



ICT Support Systems and Learning of Accounting in Selected Tertiary Institutions in Rivers State

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Abstract: *The purpose of this study was to determine the impact of information and communications technology on the learning of accounting in tertiary institutions in Rivers State. Three research questions were articulated to elicit relevant responses needed for the study. Accordingly, three hypotheses were also formulated. The study relied on both secondary and primary data. In order to obtain the data needed for the study, a simple questionnaire designed after the modified Likert Scale was administered to a sample of 1,655 respondents made up of students and lecturers in the Departments of Accounting in five tertiary institutions in Rivers State. The raw data collected were summarized and presented in tables and processed using weighted mean particularly those that relate to the research questions, and the results interpreted. Also, the three hypotheses tested using Chi Square test. The study revealed among other things that ICT support systems had no significant impact on the improvement in the learning of accounting essentially because these ICT support tools such as audio-visual aids, ICT personnel were absent or lacking. It therefore concluded that ICT support systems have failed to influence/improve learning of the subject in tertiary institutions in Rivers State. Based on these findings and conclusion, the study recommended, among other things, that Accounting lecturers and students, as a matter of concern, should explore very well on the gains of computer, calculating software, and other audio-visual learning aids as it is evident they are yet to impact learning in the desired form.*

Keywords: *Computing software, audio-visual aids, accounting library.*

I. BACKGROUND

There is no gainsaying in the fact that we are living in a constantly evolving digital world. Information and Information Communications Technology (ICT) has an impact on nearly every aspect of our lives - from working to socializing, learning to playing. The digital age has transformed the way – people especially – young people communicate, network, seek help, access information and learn. We must recognize that young people are now an online population and access is through a variety of means such as computers, TV and mobile phones. As technology becomes more and more embedded in our culture, we must provide our learners with relevant and contemporary experiences that allow them to successfully engage with technology and prepare them for life after school.

Researchers and experts have widely recognized that learners are motivated and purposefully engaged in the learning process when concepts and skills are underpinned with technology and sound teaching. ICT based learning and teaching aims to providing resources for practitioners, and students to engage with modern technologies in order to inform and enhance the learning and teaching experiences.

ICT (information and communications technology - or technologies) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. ICTs are often spoken of in a particular context, such as ICTs in education, health care, or libraries. According to the European Commission, the importance of ICTs lies less in the technology itself than in its ability to create greater access to information and communication in underserved populations. Many countries around the world have established organizations for the promotion of ICTs, because it is feared that unless less technologically advanced areas have a chance to

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catch up, the increasing technological advances in developed nations will only serve to exacerbate the already-existing economic gap between technological "have" and "have not" areas. Internationally, the United Nations actively promotes ICTs for Development (ICT4D) as a means of bridging the digital divide. ICTs stand for information and communication technologies and are defined, for the purposes of this primer, as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information." These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony.

Education is a vital tool for any form of development in any country, be it economic, social or political. It is a factor that determines the state of prosperity, sustenance of welfare and security of the people (Bray, 2000; Scott & Guogh, 2004; Osakwe, 2006). The yearnings, needs, aspirations as well as the cultural heritage and environment of any society determine, to a large extent, the kind of knowledge and skills to be acquired (Adebosin, 2004). Therefore, the kind of education operated should bring about skill development as this will enable individuals to live and contribute meaningfully to the overall development of the society in which they live. Since the government regard education as an instrument par excellence for facilitating and fostering national development as well as economic growth, it is imperative that, the kind of education to be provided should be holistic and wholesome so as to foster balanced national development. For any nation to boast of educational development, it should be able to boast of a viable and functional information and communication technology driven education in the schools particularly at the tertiary level, especially in this fast changing world where globalization is the order of the day. Tertiary school students should have access to the enormous wealth of online information and digital collaboration opportunities. It will help in the transformation and meaningful development of tertiary education.

