with diverse collective observable features. In this study, the target population was head teachers, teachers and DOS in Gisagara District.The simple random sampling and purposive sampling techniques were used to select 76 respondents, data was collected by using questionnaire and interview guide.The questionnaire was used because it had an advantage of saving time. The questionnaire wascomposed by closed ended and open questions; it was self -administrated to the respondents and collected back by the respondents. Reliability is described as the consistence of scores overtime (Mugenda & Mugenda, 2008). It was also defined as the degree to which measurements are free from errors and produce consistency results.

Reliability in this study was checked, and it was startedfrom piloting. According to the view point of Pilot et al. (2001), pilot study is the primary test carried out by the research team before general data collection for intended study. The pilot study helps the researchers to test internal consistency and clarity of the research instruments for the study. Data analysis refers to a procedure of assessing information by pinpointing useful evidences, the mass of gathered information was categorized in the way that enable analysis. Collected quantitative datawas analysed utilizing a descriptive statisticthrough statistical package for social sciences (SPSS 22nd version).Whereas content analysis model was usedto summarize collected qualitative data.

IV. RESULTS

4.1 SDMS in school management

This study sought to determine the contribution of school data management system in school management, 76 teachers, Deputy heads of studies and head teachers provided their perception on the school data management system and its impact on the school management. For the purpose of ascertaining the knowledge of respondents on the SDMS, the results of Table 1 show that 92.1% of respondents have heard SDMS before, 60.5% of respondents agreed that they have enough information on the SDMS. However, only 52.6% of respondents have been trained about the use of SDMS.

Table 1 knowledge on SDMS

Statement	Frequency	Percentage
I have heard of SDMS before	70	92.1%
I have enough knowledge of SDMS	46	60.5%
I have been trained on the use of SDMS	40	52.6%

Source: Researchers (2022)

The results summarized in Table 1 hold the implication that almost a half of respondents participated in this study and who represented their colleagues have no basic technics on the use of SDMS adopted to serve its purpose in managing public schools in Rwanda.

With respect to the role of SDMS on the improvement of the school management, a variety of asked questions reflect the contribution of SDMS on different managerial functions identified as planning, organizing, evaluation and reporting. 76 respondents completely filled the copies of research questionnaire and provide their perceptions summarized in Table 2.

Table 2 Contribution of SDMS on the school management

Statements	SDA		Disagree		Neutral		Agree		SA	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
SDMS facilitates school activity planning	3	3.9	2	2.6	9	11.8	31	40.8	31	40.8
SDMS facilitates school's organisation of material &human resources	2	2.6	5	6.6	13	17.1	32	42.1	24	31.6
SDMS plays a great role in school monitoring and evaluation	3	3.9	2	2.6	14	18.4	28	36.8	29	38.2
SDMS helps in management of teachers and learners	4	5.3	3	3.9	10	13.2	25	32.9	34	44.7
SDMS helps in information sharing among personnel inside schools	4	5.3	6	7.9	12	15.8	34	44.7	20	26.3
SDMS helps in management of school material and financial resources	3	3.9	6	7.9	4	5.3	30	39.5	33	43.4

SDMS helps in management of learners' data and progress	2	2.6	2	2.6	7	9.2	34	44.7	31	40.8
SDMS helps in processing information and innovation	3	3.9	2	2.6	17	22.4	34	44.7	20	26.3
Average	**3**	**3.9**	**6**	**4.5**	**10**	**14.1**	**30**	**40.7**	**27**	**36.8**

Source: Researchers (2022)

The perceptions of participants of this study summarized in Table 2 shows that the majority of respondents are always in the category of those who either agree or strongly agree that SDMS has a contribution on different managerial functions of the school in the specific areas of school activity plan, organization of material and human resources, monitoring and evaluation, management of teachers and learners, information sharing inside school personnel, management of school material and financial resources, management of students' data and progress, and information processing and innovation. Of a particular concern, in the same way a big number of respondents support the view that SDMS helps in management of students' data and progress, and its help in school activities planning respectively.

4.2. SDMS on external stakeholders

The second objective of this study was to establish the contribution of school management system on the external educational stakeholders including researchers, educational planners, government, private sectors, local leaders, parents and outer stakeholders. To achieve this objective, both qualitative and quantitative data were collected. Questionnaires were used to collect perceptions of 76 respondents presented in Table 3.

