

Assessment of the Effect of Integration of Information Communication Technology in Secondary School Management in Kenya

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Abstract

Information Communication Technology (ICT) is being integrated in school management gradually. This is intended to revolutionize information processing, storage and retrieval in school management systems. ICT use by school managers enhances efficiency in solving the day to day problems of school management. However the integration of ICT in schools as a management tool in Bungoma County has been assumed to be unsatisfactory over the years. The objectives of the study were to establish whether ICT has been integrated in school management, the type of ICT and the effects of ICT of the integration of ICT in school management in Bungoma County. A descriptive survey design was employed in this study. Out of 60 schools 55% were randomly sampled out. Different categories of schools were sampled using stratified sampling techniques which included Public boys' boarding schools, Public girls' boarding schools, Public mixed boarding schools, Public mixed day schools and Private schools. The study targeted 33 school principals or deputy principal, 231 heads of department, 33 accounts clerks, 33 secretaries and 33 head prefects. The instruments of data collection were the questionnaire for the school administrators, heads of department, secretaries, accounts clerks and head prefects and observation schedules for the researcher. The data was analyzed using descriptive statistics such as the mean, frequencies and percentages and inferential statistics such as chi-square. The study findings revealed that ICT integration in school management was low. Schools had few ICT facilities that had been partly integrated in school management. Most of the school managers had not received in-service training in ICT. The role of ICT in school management was minimal and this was as a result of financial constraints. This study is important in that it contributes in the provision of information that is useful to school managers, educationalists and policy makers to improve on ICT usage in school management. The study therefore recommends that as a way of enhancing efficiency in school management, school managers are encouraged to integrate ICT in their management practice. The Ministry of Education should come up with a policy which ensures that all school managers are trained in ICT. This policy should be enforced by the quality assurance officers at district and county level. The ministry should put in place measures that will allow schools to use ICT in school management. Stake holders should put priority on the provision of ICT facilities for efficient management of schools. School managers should create an enabling environment for ICT integration in school management by allowing other managers to attend trainings in ICT in order to enhance literacy in ICT that will enable them to integrate ICT in school management. Financial subsidies or donations should be given to schools so as to enable schools integrate ICT in management.

Key words: *integration, school management, effects of ICT*

Background of the Study

Information Communication Technology (ICT) has sprung from obscurity to a big industry in the world. It is used as a process

that translates descriptions and measurement of activities and events into usable information. The concept of ICT emerged as a response to the shortcomings

of the first Computerized Transactions Processing System (TPS) which improved transaction processing but provided little information for management (Pelgrum, 2008).

To digitize school management, various information systems (IS) are required at each level, ranging from the top levels, middle levels to the low levels of management. This is because each level of management has different responsibilities and therefore makes different type of decisions. As such, each level requires different type of information. For instance at the top level management there are Board of governors, Parent teachers association, Education officers, Sponsors and the Principal, who have a duty to establish the long term goals and come up with the strategic plan of the school to achieve these goals (Fuori & Gioia, 1991).

Information Communication Technology is increasingly being used in schools and educational institutions. It has been established in professional and classroom practice. However little research has been done that takes into consideration aspects of ICT and school management. ICT in school management is of great importance as it makes management efficient in terms of information retrieval and dissemination (Passey 2002).

Globally some school management systems have integrated ICT in their management practice. Countries like Australia, France, Japan, Canada, and Thailand among others have established school networks which have laid the foundation for the integration of ICT in school management while others like Netherlands were still lagging behind in ICT integration in school management (Passey, 2002). In Africa, the African Virtual University (AVU) has established open distance learning and e-learning specifically for teaching and learning purposes. This establishment has prompted African countries to consider the role of

ICT in school management. Managerial factors have emerged that have strengthened and encouraged the move to integrate ICT in school management in order to explore efficiencies in terms of program delivery and the opportunity for flexible delivery provided by ICT (Oliver and Short, 1997).

According to a study by Mangesi (2007), in Gambia ICT had been integrated in schools Management. In the Gambia Computer Laboratories are in place and some schools are equipped with state-of-the-art laboratories. The computer Programmes that were introduced aimed at computer literacy of School teachers and principals and this laid the foundation of ICT integration in school management. In Tanzania according to Menda (2008), the Ministry of Education and Culture (MOEC) unveiled its project for compulsory ICT in secondary schools. This was meant to facilitate the integration of ICT in school management. The government of Tanzania has taken the decision to reduce taxes on computer imports and also it has placed ICT among the development priorities in Tanzanian vision 2025 for the purpose of realizing the millennium development goal of digitizing education management.

