

School Information Management System (SIMS/EMIS) in Lebanon through the Lens of K-12 Public School Leaders: A Burden or an Opportunity?

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ABSTRACT

The purpose of this paper was to investigate the importance of the Education Management Information System (EMIS) “*known as School Information Management System (SIMS)*” for the Lebanese public k-12 schools. It is a quantitative study that surveyed the whole population of the K-12 public schools in Lebanon (N=1237¹). It aimed to determine if SIMS was considered an efficient tool for school principals to improve the quality of learning in their schools. It addressed the multiple technical, human, financial and managerial aspects of SIMS, the different challenges that Lebanese school principals confront while using SIMS. Additionally, it aimed to investigate the improvements school principals suggested and the alternatives they proposed. The study provides recommendations for the Lebanese Ministry of Education and Higher Education on how to improve this application to develop the education sector in Lebanon.

Keywords: Educational Management Information System (EMIS), School Information Management System (SIMS), quality of education, school principals, data, Information Management Information System.

INTRODUCTION

The business of any institution relies on data, as it is impossible for any institution to move and make any change without the existence of accurate and consistent data (Selwyn, 2018). Maintaining a strong database in any institution is essential for any organizational development that executives intend to realize, so that they carry out data-driven decision-making (Ozik et al., 2021).

In fact, data is the cornerstone for any educational institutions (Chen et al., 2022). Right from the raw data that each educational institutions should have such as student turnover, ratio teacher to students, financial records etc..., every bit of data related to the school, college or university paves the road for its advancement (Ozik et al., 2021). The bigger the institution, the greater is the volume of its data, making it impossible for its leadership team to maintain efficiency without the reliance on data management tools (Chen et al., 2022).

On the other hand, government compliance – when they exist—and accreditations bodies encourage the existence of a very well structured, accurate, consistent and easily accessible data to ease the decision making, making positive changes and assuring required

¹ Source: MEHE, SIMS 2021

improvements to the sector (Selwyn, 2018). The existence of a reliable Management Information Systems becomes a must for the success of any institution (Chen et al., 2022).

In fact, it is worth to state that within the increasing educational demands, the ultimate goal of any educational institution becomes to assure optimum distribution of resources and services among K-12 and higher education institutions to yield maximum benefits to students, teachers, and the management alike (Liu, 2019; Pluscauskas, 2019). An appropriate Management Information System (MIS System) can support institutions to propel their progress in the right direction (Liu, 2019).

WHAT IS THE EDUCATION MANAGEMENT INFORMATION SYSTEM (EMIS)?

The term “**MIS**” itself is self-explanatory. An EMIS, in its simplest form, can be defined as a system responsible for collection, maintenance, analysis, dissemination, and utilization of data in an education system (Abdul Hamid, 2014). A complete EMIS includes data on enrolments, attendance, graduation rates, learning assessments, student health, and administrative statistics. In addition, student demographics, teachers, support services, and the learning materials and environment are equally important (Blau, 2013). A complete SIMS integrates data from human resources, finances, school facilities and resources, local population, and labour market.

Initially, the main purpose of an education management information systems (EMIS) is to run school efficiently and effectively as it provides school leaders, administrators and teachers with the information they need to make their schools growing (Chen, 2019).

Nowadays, implementing a comprehensive trustworthy EMIS is in the heart of any national education strategy as any ministry of education in the world is looking forward to implementing comprehensive education management information system to plan, develop and implement solutions to align academic services with better learning outcomes (Chen, 2020).

LEBANESE CONTEXT

The K-12 education sector is dominated by private schools. The number of private K-12 schools existing in Lebanon is 1637² compared to 1237³ (250 out of them are high schools) public schools. These are non – profit and belong to ministry of education and higher education (MEHE). Some of the private schools are owned by various religious groups, others are modern non-sectarian schools, profit schools, and elite schools. These all differ according to their educational goals, ideological orientations and quality of their educational infrastructure, and outputs. All Lebanese public and private schools are run by the Ministry of Education and Higher Education. The General Education Department runs primary and secondary public schools that are spread across all regions in Lebanon by the intermediary of the Regional Education Offices (REOs). MEHE has 8 regional education offices spread across the country. They are: Beirut, Mount Lebanon, North, South, Nabatieh, Zahle, Baalback, Akkar (not operational).