Table 3 the contribution of SDMS on the external educational stakeholders

Statements	**SDA**		**Disagree**		**Neutral**		**Agree**		**SA**	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**
SDMS helps the researchers to get timely data from schools	5	6.6%	7	9.2%	11	14.5%	27	35.5%	26	34.2%
SDMS assists educational planners to get accurate data necessary for educational planning	3	3.9%	3	3.9%	10	13.2%	27	35.5%	33	43.4%
SDMS helps the government to allocate educational resources in equitable manner.	3	3.9%	4	5.3%	10	13.2%	27	35.5%	32	42.1%
SDMS helps private sector to know the critical situations in education that need their intervention.	3	3.9%	4	5.3%	10	13.2%	27	35.5%	32	42.1%
SDMS helps local leaders to understand the achievements and challenges of education in their area.	3	3.9%	8	10.5%	12	15.8%	35	46.1%	18	23.7%
SDMS helps (who, do you mean parents?) to know the progress of their children.	5	6.6%	11	14.5	21	27.6	26	34.2	13	17.1
SDMS helps in disseminating information to the outer stakeholders.	2	2.6	14	18.4	19	25.0	28	36.8	13	17.1
Average	**3**	**4.4%**	**7**	**9.6%**	**13**	**17.6%**	**28**	**37.0%**	**25**	**31.4%**

Source: Researchers (2022)

From the results summarized in Table 3, those who either agree or strongly agree that SDMS contributes on external stakeholders in different waysmentioned through the above table constitute the majority of respondents.

SDMS helps to get accurate and timely data from the schools for the researchers for their research informing policy makers on the issues in need of improvement, for educational planners for the purpose of educational planning, for government to allocate necessary educational resources, for private sectors to identify sensitive issues that need their intervention, for local leaders to address some related social issues, for parents to get information concerning their students' progress and whether SDMS in disseminating necessary information to the outer stakeholders. Further analysis of these results designated the most three groups of stakeholders: educational planners, government, and private sectors in which SDMS plays a great role on the external educational stakeholders. This fact was determined basing on the perceptions of 78.9%, 77.6%, 77.6% of respondents concurred that SDMS provides accurate and timely data with educational planners for the purpose of educational planning, for government for the purpose of allocation of educational resources, and for the private sectors for the purpose of getting information concerning the issues in need of their intervention respectively.

4.3Challenges of SDMS in school management

The third objective of this study was to ascertain the challenges against the effective use of school data management system in school management. To achieve this objective, a questionnaire was used to collect related data from 76 respondents. The results from the question asked the challenges facing SDMS in public secondary schools are presented in Table 4.

Table 4 the challenges facing SDMS in schools

	Frequency	**Percent**
Weak internet connectivity	13	17.1
Lack of internet connectivity	12	15.8
Neutral	15	19.7
Lack of ICT materials	3	3.9
management of staff files	2	2.6
lack of training on SDMS functionality	28	36.8
lack of electricity on schools	2	2.6
SDMS is not accessed by parents	1	1.3
Total	76	100.0

Source: Researchers (2022)

It is clear from the results summarizing challenges facing SDMS in Table 4that 36.8% of respondents confirmed lack of training on the use of SDMS remains a big challenge facing the effective use/implementation of SDMS in schools. In addition, nearly 32.9% of participants mentioned weak or lack of internet connectivity as a great challenge to the effective use of SDMS in public secondary schools. Further analysis examined the effect of these challenged identified to hinder the effective use of SDMS in public secondary schools. Results from this emerging issue were presented in Table5.

Table 5 impact of existing challenges facing SDMS

	Frequency	**Percent**
Non exploitation of SDMS	7	9.2
Misuse of SDMS	16	21.1
Neutral	18	23.7
lack of staff files	1	1.3
delayed reports	31	40.8
6	3	3.9
Total	76	100.0

Source: **Researchers**, (2022)

With respect to the results of Table5, the majority of respondents (40.8%) added that the main effect emerges as a result of challenges facing the smooth use of SDMS in schools is delayed reports to the related superiors. It is also important to note that 21.1% of respondents believe that misuse of SDMS is another effect experienced due to the challenges hinder the appropriate use of SDMS in public secondary schools.While asked the contribution of SDMS on the delay of capitation grand to the schools, 69.7% of respondents stated that SDMS plays a great role in timing concerning issuance of capitation grants following its expected accurate data. Table 6 below presents the summary or results related to the use of SDMS and its effect on the issuance of capitation grant in the public schools of Rwanda.