However, for effective implementation of information communication technology based instruction in schools, there is need for proper planning, elaborate curriculum and, most importantly, adequate funding. Information and communication technology means different things to different educators and researchers, hence there are various views and definitions of ICT. Yusuf (2007) described ICT as an electronic technology used for accessing, processing, gathering, manipulating, presenting and communicating information. He emphasized that when ICTs are employed in education, they can accelerate, enrich and deepen basic skills in reading, writing, arithmetic and the sciences beside motivating and encouraging students to learn as they become more independent and responsible for their learning. According to French (1996) in Nwite (2007), information and communication technology is a broad based technology which includes methods, managements and applications that are employed in the creation, storage, manipulation and communication of information. Obanya (2002) views information communication technology as a broad concept that has to do with the harnessing of the process, the methods and the product of electronic and communication related technologies (and other related resources in today's knowledge – driven society), for enhancing the availability, the spread and efficiency of a set of programmed activities geared towards the achievement of clearly defined goals. Information communication technology is a tool (Nwakundo, Oguejiofor & Nwankwo, 2006) that comprises electronic devices which are utilized for the information and communication needs of institutions, organizations, students and individuals. Such electronic devices include computers (software and hardware), networking, telephone, video, multimedia and internet. Application and utilization of these devices convert information, text messages, sounds and motion to common digital forms.

Therefore, information and communication technology is the use of computer and telecommunication facilities to store and retrieve information from various sources, generate and transfer ideas, and also impart knowledge to recipients. ICT is not just the bloom of the education system, but also the primary and secondary options required to improve effective and meaningful interaction between teachers and students of tertiary schools. It has the power to enable students enjoy things that they would normally find time-consuming and difficult. ICT is a teaching tool that improves the quality of student's education and support teachers' work inside and beyond the classroom. There is no gainsaying the fact that the application of ICT in schools will aid effective teaching and learning and help the students acquire necessary skills that will enable them contribute to the growth, improvement and development of the nation socially and economically. It is in the light of the foregoing that this paper deems it fit to examine the impact of ICT tools in the teaching and learning of accounting in the tertiary institutions in Rivers State.

1.2 Statement of Problem

Since the advent of ICT, a new era has opened to researchers, academics and students. ICT plays key roles in tertiary schools: it promotes fundamental changes in learning methods thereby overcomes the barriers of time and place by introducing new choices and opportunities for students and teachers through endless research and learning on the internet; it provides students with practical and functional knowledge of the computer, the internet and other associated gadgets that will have positive effect on future experience and make them more competent, rational and comfortable in this era of globalization; it helps students to react intelligently to future changes, expand information and live successfully in a changing world; through its multimedia facet; and creates room for students to acquire new knowledge, fosters enquiry exploration of facets, and adopt new approaches to learning. This system helps to accelerate the learning process, increase teachers effectiveness and efficiency and provides remedial instruction and enrichment of material, thus guaranteeing higher quality standards in schools. These roles suggest that if conceived as a means and not an end in itself, ICT has the capability to be a powerful teaching and learning tool for the development of tertiary education.

However, the integration of ICT support systems by Accounting lecturers and students and their respective impact on learning truly calls for concern. In other words, do they really influence desired learning outcome and in the right direction to corroborate their prowess? In the learning of Accounting, could there be noticeable improvement occasioned by the presence of these support systems? These amongst others informed the researchers' quest to embarking on the study.

1.3 Purpose of Study

In general, the purpose of this study is to determine the impact of ICT on the study of accounting in tertiary institutions in Rivers State. In specific terms, however, this study seeks to determine:

- i. If computers/accounting software impact on the learning of Accounting in tertiary institutions in Rivers State.
- ii. If audio-visual aids improve the learning of Accounting in tertiary institutions in Rivers State.
- iii. If accounting laboratories/ICT personnel improve the learning of Accounting in tertiary institutions in Rivers State.

1.4 Research Questions

The following research questions have been posed for the study:

- i. To what extent do computers/accounting software impact on the learning of Accounting in tertiary institutions in Rivers State?
- ii. To what extent do audio-visual aids improve the learning of Accounting in tertiary institutions in Rivers State?
- iii. To what extent do accounting laboratories/ICT personnel improve on the learning of Accounting in tertiary institutions in Rivers State?

1.5 Hypotheses

Three alternate one-tail hypotheses were used in the study.

