

## School Information Management System (SIMS) In Public Schools in Lebanon

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### Abstract

In view of the paramount importance that administrations have attached to informatics and its software in light of administrative and technical problems facing employees, this research came to determine the level of these problems and their impact on benefiting from the services provided by the approved SIM program in public schools in Lebanon, and used the descriptive and analytical approach using a prepared questionnaire. Therefore, the opinions of 69 informatics employees in public schools were surveyed, and it was found that there is a average level of administrative and technical problems, an average level of benefiting from the services of the program, and that there is a medium negative relationship between the level of technical problems and a weak negative relationship with the level of utilization of its services, and no statistical significant differences in the level of problems due to the variable of school type (primary, intermediate, secondary), meaning that what has been reached applies to different types of schools. It concluded a set of recommendations that need to be taken to activate the benefit of the program and face the problems stand up to its users.

**Keywords:** School Information Management System, Public Schools, Lebanon

## نظام إدارة المعلومات المدرسية (SIMS) في الثانويات الرسمية في لبنان

### ملخص

نظراً للأهمية القصوى التي باتت توليها الإدارات للمعلوماتية وبرمجياتها في ظل مشكلات إدارية وتقنية تواجه العاملين، جاء هذا البحث ليحدد مستوى هذه المشكلات وتأثيرها على الاستفادة من الخدمات التي يوفرها برنامج SIM المعتمد في المدارس الرسمية في لبنان، واستخدم لذلك المنهج الوصفي التحليلي بالاستفادة من استبيان أعد خصيصاً لذلك، حيث تم استطلاع آراء 69 موظف معلوماتية في المدارس الرسمية، وتبين أن هناك مستوى متوسط من المشكلات الإدارية والتقنية، ومستوى متوسط من الاستفادة من خدمات البرنامج، وأن هناك علاقة سلبية متوسطة بين مستوى المشكلات التقنية وسلبية ضعيفة مع مستوى الاستفادة من خدماته، وعدم وجود فوارق ذات دلالة إحصائية في مستوى المشكلات تعزى لمتغير نوع المدرسة (ابتدائية، متوسطة، ثانوية) أي أن ما تم التوصل إليه ينطبق على مختلف أنواع المدارس. وخلص إلى مجموعة من التوصيات اللازم الأخذ بها لتفعيل الاستفادة من البرنامج ومواجهة المشكلات التي يواجهها مستخدموه.

**الكلمات المفتاحية:** نظام إدارة المعلومات المدرسية، المدارس الرسمية، لبنان

## Overview

Management Information Systems (MIS) have become a vital component of successful firms, and a vital need in public administrations, especially that benefit from cloud computing that is becoming an adoptable technology for many of the firms with its dynamic scalability and usage of virtualized resources as a service through the Internet (Ercan, 2010:12). Computers are seen to have the potential to make a significant contribution to the teaching, learning, and administration in schools. An extensive amount of investment that has gone into introducing information and communication technology (ICT) into schools including hardware, software, networking, and staff development will be considered worthwhile if there is evidence that it has made a commensurate impact on school performance and effectiveness (Condie et al., 2007: pp:2-5). But many of the failures and problems of (MIS) due to technical, administrative/ organizational, and social problems constitute real obstacles that prevent the effective use and benefit of MIS.

This Research Paper declares most of the available features and failures of the **School Information Management System (SIMS)** that was officially certified by the Ministry of Education and Higher Education three years ago. All public schools all over Lebanon started using it, but there still a lot of administrative and technical problems and shortfalls that prevent the full benefit from its outcomes. This is what this paper will try to explore through a questionnaire addressed to IT employees in the public schools, in a try to raise suggestions that improve the overall performance of administrative process in all the public schools in Lebanon.

## Significance of the Study

The main significances of this research are:

1. Declaration of the problems facing IT employees using SIMS a scientific method, and classifying them.
2. Finding the relation between some variables and the level of these problems.
3. Helps public school administrations in overcoming these problems.
4. Improves administrative performance due to the effective use of SIMS.