² Private Education Department- Lebanese Ministry of Education and Higher Education- Statistics 2021

³ General Education Department- Lebanese Ministry of Education and Higher Education- Statistics 2021

REOs are the executing arm of the General Directorate of Education in the regions. Policies and governance are provided by the GDE⁴ under the leadership of the Director General and the Minister of Education. The eight REOs have a close relationship with the Principals (head teachers in the schools) in-order to support them in the delivery of education services. The REOs also work closely with the administration authorities in their region and with community groups, parents and NGOs.

EMIS IN LEBANON

The Education Management Information System (EMIS) literally known as the School Information Management System (SIMS) is a database designed in year 2000 by “Eduware”, a Lebanese Company specialized in developing software for education purposes. The rationale for the development of this software was to empower the Lebanese Ministry of Education & Higher Education (MEHE) by abridging the business flow of different operations at multi levels. It aimed at supporting MEHE in data collection, retrieving indicators, tracking the performance of the system of education nationwide and thus, improving the quality of education in Lebanon. In short, it was supposed to be the unique repository used by decision makers at MEHE to strategize the education sector in Lebanon.

SIMS is originally an SQL⁵ programmed application. Initially, it was comprised of 18 modules that were never fully functional. SIMS was subject to many functional and technical changes and customization during the last two decades. Changes were implemented by MEHE⁶'s ICT⁷ unit based on requests raised by the director general of education and by school principals. The main servers of SIMS exist in the ICT unit at MEHE's headquarters in Beirut, and connected with the intermediary servers at REOs. While the SIMS is upgraded to a web based version where schools' principals should upload and download their data via the internet to the main servers of SIMS, unfortunately a fully operative SIMS is still far away in Lebanon due to many challenges among them we can enlist: lack of internet connectivity and infrastructure, lack of ICT infrastructure at public K-12 schools, lack of IT agents at REOs and schools, lack of financing and centralization of the education system in Lebanon.

PURPOSE

The purpose of this paper is to investigate the suitability of SIMS in terms of its ability to serve the Lebanese Public Education based on empirical data collected from K-12 public schools principals.

RESEARCH METHODOLOGY

Quantitative surveying research methodology was employed, in order to gain a wide picture of the usability and suitability of SIMS used by the Lebanese Public Schools. The instrument of data collection was a questionnaire of 15 items and was designed by the researcher. Questionnaires were administered to all public school principals (N=1237) distributed across the country. So, no sampling has been made and the size of the sample involved in the study

⁴ General Directorate of Education

⁵ Structured Query Language

⁶ Ministry of Education and Higher Education

⁷ Information and Communication Technology

includes the whole population of Lebanese Public Schools making data large enough to give a full informative picture concerning the validity of SIMS for the Lebanese public school context.

DATA & ITS ANALYSIS

Raw data was analyzed using Excel Spread Sheets (Figure 1), showing that only 1039 schools of the population of the Lebanese K-12 Public Schools were using SIMS at different levels as opposed to 148 schools that were not. Moreover, 49 schools did not respond to the administered questionnaire. In other words, 84% of Public Schools in Lebanon are using SIMS, 12% are not using it and 4% of the schools didn't not respond. More details pertaining to each category are given below.