- i. Computers/accounting software significantly influence the learning of Accounting in tertiary institutions in Rivers State.
- ii. The use of audio-visual aids significantly influenced the learning of Accounting in tertiary institutions in Rivers State.
- iii. The accounting laboratories/ICT personnel significantly influence the learning of Accounting in tertiary institutions in Rivers State.

1.6 Conceptual Framework

The conceptual framework is hypothesized on two variables, one dependent variable and the other independent variable. In the subject matter of study - ICT support systems in learning of accounting –the independent variable (also known as criterion variable) is ICT support systems, while the dependent variable is learning of accounting. What this implies is that the learning of accounting in tertiary institutions is presumed to be influenced by ICT tools. Teaching aids are undoubtedly believed to enhance the teaching and learning generally (Gupta, 2009).

There are different ICT support tools useful in this regard. However, for the purpose of generating the data needed for the answer to the research questions and proffering of solutions to the research problem of the study, three of them are identified. They include:

- i. Computers/accounting software;
- ii. Audio-visual aids; and
- iii. Accounting laboratories/ICT personnel.

These three tools are therefore the sub-independent variables for the study. The dependent variable on the other hand is learning of accounting. What is implied is that the learning of accounting is presumed to be dependent of the availability and proper utilization of the aforementioned ICT tools. The conceptual framework is depicted in Figure 2.1 below.

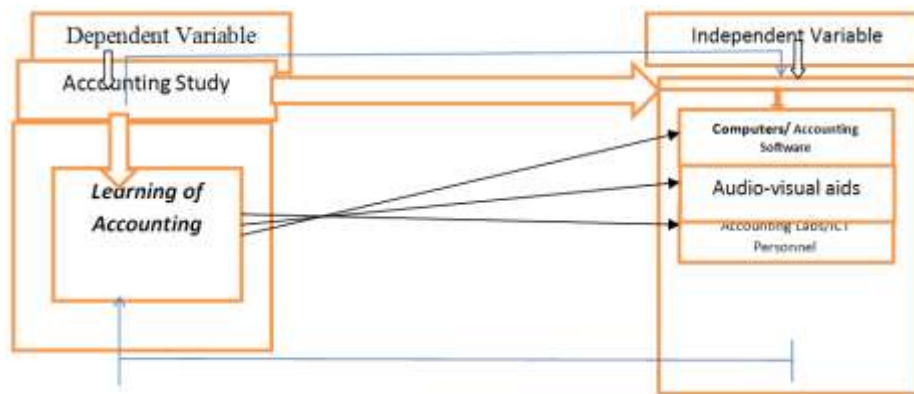


Figure 1: ICT Support Systems

1.7 Theoretical Framework

Learning theories are conceptual frameworks describing how information is absorbed, processed, and retained during learning. Cognitive, emotional, and environmental influences, as well as prior experience, all play a part in how understanding, or a world view, is acquired or changed and knowledge and skills retained. There are many theories that can be used to explain the subject matter of investigation. First is the multimedia learning theory.

Multimedia learning refers to the use of visual and auditory teaching materials that may include video, computer and other information technology. Multimedia learning theory focuses on the principles that determine the effective use of multimedia in learning, with emphasis on using both the visual and auditory channels for information processing. (Phillips & Soltis, 2009).

The auditory channel deals with information that is heard, and the visual channel processes information that is seen. The visual channel holds less information than the auditory channel. If both the visual and auditory channels are presented with information, more knowledge is retained. However, if too much information is delivered it is inadequately processed, and long term memory is not acquired. Multimedia learning seeks to give instructors the ability to stimulate both the visual and auditory channels of the learner, resulting in better progress. (Illeris, 2004; Ormond, 2012, Ola, 2011)

Another theory that explains the subject matter of study is the theory of constructivism. Founded by Jean Piaget, constructivism emphasizes the importance of the active involvement of learners in constructing knowledge for themselves. Students are thought to use background knowledge and concepts to assist them in their acquisition of novel information. When such new information is approached, the learner faces a loss of equilibrium with their previous understanding which demands a change in cognitive structure. This change effectively combines previous and novel information to form an improved cognitive schema. (Smith, 2011).