## Research Problem

This research aimed to answer the following questions:

**"What are the available features of SIMS in public schools? And what are the challenges that face IT employees using it?"**

The proposed research question is based on the following three sub-questions:

1. What is the level of the technical and administrative/organizational problems that face IT employees who use it, from their point of view?
2. Are there any differences between the levels of problems facing the schools due to its type, years of experience of the IT employee?
3. Is there any relation between the level of these problems and the readiness for benefit for SIMS?

## Scope of the Study

This Research Paper has 3 objectives:

1. Determine technical and administrative/organizational problems and shortfalls that prevent the full benefit of SIMS.
2. Determine the extent of differences in benefit of SIMS between the schools.
3. Determine the effect of these problems on benefiting from SIMS.

## Hypotheses

1. IT employees face technical and administrative/organizational problems using SIMS.
2. There is an inversed relationship between the level of these problems and the readiness for benefit for SIMS.
3. There are differences between the levels of problems facing the schools due to its type, years of experience of the IT employee.

## Literature Review

In education field not only the content but also the educational management is vital. When taking the decisions, teachers and school management staff must have precise and up-to-date data about latest state of students and school. If there isn't information system, the data will not be saved and analyzed effectively therefore use of needed information is either difficult or takes time. To obtain the precise and fast results, information system is required (Akpinar and Kaptan: 2010: pp. 4392–4397). In educational management, staff is word in various fields to effectively execute the organization and minimize the cost. (Onwalan Klongsungsrn, 2007: 2) The staff needs to take decisions and put plans to utilize of limited resources. Therefore, they requisite well processed information about the status of the school. Management information system (MIS) is an instrument that supports the staff in decision making. MIS must include both external and internal information that are related to the challenges, strategies, targets, policies, and control for the educational firm in order to make them do their job effectively. (Weeraporn Panurag, 2007: 2).

School information systems (SIS) are a clear sub-group of (MIS) that are used in educational firms. In schools, distinct information systems support different types of decisions: administrative learning management systems, information systems and assessment information systems. Theoretically, we must differentiate between systems that focus mainly on supporting the learning and teaching tasks and systems that serve for the instructional and administration decision making. An often cited definition for a school information system is: "An information system based on one or more computers, consisting of a data store and computer application which enables the computerized storing, retrieval, analysis, and distribution of data to support school management." (Visscher, 2001: 4). But this demonstrates only the aspect of instructional support. (Breiter and Light, 2006: pp. 206-217). The use of (MIS) in educational firms has increased rapidly due to its effectiveness and efficiency. At the begging stages of its implementaion, (MIS) main aim and usage was to enhance the efficiency of school administration. It was used to retention student and data. The most interest was focused on data entry and collation, more than data analysis or transfer.

The value of (MIS) has evolved during its integration stages. Wide review of previous studies showed positive effect of MIS on school management including enhanced accessibility to data and information, more effective and efficient administration, higher utilization of school resources, and reduction in cost and workload, better time management, and improving reports quality. A number of barriers to (MIS) use are clear in the literature; majorly is lack of time, lack of training, lack of senior management support, lack of confidence or skills, and lack of technical support. MIS can supply staff and teachers with the required information for policy-making, plans, and assessment. Management information system (MIS) changed school management in the areas of workloads, making decision, leadership, communication lines, HR management, accountability, and plan making. This will help the school manager in determining the school targets, making strategic plans, distributing resources, and assessment teachers and staff achievement as well as organizational progress. (Weng, 2014: 94)