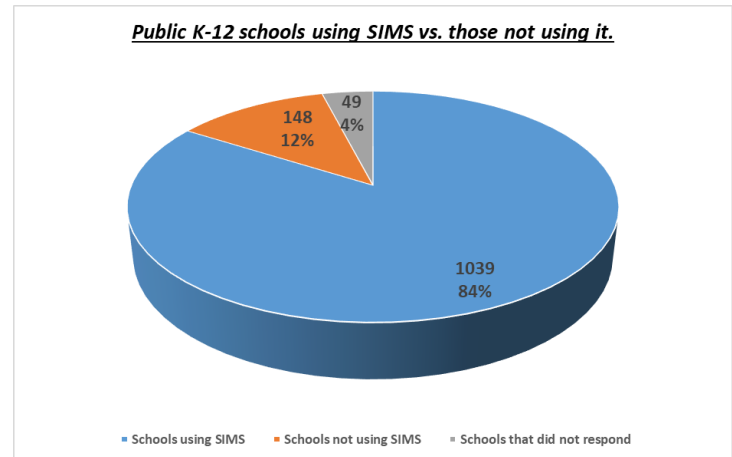


Figure (1): Pie chart representing the usage of SIMS by Lebanese public K-12 schools

Existence of national management information strategy at MEHE

Asking school principals about the existing of a national management information strategy overarching the implementation and architecture of SIMS in public K-12 public schools revealed that 93% of the school principals answered that it is not existing at MEHE or at least they are not informed about it while 7% of school principals reported that it is existing but not clear and it can be reflected by the queries of the general directorate of education addressed on a daily basis to school principals to strategize and manage the sector (Figure 2).

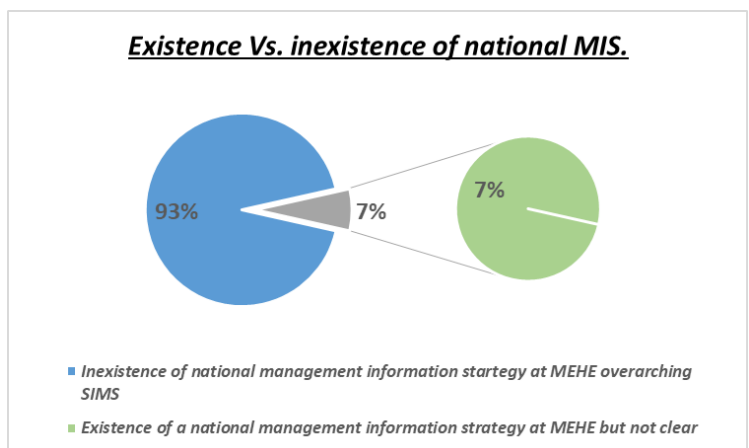


Figure (2): Graph representing the existence of a national Management Information Strategy at MEHE

Reasons for not Using SIMS

As figure 3 shows, data revealed that 35.6% (out of the 12%) of the Public Schools did not use SIMS due to technical difficulties and bugs in using the application itself.

9.5% (out of 12%) stated that the lack of computers and the lack of human and financial resources are main obstacles against using it. 11.5% (out of the 12%) of the Public Schools preferred to use other applications which they described as being "more friendly user" and that do not confront them with the technical problems that they encountered in the case of SIMS.