The Kenya Government appreciates and recognizes that an ICT literate workforce can form the foundation on which the country can acquire the status of a knowledge based economy. It is against this background that the Government wishes to make Education the natural platform for equipping the nation with ICT skills. This will then create a dynamic and sustainable economic growth and make the schools be ICT compliant Republic of Kenya (Session paper NO.1 of 2005). In Kenya one of the goals and objectives of education was to promote and popularize ICT as well as science and technology by the year 2008. On this basis, in January 2006, Kenya promulgated a National ICT policy aimed at improving the livelihood of

Kenyan. The Education Ministry's policy on ICT is to integrate ICT into education and training systems in order to prepare the learners and staff for the Kenyan economy of the future and enhance the nation's ICT skills. The policy has several sections which include information technology, broadcasting, telecommunication and postal services. The importance of ICT lies in its use, it is considered necessary in education management in schools because it enhances quick processing of information and it gives continuous development of knowledge, skills and enriches educational materials. (Mutuma, 2005). ICT is an assisting tool for making assignments, collecting data, documentation, communication and conducting research (Passey, D 2002).

Most schools in Kenya mainly use computers for teaching and learning. The learning is done using Computer aided learning (C.A.L), Computer Aided Instruction (C.A.I), Electronic learning (e-learning) and Computer based Simulation. The learners use word processors, Databases and desktop publishing programmes for typing, printing and storing important documents for future reference (Mburu, 2004). However the practice is changing and schools in Kenya have begun to integrate ICT in school management.

The Ministry of Education Science and Technology (MOEST) in the session paper No.1 of 2005 indicated that ICT skills play a key role in promoting economic development of a country. Many of the productivity gained in the developed world economies over the past two decades can to a great extent be attributed to the impact of ICT. If ICT is integrated in school management then development in program and information delivery will be realized.

From this background it is clear that the integration of ICT in schools is wanting. School managers are supposed to communicate with parents, staff members,

the employer, the ministry etc. For the managers to be effective, ICT is required in their management practice. This study therefore sought to assess the effects of ICT integration in secondary school Management in Bungoma south district found in Bungoma County in western province of Kenya.

Statement of the Problem

The Integration of ICT in School Management has been assumed to be unsatisfactory over the years in many schools in the country (Oloo, 2009). This has caused a lot of public complaints from schools and concern from the ministry about the integration of ICT in School Management. Studies focusing on the integration of ICT in school management at secondary school showed minimal integration of ICT in management. The low level of the integration of ICT in school management and the low literacy in ICT could militate against the country's aspiration to achieve the Vision 2030 and the Millennium Development Goals (MDGs). This is because ICT is a tool for organization, management, communication, conducting research and documentation. It is therefore of great value in school management because it enhances planning and information delivery in management. It is therefore important to assess the effects of ICT integration in school management in Bungoma County.

Objectives of the Study

The objectives of this study included the following:

- (i) To determine the type of ICT integrated in secondary school management in Bungoma County.
- (ii) To establish whether ICT has been integrated in secondary school management in Bungoma County.
- (iii) To assess the effects of the integration of ICT in secondary school management in Bungoma county.

Significance of the Study

The findings of this study have both theoretical and practical benefits to the future of ICT in Kenya. The study contributes to the advancement of knowledge about ICT and ICT integration in particular. The findings of this study will motivate school managers to realize the need of integrating ICT in their management systems. The significance of the study lies in the fact that the findings could influence policy guidelines to facilitate successful integration of ICT in school management. The study will awaken the ministry of education science and technology (MOEST) in the formulation and implementation of ICT policies aimed at enhancing efficiency in information and program delivery in school management in the Republic. The findings of the study will sensitize school managers in adopting ICT in school management due to its advantages of bringing efficiency in information and

program delivery. This practice will have a trickledown effect in school management.