The effect of MIS increased by the wide spread of computerized networks, internet and benefit of cloud computing. Where cloud computing was first established by Google. So of course, the (MIS) has not a specific definition yet, but since the official presentation of the concept of (MIS) - especially in recent years- many studies and firms have used the cloud computing research and application, to the analysis of its revolutionary impact on information industry and IT industry, (Erdogmus, 2009: pp. 4-6) focusing on the connection between software trade development and cloud computing. Chen suggested that healthy cloud computing development will surely make the software trade to evolve from the pure SaaS model to PaaS/IaaS, software on demand is the mainstream in the future (Chen and Li, 2011: pp. 1-4). Saju Mathew who carried a research titled “Implementation of Cloud Computing in Education – A Revolution” said that cloud computing was used in the education sector about flexibility, teaching and costs for main business acts. The limitations and benefits of (MIS) are also mentioned in the research. According to the findings, a lot of educational firms enhanced the fundamental structures of IT programs. The awkwardness could be treated by using (MIS). The challenges included flexibility, access to information, expenses and technology (Mathew, 2012: pp. 154-160). Using (MIS) in the firms should be defined as follows:

1. Infrastructure as a Service (IaaS): can be used to satisfy the infrastructure needs of the students, faculties or researcher globally or locally with some specific hardware configuration for a specific task.
2. Platform as a Service (PaaS): certain providers are opening up application platforms to permit customers to build their own application without the cost and complexity of buying and managing the underlying hardware and software layers.
3. Software as a Service (SaaS): the application service provider is hosting the application which runs and Interacts through web browser, hosted desktop or remote client.
4. Computing as a Service (CaaS): providers offer access to raw computing power on virtual server such as Amazons, EC2 service. Following figure shows the university using the services of cloud computing (N. Sultan, 2010: pp. 109-116).

As a result of computerization, the tasks of school administrator are affected in 6 main categories: instruction assesment, meetings frequency, surveillance, responsibility, performance interpretation, and decision-making. The school administrator interrelations with staff heads and teachers significantly strengthened. The school administrator relations with the IT administrator were found to be on a daily basis and powerful (Telem, 2001: pp. 345-362). Management information system as a thrilling improvement is a significant alternative today's educational perspective. Administrative staff and students have the opportunity to on-time and low-cost use different applications and resources through the internet on-demand. This automatically offers more powerful functional capabilities and reduces the cost of organizational expenses. (T. Ercan, 2010: 492).

These changes appeared more in Lebanese public schools, where MEHE approved a new system to be used starting 2016 called "SIMS". IT employees – the users of the system – faced a lot of challenges and problems using it. And they had to deal with repeated updates and changes throughout the 3 years. These challenges affected the mission and the role of SIMS in supporting and development of school administrations to increase its effectiveness and sufficiency. To study these challenges, we classified them to administrative and technical problems.

## Methodology

Using descriptive research analytical method, the population in this research is the IT employees in public schools in Lebanon. Using a special questionnaire that is based on Likert scale, it was prepared using Google form, and the link was sent to more than 125 respondents from all over Lebanon to fill the questionnaire; we tried to take a sample of at least 50 persons of the population, and we had 69 questionnaires filled.

Note: The questionnaire was prepared in Arabic language to suit better with all respondents, especially that aren't English educated.

## Results or Findings

	Frequency	Percent
Male	17	24.6%
Female	52	75.4%
Total	69	100%

We found out that females are more than three quarters of the sample, this agrees with the distribution of administrative and educational staff in public schools in Lebanon (79.9% females, 20.1% males) (CRDP's Statistical Bulletin, 2017).

	Frequency	Percent
20-29 years	11	15.9%
30-39 years	32	46.4%
40 and above	26	37.7%
Total	69	100%

About half of IT employees are 30-39 years old, and more than their third are above 40, while 15.9% only are 20-29 years old, this shows that the staff using SIMS aren't young people.

<b>Table 3: Educational Level</b>		
	Frequency	Percent
secondary	26	37.7%
university	43	62.3%
Total	69	100%

The majority of the sample is composed of university graduates, while the minority is of secondary level.

<b>Table 4: Years of Experience</b>		
	Frequency	Percent
1-3 years	12	17.4%
4-6 years	15	21.7%
7-9 years	14	20.3%
10 years or above	28	40.6%
Total	69	100%

The majority of the sample is composed of experts, while only 17.4% are beginners.