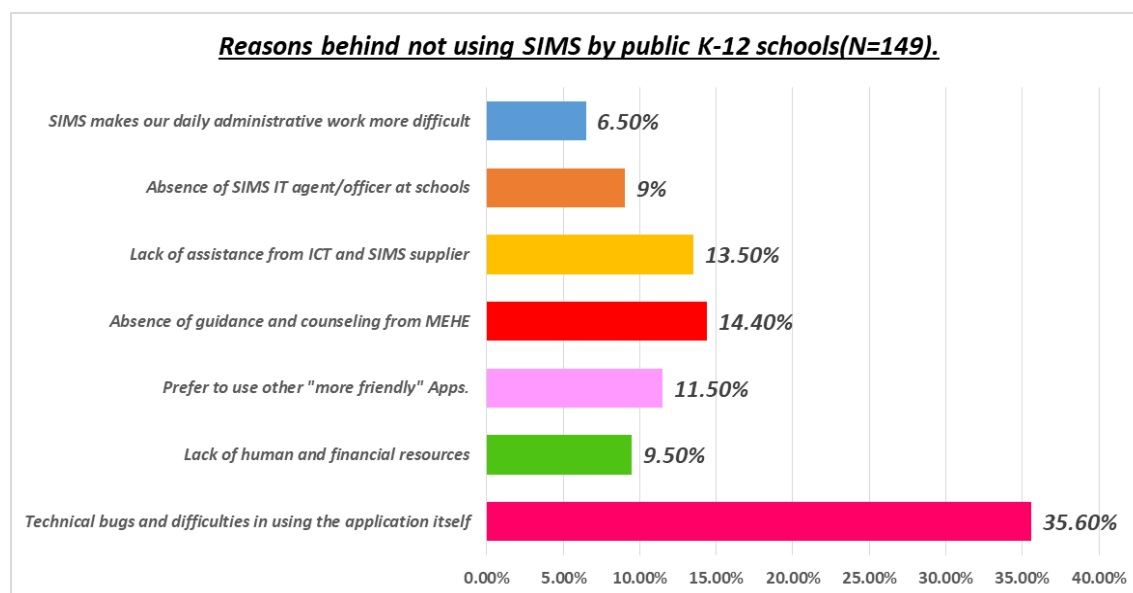


Figure (3): Graph representing the classification of schools regarding the usage of EMIS including reasons for not using it.

The absence of guidance and counseling from the MEHE was considered as the main reason behind the lack of SIMS adoption in 14.4% (out of the 12%) of the schools whilst 13.5% (out of the 12%) of the schools considered the lack of technical assistance and support from ICT and the SIMS supplier to be basic behind the failure of the system in their schools. 9% (out of the 12%) of the schools reported that a major reason behind not using the application is the absence of specific IT agent(i.e. officer) in each public K-12 school handling all the aspects and queries pertaining to SIMS. 6.5% (out of the 12%) considered that SIMS makes their daily administrative work more difficult, complicated and time consuming.

Installation of SIMS in Schools

As for having the SIMS installed in schools, figure 4 shows that 75% of the Public Schools using SIMS (N=1039) stated that they face minor problems with the SIMS versions installed and these are solved through the directions they receive from the ICT unit at MEHE, most of the time these guidance are received through ICT unit hotlines. 14% out of the same sample indicated that they face major problems within the version installed which deny them from using the SIMS installed, It was reported that these problems were due to the incompatibility of computers dedicated to SIMS usage with the version used. 11% percent of schools using SIMS reported that they have no single problem with the SIMS version installed.

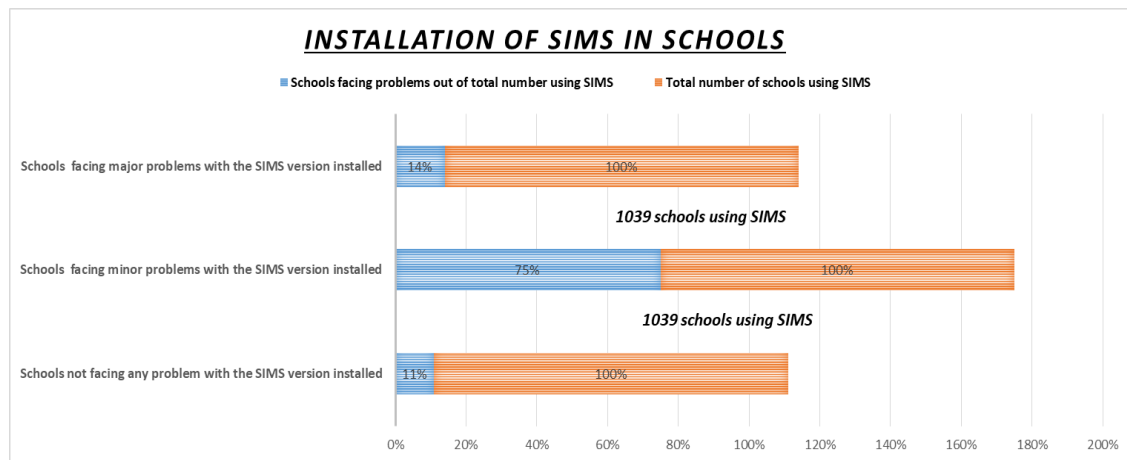


Figure (4): Graphical Representation showing SIS installation in Lebanese Public Schools