The Conceptual Framework

The Conceptual framework that explains the integration of ICT in school management has the main goal of improving efficiency and increasing communication both within and without the school system. This is shown in figure 1. Figure 1 shows the pathway through which the integration of ICT affects school management. It shows the variables, ICT integration and school management. The integration of ICT in school management includes the types of ICT, literacy in ICT. Uses of ICT, effects of ICT and constraints in ICT use that result in efficiency in program and information delivery in school management. The effect of ICT overlaps when ICT is integrated in school management which leads to efficient running of school administration and management.

Conceptual Framework

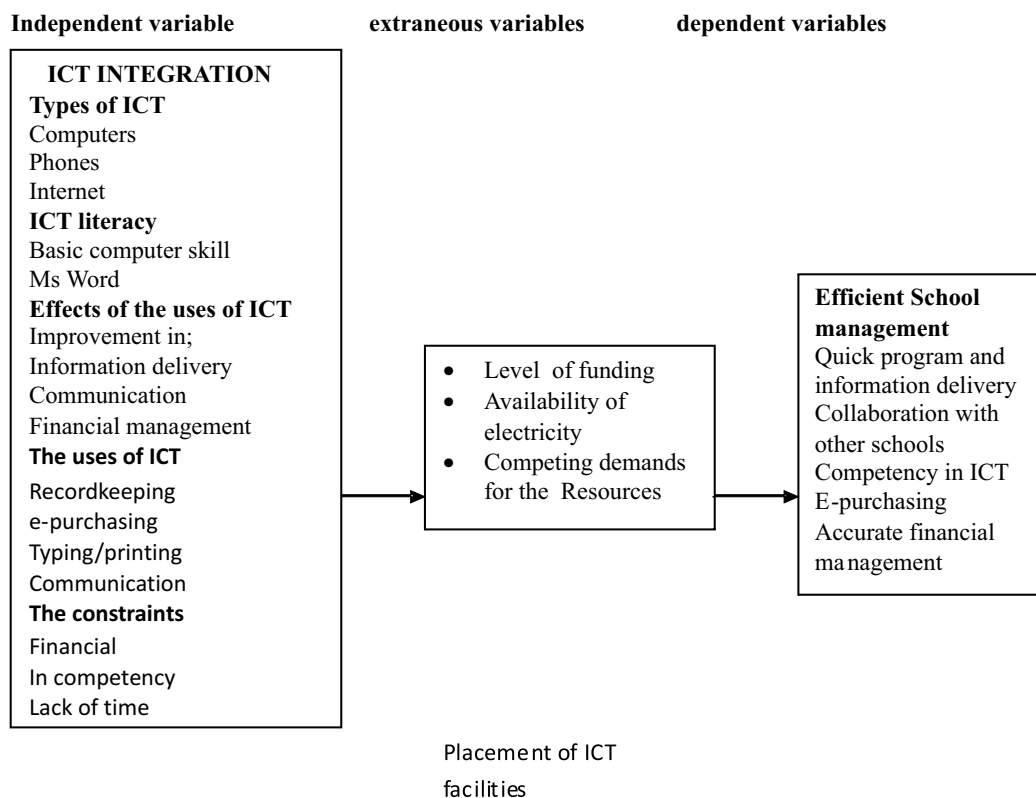


Figure 1: The relationship between ICT integration and school management

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However the integration of ICT depends on the ability of the school management to finance and buy the ICT facilities and programmes and place them in the strategic places of management in the school. The integration may be affected by the literacy level which is required to operate and utilize the facilities and programmes. The independent variable is the one to which different subjects are exposed to in different degree or the variables on which the groups of subjects to be compared are different (Kathuri & Pals, 1993). The independent variable is expected to bring

about or account for a difference or a change in the dependent variable. The researcher builds the independent variable into the design in order to determine the effects of those factors on the dependent variables (Kathuri & Pals, 1993). According to Kothari (2003) an extraneous variable is the dependent variable that is not related to the purpose of the study but may affect the dependent variables.

Research Methodology

The study adopted a descriptive survey design. A total of 33 secondary schools were selected using stratified sampling from a total of 60 secondary schools (public and private) found in Bungoma south district in Bungoma County. This group of respondents possessed the required characteristics. The study used 363 respondents out of which 33 were school administrators, 23 heads of department, 33 accounts clerks, 33 secretaries, and 33 head prefects. Data analysis was done both qualitatively and quantitatively. The results were tabulated and summarized in tables.