II. EMPIRICAL LITERATURE

In recent years there has been a groundswell of interest in how computers and the Internet can best be harnessed to improve the efficiency and effectiveness of education at all levels and in both formal and non-

formal settings. But ICTs are more than just these technologies; older technologies such as the telephone, radio and television, although now given less attention, have a longer and richer history as instructional tools. For instance, radio and television have for over forty years been used for open and distance learning, although print remains the cheapest, most accessible and therefore most dominant delivery mechanism in both developed and developing countries. The use of computers and the Internet is still in its infancy in developing countries, if these are used at all, due to limited infrastructure and the attendant high costs of access.

Our world is changing, so information and Communication technology (ICT) is central to this change. Amutha (2014) observed that the use of ICT in education develops higher order skills such as collaborating across time and place and solving real world problems. It improves the perception and understanding of the world of the student. ICT can be used to prepare the workforce for the information society and the new global economy. He based his study on both primary and secondary data covered only three months period. Secondary data and information are collected from the annual reports of the department of statistics, books, journals and websites. Class interval technique was used to analysis the age, family size and experience. Percentage analysis, averages, ranking method, standard deviation, chi-square tests, Cramer's V and probability analysis were used for the analysis.

Amutha (2014) found that majority of the teachers are most knowledgeable in word processing was ranked first followed by emailing. Well-informed in internet browsing was ranked third, proficiency in spread sheets ranked fourth. Information in statistical tools and presentation tools were ranked fifth and sixth respectively. To know the teacher's attitude and usage of ICT in teaching learning, many teachers have also expressed the opinion that incorporating ICT in teaching is time consuming (59.29%), Lack of skill (20.35%), Syllabus pressure (12.39%) and needs access to a lot of infrastructure (7.96). They want the institution to recognize teachers who use ICT and provide the necessary infrastructure so that others who are nonusers of ICT will be motivated. The result of chi-square-test revealed that there is no significant difference between teacher's attitude and usage of ICT in teaching learning and barriers in implementing ICT in higher education. Amutha (2014) concluded that in this present age ICT tools are absolutely necessary to the teaching and learning in institutions of higher educations.

Evidently, ICT is not just the bloom of the education system, but also the primary and secondary options required to improve effective and meaningful interaction between teachers and students of tertiary schools. It has the power to enable students enjoy things that they would normally find time-consuming and difficult. ICT is a teaching tool that improves the quality of secondary school student's education and support teachers' work inside and beyond the classroom. There is no gainsaying the fact that the application of ICT in public secondary schools will aid effective teaching and learning and help the students acquire necessary skills that will enable them contribute to the growth, improvement and development of the nation socially and economically.

2.2 Methodology

The purpose of this section is to identify and present the various methods employed in the research process. This is vital because the techniques employed determine, to a large extent, the veracity, reliability, and authenticity of the data that would be generated (Baridam, 2008). The issues discussed include: research design, population of study, sample and sampling technique, instrumentation, validity and reliability of instrument, and data and analysis.

2.3 Research Design:

This study adopts the descriptive survey research design. This design aims at collecting the required data, describing it systematically in terms of the characteristics of the population. This method was considered suitable because the data relating to teaching and learning in tertiary institutions in Rivers State collected were used to associate with those of ICT tools. That is, the data on the roles of ICT tools were used to determine the extent to which these tools impact on and influence the learning and teaching in these tertiary institutions.

2.4 Population of Study:

The population of this study is made up of all accounting lecturers and accounting students in all the five (5) tertiary institutions in Rivers State namely:

- i.** University of Port Harcourt, Choba, Port Harcourt;

- ii. Rivers State University of Science and Technology, Nkpolu, Port Harcourt;
- iii. Ignatius Ajuru University of Education, Rumuolumeni, Port Harcourt;
- iv. Federal College of Education (Technical), Omoku, Port Harcourt; and
- v. Rivers State College of Arts and Science, Rumuola, Port Harcourt.