Useful SIMS Modules

80% (out of the 1039 schools) of School Principals of the Public Schools that use SIMS said that the modules they found mostly useful to their schools and were fully functional are the students and teachers modules. The remaining 20% (out of the 1039) use it since they didn't have a better solution provided by MEHE.

Data cleanliness on SIMS

Figure 6 shows that 73% of the public schools using SIMS expressed that the data entered in SIMS is not yet clean and trusted enough to admit it as the unique and sole data base source against their relevant directorates and executives at MEHE. 16% of schools who are using SIMS said that approximately 90% of the data entered on SIMS are clean, useful and accountable for the administration to use. 11% double check the data entered manually before sending them to the relevant administration. School principals reported that this last point is effort and time consuming mainly during the national exams period due to the lack of required human resources and short period of time.

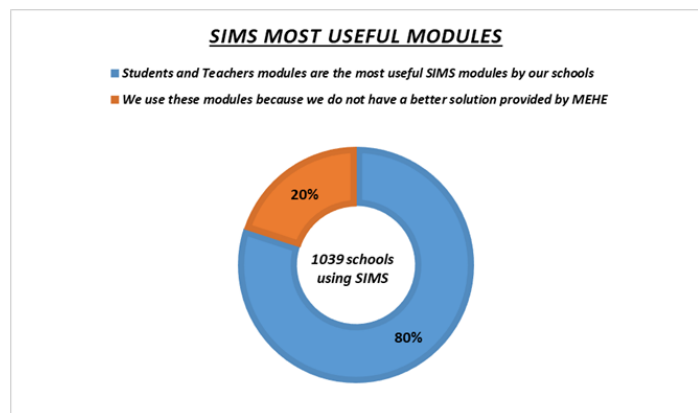


Figure (5): Usage of SIMS modules

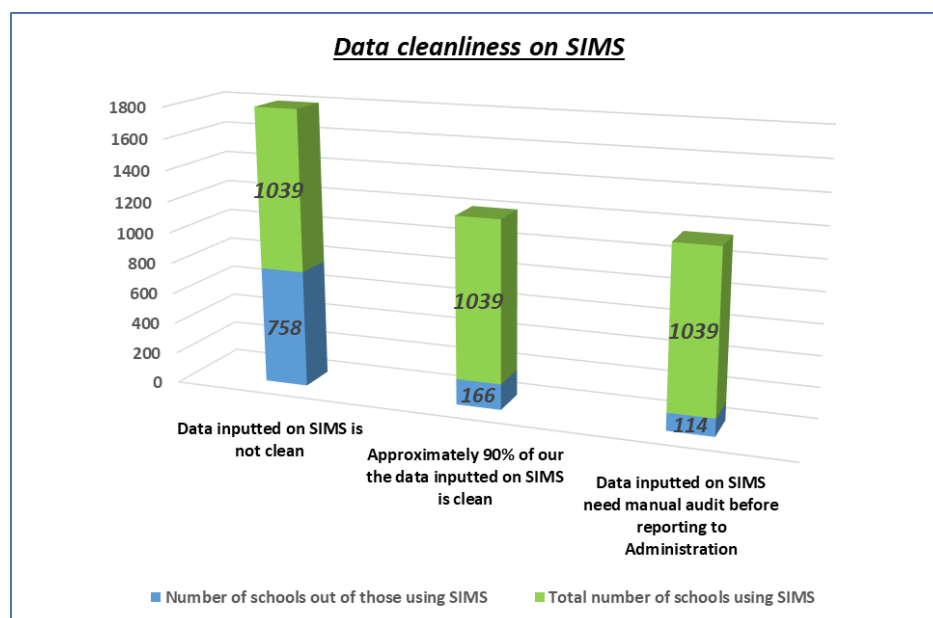


Figure (6): Graph representing the data cleanliness on SIMS

Difficulties with SIMS

The problems that school principals encountered whilst using SIMS were also explored in the survey. This has been checked at four levels: (a) Technical (purely concerning the SIMS application), (b) Administrative, (c) Financial, and (d) Human.

As shown in figure 7, the examination of these variables demonstrated that within the 1039 (84% of total public K-12 schools) using SIMS, only 30% of the problems encountered were related to SIMS technical troubleshoots, whereas 35% of the problems were due to the lack of trained people.

The incapability of school principals and their lack of expertise in dealing with this kind of software underlie 9% of the problems.

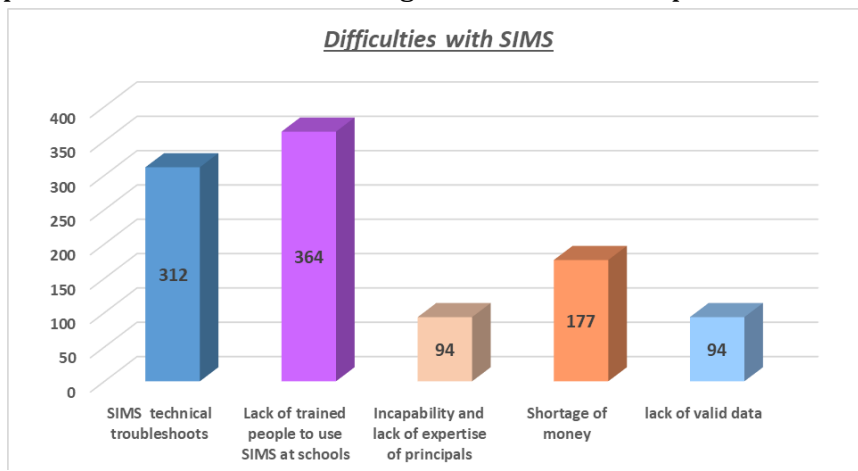