Finding and discussions

ICT Integration in School Management

The integration of ICT in most schools in Kenya is still low. Most schools still use the manual system that is full of paper work which makes the tracing of information very tedious and time consuming. Table 1 shows whether ICT has been integrated in school management.

Table 1: ICT integration in secondary Schools as reported by the respondents

Nature of responses	Respondents									
	administrator n=33		HODs n=231		secretaries n=33		A/Cs n=33		H/P n=33	
	f	%	f	%	f	%	f	%	f	%
Yes	8	24.2	53	22.9	20	60.6	15	45.5	12	36.4
No	25	75.8	178	77.1	13	39.4	18	54.5	21	63.6
Total	33	100	231	100	33	100	33	100	33	100

From table 1, 8 (24.2%) of the school administrators reported that ICT had been integrated in school management while 25(75.8%) indicated that ICT had not been integrated in school management. Of the 231 Heads of department 53(22.9%) of them reported that ICT had been integrated in school management while 178 (77.1%) reported that ICT had not been integrated in school management. The table shows that 20 (60.6%) of the school secretaries reported that ICT had been integrated in school management while 13(39.4%) reported that it had not been integrated in school management. In the table 12 (36.44%) of the head prefects indicated that ICT had been integrated in school management while 21 (63.6%) of them reported that ICT had not been integrated in school management. The interpretation therefore was that the majority of the schools had not integrated ICT in school management. This was attributed to the fact that the most of the schools had insufficient funds, lacked human resource and electricity. This concurs with observation made in the sampled schools which indicated that most of the schools had not integrated ICT in school management while others though they had electricity the integration of ICT in school management had not been fully implemented. According

to livagne, (1996) computerizing the reporting systems of a school have saved time for both teaching and administrative work for the staff since the reports can be generated automatically and to a common format. However the low integration of ICT had made the schools to lag behind in technology. This study concurs with the study of Heathcoast, (2000) who reported that computerizing information systems and automating the school management systems improved on the school productivity and enhanced efficiency. Schools that had integrated ICT had made a step to move away from paper work to achieve a paperless office system. Therefore integrating ICT in school management enables schools to achieve efficiency.

4.3.2 The ICT Facilities used in School Management

Several ICT facilities are used in the smooth running of the school management in communication and information delivery if the facilities were placed in relevant places of the school management. Table 2 indicates some of the ICT facilities that had been integrated in school management which included the computers, telephones, internet and others (photo printers, fax machines scanning machines, LCD projectors).

Table 2: The ICT Facilities used in School Management

Respondents	Administrator n=33		HODs n=231		Secretaries n=33		A/CS n=33		H/P n=33	
	f	%	f	%	f	%	f	%	f	%
Computers	7	21.7	55	23.8	11	33.3	5	15.2	17	51.5
Mobile phones	4	12.1	72	31.2	9	27.3	12	36.3	2	5.7
Internet	17	51.5	10	4.3	4	12.1	5	15.2	0	0.0
Others	2	5.7	3	1.3	5	15.2	11	33.3	1	3.4
None	3	9.0	91	39.4	4	12.1	0	0.0	13	39.4
Total	33	100	231	100	33	100	33	100	33	100

Others (photo printers, scanning machines, modems,)Table 2 shows that 17(51.5%) of the school administrators reported that there were internet services in schools while 3(9.1) indicated that there was none. On the other hand 91(39.4%) of the HODs

reported that they had none of the ICT facilities while 55(23.8%) reported that they had computers in school management. From the table 11(33.3%) of the secretaries indicated that there had computers while 4(12.1%) reported that there was none.

Also 21(63.6%) of the head prefects reported that there were the computer facilities while 13(39.4%) reported that there was none. The findings revealed that 12(36.3%) of the accounts clerks reported that mobile phones were there in school management while 11(33.3%) indicated that there were other facilities like the photo printers and scanning machines. These finding concurs with those of Kozma(2002) who indicated that there was increase in computers and internet access in the developed countries between 1995-1998. Such developments laid the foundation for the integration of ICT in school management. This was also supported by the report of HM inspectors of education in Scotland where secondary schools had one computer per class and one per department and computers were connected to the internet. The school administrator, HODs, school secretaries and Accounts clerks had some of the ICT facilities that were used in school

management while some of them were not keen to utilize them for management purposes.