The total population of Accounting lecturers and accounting students in these institutions is 1,954. The breakdown is as follows:

Table 1: Population of Study

| S/No. | Name of Institution | Population | | Total |
|--------------|--|------------|--------------|--------------|
| | | Lecturers | Students | |
| 1 | University of Port Harcourt, Choba, Port Harcourt | 16 | 503 | 519 |
| 2 | Rivers State University of Science and Technology, Nkpolu, Port Harcourt | 12 | 480 | 492 |
| 3 | Ignatius Ajuru University of Education, Rumuolumeni, Port Harcourt | 18 | 289 | 307 |
| 4 | Federal College of Education (Technical), Omoku, Port Harcourt | 12 | 402 | 414 |
| 5 | Rivers State College of Arts and Science, Rumuola, Port Harcourt | 12 | 210 | 222 |
| Total | | 70 | 1,884 | 1,954 |

Source: Establishment Divisions of the various Institutions (2015)

2.5 Sample and Sampling Technique:

From the population given above, a sample of 390 representing 20% of the population was selected. Accordingly, 390 copies of the research instrument was administered to 390 sample elements using simple random sampling technique.

2.6 Instrumentation:

A well-structured questionnaire was used as the major instrument for primary data collection. This questionnaire is referred to as 'ICT Support Systems in Learning of Accounting Questions (ICTSSLAQ)'. The instrument contains items relating to the variables of the study namely learning of accounting, and ICT tools. Specifically, the questionnaire is made of three sub-sections; each section is made up of items that relate to the relationship between the two dependent variables and the three independent variables. The instrument was structured using the Modified Likert System. The responses are very large extent, large extent, low extent, and very large extent. Accordingly, the various responses have been assigned weights as follows: Very Large Extent (VLa E) 4 points; Large Extent (LaE) 3 points; Low Extent (LoE); 2 points Very Low Extent (VLoE) 1 point.

2.7 Validity of Instrument:

To ensure that the instrument had both face and content validity to be able to relate to the research questions, the researchers gave it to seasoned items instructors and analysts. By this singular measure, relevant items were retained while unrelated ones were expunged.

2.8 Reliability of Instrument:

The simple test-retest technique was used to confirm the reliability of the instrument. The researches administered the instrument to a pilot sample of thirty (30), different from the real study sample in two successive occasions. A comparison of the two results using the Alpha-Combach Index, reliability (r) value of 0.54 was obtained and because this value is close to unity. The instrument was considered as reliable.

2.9 Data Analysis:

The data generated was analyzed using simple percentage method, means, and the Chi Square statistic. The simple percentage and means were used to analyse the research questions. The criterion mean of 2.5 was used in decisions making. The items responses which were ≥ 2.5 were considered to be effective to a large extent, whereas the items which were < 2.5 were considered effective to a low extent.

Mean (\bar{X}) responses = $\frac{4+3+2+1}{4} = 10/4 = 2.5$

The hypotheses were tested using Chi Square (X^2) statistic at 0.05 level of significance.

III. SUMMARY OF DATA

Research Questions

Table 2: Pooled and Criterion Means (x)

| Research Questions | Pooled Mean (\bar{X}_p) | Criterion Mean (\bar{X}_c) | Comparison | Remark |
|--------------------|-----------------------------|--------------------------------|-------------------------|------------------------------|
| 1 | 1.31 | 2.50 | $\bar{X}_p < \bar{X}_c$ | Effective at to a low extent |
| 2 | 1.92 | 2.50 | $\bar{X}_p < \bar{X}_c$ | Effective at to a low extent |
| 3 | 1.23 | 2.50 | $\bar{X}_p < \bar{X}_c$ | Effective at to a low extent |

Hypotheses

Table 3: Chi Square Values

| Hypotheses (H_A) | \bar{X}^2 Computed | \bar{X}^2 Critical | Comparison | Decision |
|----------------------|----------------------|----------------------|--------------------------------------|--------------|
| 1 | 26,070.27 | 12.92 | $\bar{X}^2_{calc} > \bar{X}^2_{tab}$ | Reject H_A |
| 2 | 14,063.14 | 12.92 | $\bar{X}^2_{calc} > \bar{X}^2_{tab}$ | Reject H_A |
| 3 | 41,666.75 | 12.92 | $\bar{X}^2_{calc} > \bar{X}^2_{tab}$ | Reject H_A |