Figure (7): Graphical Representation showing difficulties encountered while using SIMS in Lebanese Public Schools

17% of the schools noted that the problems were due to shortage in money and roughly 9% of the problems were related to the lack of valid data. Dealing with these problems entailed calling the TAC (Technical Assistance Center) at MEHE and bringing out an IT technician (outsider) to resolve these problems. Data reflected that the majority of the school principals surveyed noted that they were calling support hotline but it was busy almost at all times and the Time to Respond (TTR) took at least one week.

Suggestions for Improving SIMS

One of the questionnaire items addresses the suggestions of the Public School Principals to improve SIMS. This item was a close ended question including 10 variables. Data is presented in figure 8.

90% of the principals using SIMS suggested that (a) dedicating an IT specialist to administer SIMS in

each school would be very helpful, (b) Agility in customization and re-programming SIMS so as to meet school needs (c) annual budgeting for this purpose (d) make the SIMS a web application based (e) include active procurement, health, and financial modules (f) banning extension of students registration (registration of students in public K12 schools remain till January...) to allow valid and accurate data in the system (g) necessity of synchronizing SIMS with other Document Management System(DMS) and other e-learning platforms such as MS teams, zoom, blackboard etc... (h) create a SIMS mobile app accessible allowing school principals to run the school through their own mobile (i) simplifying reporting and graphic analysis techniques, methodologies and customization and (j) improve security of SIMS and its data would be very crucial for the successful implementation of SIMS and its sustainability. On the other hand, 10% of the school principals assured that decreasing the number of SIMS modules might give much time for the schools principals to better run and ameliorate the performance of their schools.