The Opinions of managers on the effects of the Integration of ICT in schools

School administrators are the top-level managers who are required to bring reforms to schools although the middle and lower level management opinion was also sought in order to bring consensus in schools. The respondents' outlook on definite management opinion was asked so as to be able to establish the on the effects of the integration of ICT in secondary school management. The opinions investigated were improved communication, improved financial management and improved administrative and managerial activities. A 5 level likert scale was used. The findings are presented in table 3.

Table 3: Responses on the effects of ICT integration in school management (n=363)

Opinion	Respondents	Responses					Total	mean
		SD	D	U	A	SA		
Improved Communication	ADM	6.1	9.1	3.0	21.2	60.6	100	4.21
	HODs	2.6	0.9	2.6	22.9	71.0	100	4.59
	SEC	0.0	6.1	3.0	30.3	60.6	100	4.45
	A/C	15.2	3.0	9.1	18.2	54.5	100	3.94
	H/P	20.6	12.1	12.1	6.1	50.1	100	3.48
Improved Financial Management	ADM	0.0	1.0	2.0	6.1	90.9	100	4.85
	HODs	12.6	4.8	1.8	22.4	58.4	100	4.11
	SEC	0.0	0.0	0.0	45.5	54.5	100	4.55
	A/C	3.0	9.1	3.0	12.2	72.7	100	4.45
	H/P	0.0	3.0	12.1	20.6	64.3	100	4.24
Improved Administrative and managerial activities	ADM	0.0	3.0	3.0	18.2	75.8	100	4.82
	HODs	1.8	0.4	0.0	14.7	83.1	100	4.77
	SEC	9.1	5.7	3.0	20.6	60.6	100	4.18
	A/C	0.0	6.1	12.1	12.1	9.7	100	4.45
	H/P	0.0	3.0	18.0	20.6	58.4	100	4.70

Figures given in percentages except mean: legend SD (1) =strongly disagree, D (2) =Disagree, U (3) = Undecided, A (4) = Agree, SA (5) =Strongly Agree

The effects on improved communication

The result on improved communication in school management show that 27(81.8%) of the school administrators, 218(93.9%) of the heads of department, 24(72.7%) of the accounts clerks, 30(90.9%) of the secretaries and 18(56.2%) of the head prefects were in agreement while 5(15.2%) of the administrators, (3.5%) of the heads of department, 2(6.1%), of the secretaries, 6(18.2%) of the accounts clerks and 11(32.7%) of the head prefects were in disagreement. The mean recorded were 4.21 for the school administrators, 4.59 for heads of department, 4.45 for the school secretaries, 3.94 for the accounts clerks and 3.48 for the school head prefects. The overall mean was 4.13 which signify agreement by the majority of the respondents hence they were in agreement that the use of ICT had caused improvement in communication in school in Bungoma County.

The findings revealed that administrators, Heads of department, secretaries, accounts clerks and head prefects had consistent opinion regarding improvement in communication in the use ICT in school management. The opinion is attributed to the factor that the Kenyan MOE, KNEC and TSC had put emphasis on communication being online since Kenya's goal and objective is to promote and popularize ICT Republic of Kenya (session paper 1 of 2005). The HOD's opinion is attributed to the fact that they are required to be in constant communication with members of their department, parents and students regarding performance hence need for them to have a central cell phone for quick conveyance of information. The school secretaries opinion is associated with their job designation of conveying information on behalf of the school administrators in and out of school. ICT facilities especially the e-mail and telephones makes their work easier and more convenient. The A/C opinion is related to the fact that they are

required to sent alert messages on fees balances to parents and guardians of the students. Therefore efficient communication is required to convey such information. The opinion of the H/P is suggestive since the Kenyan MOE doesn't require them to use ICT especially phones for communication purposes while in school.