Table 6 Role of SDMS in fixing the delay of Capitation grant to the schools

	Frequency	Percent
strong contribution due to real and accurate data	53	69.7
not yet	1	1.3
Neutral	19	25.0
yes on a moderate extent	1	1.3
No, there is no capitation grant for private schools	2	2.6
Total	76	100.0

Source: Researchers, (2022)

The results of table6 present a summary of the contribution of SDMS on the issue of capitation grant, 69.7% validated that SDMS plays a role on whether capitation grant is issued earlier or later. That is a strong contribution due to real and accurate data. Yet, from the above table, the same findings revealed a delay of reports to the superiors due to the challenges identified including lack of internet connection and insufficient knowledge of using SDMS as a new technology.

V. DISCUSSION

The overall purpose of this study was to explore the contribution of school data management system on the efficiency and effective management of public school in Rwanda. Data collected for this purpose was carefully analysed through IBM-SPSS. The findings of this study indicated the most contribution of SDMS associated with the effective public school management in Rwanda and pointed out major challenges facing the effective use of SDMS in such school to generate its full potential contribution in school management.

Prior to the analysis of specific objectives of this study, the demographic characteristics (gender, age, qualification, working experience and working position occupied) of the participants was analysed. Concerning gender of respondents, the results showed that majority (i.e. 64.5%) of respondents were males. This finding expresses that though the number of men remains higher than that of women, the principle of gender balance in public service in Rwanda is maintained. This current finding is consistent with the Rwanda's constitution of 2003 revised in 2015 which insists that at least 30% of entire positons should be reserved for women in all decision making organs. With respect to age, the results of this study showed that more than a half (60%)of respondents falls in the age group of 30-40 years old. It is interesting from this finding to note that the big portion of teaching staff in public schools of Rwanda consists young adults. This findings is consistent with the recent report of Statista (2020) which showed that 57.41% of the entire population of Rwanda is occupied by people aged 15-64years old. Besides, the findings of this study revealed that 73.6% of participants were qualified at university level. This finding indicates that more that 20% of the participants were underqualified to serve in secondary school in Rwanda. It is worth important to note from that this finding did not support the existing Rwandan Teaching Service Commission' regulation insisting that teacher's holding at least an Advanced Diploma (A1) or Bachelor's degree (A0) are allowed to teach in two levels of secondary schools, Ordinary level and advanced level respectively. The latter is the concern of working post and experience. The results of this study showed that the majority (i.e. 64.5%) of the participants was occupied by the teaching staff, which confirms a normal/proportionate distribution of participants in this study. The study thus shows thatmajority (i.e. 65.8%) of respondents has over 6 years of working experience. This finding is in direct contrast with the study conducted by World Bank, MINEDUC, UNESCO BREDA and Education for all fast track initiative (2011) which reported that approximately 40% of all teachers in secondary schools in Rwanda have less than 5 years of teaching experience.

For the sake of identifying the specific contribution of SDMS on the effective school management, the perceptions of 77.5% of participants responded that SDMS plays a great role in different areas of managerial

function including those of planning, organization, monitoring and evaluation. Interestingly, the findings of this study revealed that SDMS plays an outstanding role in arrangement of students' data and progress as well as in school activities planning. This finding designates that SDMS in serving more of its full potential in the area of students and school profiles than staff profile. Further implication of this finding lies in the view that SDMS contributes more in planning and monitoring & evaluation than organising and staffing. The findings of this study did not support the previous studies undertaken by Perez and Uline (2003); Telem (1991) and Gentry (2005) who reported that SDMS helps the school institutions in the entire management whereby appropriate decisions including strategic plan, allocation of scarce resources, implementation strategies, and determination of performance for both students and staff, are made based on accurate and timely data. It is therefore recommended that in this digital era, MINEDUC and MINECOFIN in Rwanda with their partners should add effort in ensuring that SDMS is appropriately in use of effective management particularly in the areas of organizing, monitoring, and evaluation based on accurate data from SDMS.