<b>Table 5: Type of the School</b>		
	Frequency	Percent
elementary	7	10.1%
intermediate	26	37.7%
secondary	36	52.2%
Total	69	100%

IT employees in secondary schools where more responsive than others, while those who work in elementary schools are the less.

	Frequency	Percent
2 years	11	15.9%
3 years	58	84.1%
Total	69	100%

Most of the schools started using SIMS three years ago; only about 16% started using it two years ago.

At the technical level		Never	Rarely	Sometimes	Very often	Always	Total
Availability of necessary technical equipment (computer, printer, ...) are available	Frequency	4	9	21	26	9	69
	Percent	5.8%	13.0%	30.4%	37.7%	13.0%	100%
Suitability of equipment specifications with program needs	Frequency	2	5	34	22	6	69
	Percent	2.9%	7.2%	49.3%	31.9%	8.7%	100%
Availability of necessary space for the operation of the program	Frequency	16	11	25	16	1	69
	Percent	23.2%	15.9%	36.2%	23.2%	1.4%	100%
Availability of internet service with the necessary specifications (speed,	Frequency		13	47	7	2	69
	Percent		18.8%	68.1%	10.1%	2.9%	100%

capacity, coverage, ...)							
Availability of technical support required by the MEHE to answer any inquiry or review	Frequency	1	4	47	14	3	69
	Percent	1.4%	5.8%	68.1%	20.3%	4.3%	100%
Suitability of the program with the practical needs of the school	Frequency	1	6	31	20	11	69
	Percent	1.4%	8.7%	44.9%	29.0%	15.9%	100%
Suitability of the program to the full requirements required of the MEHE	Frequency		12	44	10	3	69
	Percent		17.4%	63.8%	14.5%	4.3%	100%
Total	Frequency	24	60	249	115	35	483
	Percent	5.0%	12.4%	51.6%	23.8%	7.2%	100%

	Mean	Std. Deviation	Direction
Availability of necessary technical equipment (computer, printer, ...) are available	3.39	1.06	sometimes
Suitability of equipment specifications with program needs	3.36	0.86	sometimes
Availability of necessary space for the operation of the program	3.49	0.92	very often

Availability of internet service with the necessary specifications (speed, capacity, coverage, ...)	2.64	1.12	sometimes
Availability of technical support required by the MEHE to answer any inquiry or review	3.20	0.68	sometimes
Suitability of the program with the practical needs of the school	2.97	0.64	sometimes
Suitability of the program to the full requirements required of the MEHE	3.06	0.70	sometimes
<b>Total</b>	<b>3.16</b>	<b>0.59</b>	<b>sometimes</b>

Third phrase had the lowest score (52.8%); this means that IT employees have no big problem in availability of necessary space for the operation of the program.

Sixth phrase had the highest score (69.9%); this means that the biggest problem is in suitability of the program with the practical needs of the school.

In overall, IT employees face problems at an average of 63.2% at the technical level.

<b>Table 8: To what extent do you experience a problem when using SIMS, in each of the following ?</b>							
<b>At the administrative level</b>		Never	Rarely	Sometimes	Very often	Always	Total
Availability of sufficient staff to run SIMS	Frequency	4	14	35	10	6	69
	Percent	5.8%	20.3%	50.7%	14.5%	8.7%	100%
Availability of necessary decisions for the proper functioning of SIMS are	Frequency	4	12	40	10	3	69
	Percent	5.8%	17.4%	58.0%	14.5%	4.3%	100%

provided by MEHE							
Availability of necessary decisions for the proper functioning of SIMS are provided by school administration	Frequency	4	13	30	17	5	69
	Percent	5.8%	18.8%	43.5%	24.6%	7.2%	100%
Availability of necessary funding to operate SIMS	Frequency	22	20	12	8	7	69
	Percent	31.9%	29.0%	17.4%	11.6%	10.1%	100%
Availability of necessary time to operate SIMS	Frequency	4	13	30	17	5	69
	Percent	5.8%	18.8%	43.5%	24.6%	7.2%	100%
Consistent requirements between the Ministry and the educational region	Frequency	2	21	33	8	5	69
	Percent	2.9%	30.4%	47.8%	11.6%	7.2%	100%
Total	Frequency	38	106	178	64	28	414
	Percent	9.2%	25.6%	43.0%	15.5%	6.8%	100%