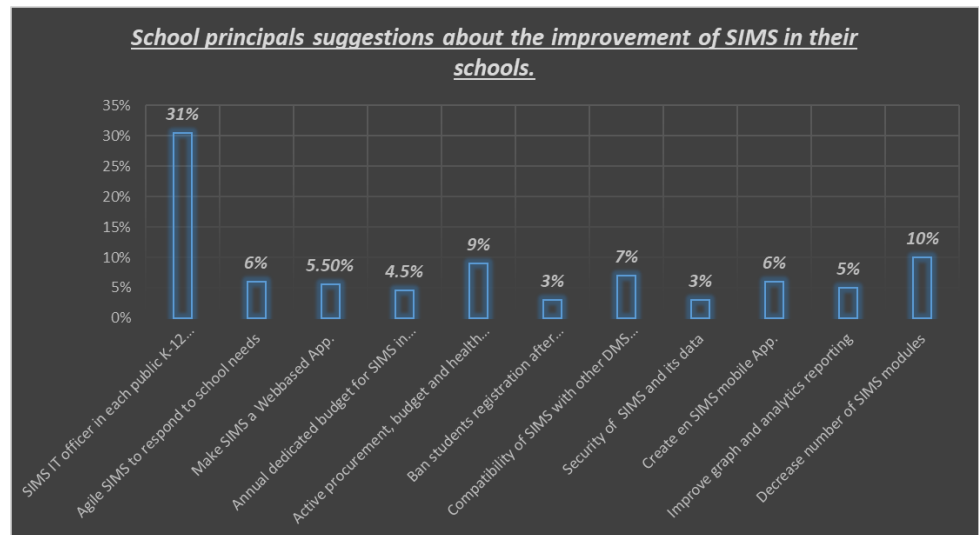


Figure (8): Graphical Representation of school principals' suggestions concerning SIMS improvement in Lebanese Public Schools

Suggested Alternatives for SIMS

When asked about their opinion if they did prefer any substitute for SIMS (figure 9), 47% of school principals explained that they prefer keep working with SIMS under the condition that a specified dedicated IT agent would be assigned for each public school.

On the other hand, 22% of school principals suggested merging into another school management

system that is much more flexible is better. This might be ascribed to the technical problems encountered whilst using SIMS.

18% encouraged contracting with a specialized company to automate the work on their behalf and 13% preferred to use the traditional IT solution i.e. dedicated computer with an assistant to input the requested data, organize them and sort out a limited number of indicators to help in making decisions and solving problems. Only 6% of school principals prefer to keep using paper work, the opinions of school principals are shown in the figure on the right.