In the current study, the results indicated that more than a two third (i.e. 68.4%) of participants' perceptions confirmed that SDMS facilitates different categories of external educational stakeholders including researchers, educational planners, government, private sectors etc. to get relevant information that is accurate and available on time for their purpose. One of the issues that emerges from this findings is the concern that SDMS provides accurate and timely data for the particular three categories of stakeholders including the educational planners, government and private sectors for the purpose of educational planning, resources allocation, and provision of necessary intervention by private sectors respectively. This finding holds the implication that high level institutions (national institutions) in the areas of planning and resource (finance, material, human) management benefit more than the local levels in their routine activities. This finding is consonant with the previous studies, Wayman et al. (2004) and Hua and Herstein (2003) who observed that SDMS helps key decision makers or higher public/private stakeholders through the provision of necessary access to the data and information appropriate for more informed decision making in line of improving educational attainment. In accordance with the present results, the MINECOFIN and MINEDUC which have made great strides in design and introduction of SDMS in Rwandan public school with their close partners in this program should make relevant adjustment in the use of SDMS purporting to involve school staff in exploitation of the full potentials of SDMS in public schools in their daily/routine activities including all related students and staff profile as well as school profile to advance efficient/effective management resulting in achievement of pre-established educational goals.

So far, the current study found out lack of training on the use of SDMS as a major challenge that impedes the effective use of SDMS for their daily/routine activities. In addition to this lack of training for the expected users, the findings of this study also revealed a weak or lack of internet connectivity as an increasing challenge against the smooth running of SDMS in the public schools of Rwanda. The increasing evidence from this current study justifies that the majority of respondents in this study mentioned a delay of different educational reports to the superiors as an emerging effect of identified challenges facing the smooth use of SDMS in schools. These findings confirmed the claim stated in problem statement of this study that Rwandan public schools are still facing a serious delay of capitation grant as well as school feeding support due to a long time ministry in charge (MINECOFIN) wait trying to reach the accurate number of students enrolled in each school to release such grant according to the number of students. The findings of this current study on challenges facing use of SDMS supported the previous studies undertaken by Warren (1998) and Shah (2013) who also revealed insufficient training of the school teaching and administrative staff. Furthermore, these findings support the previous findings of a study undertaken by Jean de Dieu et al. (2022)which reveals inadequate technological infrastructures (i.e. insufficient electricity, technological equipment, connectivity and inadequate digital literacy among teachers).Additional concern could be the assertion articulated by Vissher and Bloemen (1999) who raises a concern that only administrative staff uses SDMS while teaching staff remain marginalised. To this end, the MINECOFIN and MINEDUC as the central organs in charge of education and its finance should prepare intensive training on use of SDMS for the entire school staff and direct attention to the technological infrastructures like stable electricity and internet connectivity for the efficient and effective publicschool management, as well as provision of user-friendly software for data analysis, sharing, and reporting for the achievement of pre-determined educational goals.

VI. CONCLUSION

This study explored the contribution of school data management system on public school management in Rwanda. The findings of this study established a number of men higher than that of women, aged 30 to 40 years old with working experience of six years and above. Yet, more than 20% of school staff was identified as unqualified. This study revealed a strong evidence supporting the contribution of SDMS in a variety of managerial functions particularly in school activities planning and the arrangement of students' related data and their progress. The finding of this current study also identified three major categories of stakeholders benefiting

much from the use of SDMS in schools including central government, educational planners, and private sectors. In the last instance, the study revealed lack of training on the use of SDMS, a weak or lack of internet connectivity as main challenges that hinder a smooth use of SDMS to serve its purpose in the public schools which result in delayed educational reports to the relevant superiors. Based on the findings of this study a conclusion was therefore drawn that the pre-determined purpose of SDMS (i.e. to improve efficiency and effectiveness in government financial management and increase the availability of comprehensive financial information, planning and budgeting process at school level) is still largely absent. In light of this conclusion recommendations were asserted in light of improving the actual use of SDMS which substantially helps in public school management in Rwanda.

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