	Mean	Std. Deviation	Direction
Availability of sufficient staff to run SIMS	3.00	0.97	sometimes
Availability of necessary decisions for the proper functioning of SIMS are provided by MEHE	2.94	0.86	sometimes
Availability of necessary decisions for the proper functioning of SIMS are provided by school administration	3.09	0.98	sometimes
Availability of necessary funding to operate SIMS	2.90	0.91	sometimes
Availability of necessary time to operate SIMS	2.78	0.86	sometimes
Consistent requirements between the Ministry and the educational region	2.39	1.32	rarely
<b>Total</b>	<b>2.85</b>	<b>0.73</b>	<b>sometimes</b>

Fourth phrase had the lowest score (47.8%); this means that IT employees have no big problem in availability of necessary funding to operate SIMS.

Third and fifth phrase had the highest score (69.9%); this means that the biggest problem is in availability of necessary decisions for the proper functioning of SIMS are provided by school administration and in availability of necessary time to operate SIMS.

In overall, IT employees face problems at an average of 57.0% at the administrative level.

**Table 9: To what extent do you agree that the use of SIMS helps in each of the following?**

		Never	Rarely	Sometimes	Very often	Always	Total
Provides the school administration with information and data needed for decision making	Frequency		15	42	9	3	69
	Percent		21.7%	60.9%	13.0%	4.3%	100%
Saves time and gets procedures done faster	Frequency	1	17	35	9	7	69
	Percent	1.4%	24.6%	50.7%	13.0%	10.1%	100%
Facilitates and streamlines procedures	Frequency	1	12	36	17	3	69
	Percent	1.4%	17.4%	52.2%	24.6%	4.3%	100%
Reduces errors and prevents recurrence	Frequency	1	8	44	7	9	69
	Percent	1.4%	11.6%	63.8%	10.1%	13.0%	100%
Raises the level of administrative control	Frequency		15	34	11	9	69
	Percent		21.7%	49.3%	15.9%	13.0%	100%
Ensures the smooth and consistent transmission of	Frequency		11	41	10	7	69
	Percent		15.9%	59.4%	14.5%	10.1%	100%

information and compatibility with the decision between different administrative levels							
Contributes to the achievement of the objectives and procedures established in the annual plan	Frequency	20	19	17	7	6	69
	Percent	29.0%	27.5%	24.6%	10.1%	8.7%	100%
Total	Frequency	23	97	249	70	44	483
	Percent	4.8%	20.1%	51.6%	14.5%	9.1%	100%

	Mean	Std. Deviation	Direction
Provides the school administration with information and data needed for decision making	3.00	0.73	sometimes
Saves time and gets procedures done faster	3.06	0.92	sometimes
Facilitates and streamlines procedures	3.13	0.80	sometimes
Reduces errors and prevents recurrence	3.22	0.87	sometimes
Raises the level of administrative control	3.20	0.93	sometimes
Ensures the smooth and consistent transmission of information and compatibility with the decision between different administrative levels	3.19	0.83	sometimes

Contributes to the achievement of the objectives and procedures established in the annual plan	2.42	1.25	rarely
<b>Total</b>	3.03	0.74	sometimes

The use of SIMS helps administration in most of its tactical needs, where all the phrases had scores between 60% (first phrase) and 64.3% (forth phrase), this means that if SIMS is used in proper way, and the problems facing its full use has been solved, it will be an effective program, and will help administration in all its tasks.

## Analysis and Discussion

In this part, we will try to test hypothesizes, as follows:

- **First hypothesis:** “IT employees face technical and administrative/organizational problems using SIMS”.