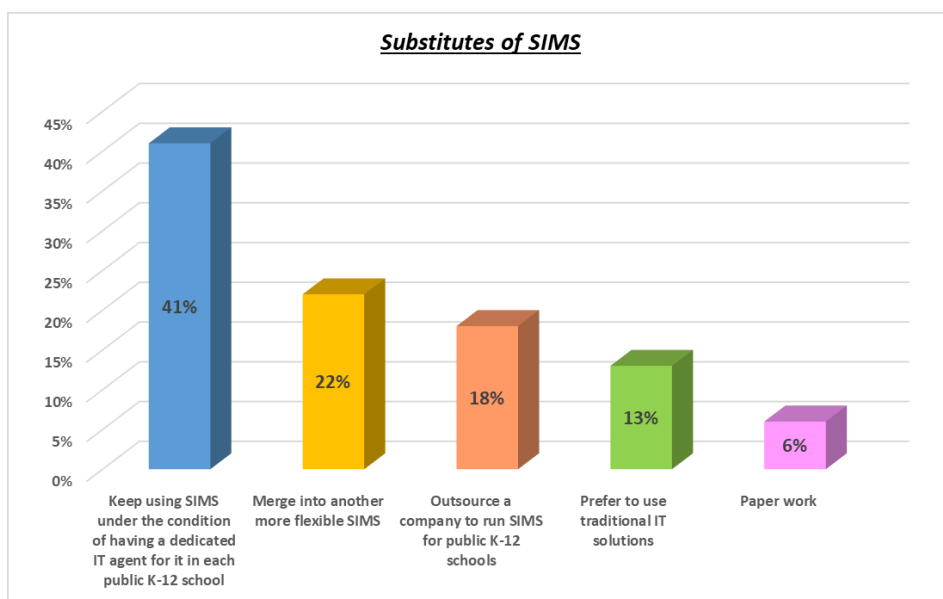


Figure (9): Suggested Alternatives for SIMS

LIMITATIONS OF THE STUDY

The study investigated the suitability of SIMS by the lenses of public K-12 school principals and did not address the opinion of the different administrations and directorates inside MEHE such secondary education, primary education, accounting unit, national exams, etc... Also, stepping on the opinion of different stakeholders such as WBG, UNESCO, UNICEF etc... about how much they trust the data extracted from SIMS would have been definitely strengthened this study. Last but not least, the study did not address the government spending on SIMS during the last two decades due to the difficulties in having data relevant to this cost. This would have definitely enriched this paper to determine if it is really feasible for MEHE to invest in this application across 20 years or to move to other better alternatives.

CONCLUSIONS AND RECOMMENDATIONS

The aim of any Management Information System is to save time, money and improve work efficiency. Usually, the management information system designed for education requires more professionalism and accuracy than any other system to give the concerned authorities in any country full support to draw strategies that support reform.

Investigating the School Information Management System (SIMS) suitability for the Lebanese Public School System showed that only 12% of the total number of public K-12 schools in Lebanon did not use it at all i.e 148 schools while the 84% i.e. 1039 of schools that use SIMS face many problems the deficiency in using this software is essentially related to programming problems and troubleshoots of the application itself where most of the school principals faced problems in extracting relevant data and appropriate reports, this is followed by the absence of any guidance and support that school principals are expected to receive from MEHE along with the lack of assistance from ICT unit and SIMS supplier.

The absence of a national management information strategy overarching the implementation of SIMS in Lebanese public K-12 schools and the delay to solve the problems that schools often encountered within SIMS, played a big role in de-motivating SIMS users by the long TTR⁸ made available, the weak efforts to redress technical problems and make SIMS functioning properly. In addition, the call center (hotline) to support the SIMS implementation and to respond to troubleshoot messages, didn't seem to function appropriately.

Further to this, the lack of human and financial resources to implement and sustain this application to serve the Lebanese Public Schools and the absence of any ICT strategy to leverage the education quality in Lebanon, contributed also to the failure of this system inside schools. The findings of this study; along with the fact that 20 years of exploration within an Information Technology System lie pretty much beyond the international norms governing the IT world where it was supposed to build a success story of SIMS implementation, update and extension during this time; it is recommended that MEHE firstly should put in place a clear national management information strategy making implementation and sustainability of SIMS on the top of its priorities, develop new policies and regulations making SIMS the sole and unique accountable education information system for the whole education sector, plan the proper connections and bridging between SIMS and other management information systems existing or affiliated with MEHE such as CERD data base, TVET data base, private schooling databases (i.e National Student List), Lebanese university etc... Also making the ICT unit as an embedded part of MEHE's administration and not an external unit funded by UN and other agencies with a clear organogram and role for this unit. Last but not least, clean data remains the main challenge, MEHE can benefit from teaming up with different faculties of Lebanese university that they are spread across the country to run an internship for enrolled students aiming at cleaning existing data and inputting missing data during the summer semester. This would be a Win-win situation for both parties and makes the SIMS data base clean and ready to use by the beginning of each academic year. Establishing regional technical hubs in different Caza to support the implementation of SIMS would definitely help a lot. Otherwise, SIMS would remain a real burden for MEHE that its disadvantages weigh far more than its advantages.

⁸ Time to Respond

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