Effect on improved financial management

ICT use had improved financial management in school management is also another view that was given. The respondents gave their opinion on ICT use in improving financial management. An overwhelming 32(97%) of the administrators, 188(81.3%) of the Heads of department, 33(100%) of the secretaries, and 28 (84.9%) of the head prefects declared that ICT integration improved financial management. It also emerged from interview schedules that most of the school administrators 30(90.9%) of them do recognize the fact that ICT integration is greatly required in school management so as to change the old management styles and adopt the ICT style of management. The school administrators recorded a mean of 4.85, heads of department recorded 4.11, school secretaries had 4.55. Accounts clerks had 4.45 and school head prefects had 4.24. The overall mean was 4.44 which indicate that there was agreement. From the findings it can be concluded that there was agreement beyond doubt from all the respondents that ICT improved financial management. These responses are based on the fact that the paperless work in offices makes access of information quick unlike previously where the school secretary, heads of department, and accounts clerks had to keep so many files of information and in case of requirement of particular information it would take long to get access. This makes them to keep on postponing as they search for a particular set of information. In unscheduled interview

with the accounts clerks most of them indicated that ICT integration is wanting and if it is done as quickly as possible then their work will be very effective and efficient.

Effect on improvement on the general administrative and managerial activities

The opinions of respondents on improvement in the general administrative and managerial activities of schools are shown in table 30. The findings indicate that 32(94.0%) of the school administrators, 32(17.8%) of the heads of department, 26(81.2%) of the secretaries, 27(81.8%) of the accounts clerks and 32(96.4%) of the head prefects strongly agreed that integration of ICT improved administrative and management activities in schools while 1(0.6%) of the administrators, 4(2.2%) of HODs, 7(18.8%) of secretaries, 6(18.2%) and 1(0.6%) disagreed that IT integration improved administrative and management activities in schools. The mean computed were as follows, 4.82 for school

administrators, 4.77 for heads of department, 4.18 for the school secretaries, 4.45 for the accounts clerks and 4.70 for the school head prefects. The overall mean of 4.58 confirmed that the respondents were in agreement. These findings concur with Lavigne (1996) who noted that effective administration and management is achieved when ICT is integrated in school management. Oloo, (2000) and Gakuu, (2006) reported that ICT integration contributed to improved service delivery and communication in schools. The overwhelming agreement suggests that if ICT is integrated in school management then efficiency will be achieved in the management sections of the school.

The efficiency of ICT use according to school category

The type of ICT integrated in a school will determine its efficiency in management. Table 4 shows the efficiency of ICT use in schools according to their category.

Table 4: The efficiency of ICT use in the schools by school category

	Very efficient	efficient	not efficient	total
Boys boarding	1	1	0	2
Girls boarding	1	1	0	2
Mixed day /boarding	3	1	2	6
Mixed day	3	2	11	16
Private	2	3	2	7
Total	10	8	15	33

The calculated chi-square value ($\chi^2 = 13.04$) was less than the critical table value of 15.5 at 0.05 alpha level of confidence ($13.04 < 15.5$, df 8). The results therefore revealed that there was no significant difference in the efficiency of ICT utilization in the five categories of schools. This implies that there was low efficiency of ICT use in school management. However a significant value could possibly have emerged if a larger sample of boys and girls boarding schools was used in the study.

Conclusions

Based on the background information and results of the analysis the study found out that there was low ICT integration in school management with few computers in key areas of school management. The model schools had computers, photo printers in the accounts section, principal, director of studies and secretary's sections. The study established that

there were limited training and in-serving offered to the school managers especially on the computer technology which is required to learn the operation of the other ICT facilities like the internet, e-mail. Face book and twitters. The uses of ICT were basically for examination and communication in and out of the schools. The managers in the schools realize minimal effects of ICT in administration and management because of the limited ICT facilities that had been put in place and therefore the advantages of ICT use was not greatly felt. The schools had financial challenges that hindered the fully integrate ICT in school management. The few ICT facilities present were given as donations from CSFK and they were not enough to allow full integration into school management.

Recommendations

Based on the findings and conclusions, the study recommends the following

recommendations;

- (i) The study suggests that more funding should be given to schools through donations to enable schools acquire ICT facilities that could be integrated in school management.
- (ii) School managers should create an enabling environment that will motivate managers in schools to integrate ICT that will enhance internal school efficiency.
- (iii) More training through in-service courses should be offered to school managers to improve on their literacy in ICT in order to enable them integrate ICT in school management.
- (iv) The ministry of education should develop clear policies on the integration of ICT in school management.
- (v) Schools should hold seminars and workshops in and out of school in order for the managers to learn the basic computer skills.

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