As shown before, IT employees face problems at an average of 57.0% at the administrative level and 63.2% at the technical level. This means that there still a lot to do to solve problems facing SIMS users.

**And this shows that first hypothesis is true.**

-**Second hypothesis:** “There is a positive relationship between the level of these problems and the readiness for benefit for SIMS”.

### a) At technical level:

		readiness for benefit for SIMS
Level of problems at technical level	Pearson Correlation	-0.592**
	Sig. (2-tailed)	0.000
	N	69

Using Pearson correlation test, statistical significance scored 0.000 less than 0.05; which means that there is a significant correlation between the level of these problems and the readiness for benefit for SIMS. And Pearson's value scored -0.592, which means that there is a moderate inverse

relationship between the level of problems at technical level and readiness for benefit for SIMS.

**b) At administrative level:**

		readiness for benefit for SIMS
Level of problems at administrative level	Pearson Correlation	-0.262*
	Sig. (2-tailed)	0.030
	N	69

Using Pearson correlation test, statistical significance scored 0.030 less than 0.05; which means that there is a significant correlation between the level of these problems and the readiness for benefit for SIMS. And Pearson's value scored -0.262, which means that there is a moderate inverse relationship between the level of problems at administrative level and readiness for benefit for SIMS.

**This shows that second hypothesis is true.**

**-Third hypothesis:** “There are differences between the levels of problems facing the schools due to its type, years of experience of the IT employee”.

**a) Due to the type of the school:**

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Level of problems at technical level	Between Groups	0.383	2	0.192	0.549	0.580
	Within Groups	23.030	66	0.349		
	Total	23.413	68			
Level of problems at administrative level	Between Groups	1.440	2	0.720	1.352	0.266
	Within Groups	35.150	66	0.533		
	Total	36.591	68			

Using Oneway – Anova, it showed that there is no difference between types of schools in facing neither technical nor administrative problems (Sig>0.05 in the two cases).

**b) Due to the years of experience of the IT employee:**

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Level of problems at technical level	Between Groups	2.276	3	0.759	2.333	0.082
	Within Groups	21.137	65	0.325		
	Total	23.413	68			
Level of problems at administrative level	Between Groups	1.054	3	0.351	0.643	0.590
	Within Groups	35.537	65	0.547		
	Total	36.591	68			

Using Oneway – Anova, it showed that there is no difference between years of experience of the IT employee in facing neither technical nor administrative problems (Sig>0.05 in the two cases).

**This means that third hypothesis is not true.**

## Conclusions

In conclusion, and taking in consideration the importance of MIS in any administration, and especially in educational institutions, this research has found that:

1. There still a lot to do to solve problems facing SIMS users:
  - a. At the technical level, IT employees face problems at an average of 63.2%. They have no big problem in availability of necessary space for the operation of the program. The biggest problem is in suitability of the program with the practical needs of the school.
  - b. At the administrative level, IT employees face problems at an average of 57.0%. They have no big problem in availability of necessary funding to operate SIMS. The biggest problem is in availability of necessary decisions for the proper functioning of SIMS is provided by school administration and in availability of necessary time to operate SIMS.
2. The use of SIMS helps administration in most of its tactical needs if the problems facing its full use have been solved.
3. There is an inversed relationship between the level of administrative and technical problems and the readiness for benefit for SIMS
4. There are no differences between the levels of problems facing the schools due to its type, years of experience of the IT employee

## Recommendations

According to what this research found, and to increase the benefit of SIMS in supporting educational administrations in public schools, some recommendations must be mentioned:

1. A special employee must be assigned to follow up the program in addition to the overloaded IT employee.
2. Redesigning SIMS to suit full needs of educational administrations in public schools.
3. Testing SIMS to overcome all bugs and faults that face its users.
4. Educational administrations in public schools must facilitate IT employees by issuing necessary decisions.
5. Educational administrations in public schools must facilitate IT employees by reducing required tasks to save time to operate SIMS.

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