4.1 Findings

Based on the analysis of the research questions and hypotheses tested above, we have extracted a number of findings:

The findings from the analysis of research question first which states: ‘To what extent do computers/accounting software impacted on the learning of Accounting in tertiary institutions in Rivers State?’, we found that all the items analyzed had a weighted mean of less than the criterion mean for effectiveness. Also, the pooled mean of 1.31 is less than the criterion mean of 2.50. This made us to opine that in spite of the huge role computers play in the learning process, computers and accounting software had not impacted or improved the learning of Accounting in the institutions. The result of the first hypothesis tested corroborated this as the calculated value of Chi Square ($\bar{X}^2_{calc} = 26,070.27$) is far greater than its table or critical value ($\bar{X}^2_{tab} = 12.92$). Thus we rejected the hypothesis which state that ‘Computers/accounting software do significantly influence the learning of Accounting in tertiary institutions in Rivers State.

In the analysis of the second research question which enquires: ‘To what extent do audio-visual aids improved the learning of Accounting in tertiary institutions in Rivers State?’ we observed that the questionnaire items analyzed the weighted means were less than 2.50. The pooled mean of 1.92 is also less than the criterion mean. This implies that audio-visual aids have not improved the learning of Accounting in tertiary institutions in Rivers State. This is supported by the result of the second hypothesis tested. The result showed that the calculated Chi Square value ($\bar{X}^2_{calc} = 14,063.14$) was far greater than its table value ($\bar{X}^2_{tab} = 12.92$). Hence, we rejected the hypothesis which states that ‘The use of audio-visual aids significantly influence the learning of Accounting in tertiary institutions in Rivers State. This is in contrast with the findings of Ola (2011) and others who stated that audio-visual aids facilitate the learning in schools.

Finally, in the analysis of the third research question which enquires: ‘To what extent do accounting laboratories/ICT personnel improved the learning of Accounting in tertiary institutions in Rivers State?, we found that all the three questionnaire items analyzed had a weighted mean of less than the criterion mean for effectiveness. The pooled mean of 1.23 is also less that the criterion mean of 2.50. This made us to posit that though accounting laboratories and ICT personnel have not improved the learning of the subject of accounting in the institutions. Furthermore supporting this finding, we noted that in the test of hypothesis three which states: ‘The accounting laboratories/ICT personnel do significantly influence the learning of Accounting in tertiary institutions in Rivers State’, we found that the value of Chi Square calculated ($\bar{X}^2_{calc} = 41,666.75$) is far greater that its table or critical value ($\bar{X}^2_{tab} = 12.92$). Thus we rejected the hypothesis at the same level of significance

and concluded that accounting laboratories and ICT personnel have not improved the learning of Accounting in the institutions.

V. CONCLUSION

The analysis of the three research questions and three hypotheses which precipitated in the findings of the study in the preceding section have shown that the level of utilization of information and communication technology system in both teaching and learning in the tertiary institutions in Rivers State is ridiculously low, giving the age and time we are in. Hence, we concluded that ICT systems have made no remarkable impact in terms of improvement in learning in the study milieu. This conclusion, as we have noted in the preceding section, is contrary to the generally held opinion, and the findings of past and contemporary studies that ICT systems undoubtedly, have over the years enhanced learning in academic institutions as well as all spheres of life. The reason why our conclusion failed to align with this is because of the obvious fact that in all the academic institutions studied, none had a functioning accounting laboratory. Computers, video projectors, and other audio visual aids were not used for the study of accounting at all. Even in some Universities such as University of Port Harcourt where it was observed that it had an accounting laboratory, the facility is not in use. Also, there is an ICT personnel in the laboratory but since it is not in use, the impact is insignificant. In all the institutions, the old traditional method of learning of the subject still prevails.

RECOMMENDATIONS

On the strength of the foregoing, the study recommends as follows:

- i. Accounting lecturers and students, as a matter of concern, should explore very well on the gains of computer and calculating software as it is evident they are yet to impact learning in the desired form. The no result impact from the study calls for further study in the level of use and where available, by these Accounting lecturers and students.
- ii. In the same vein, Accounting lecturers and students should explore very well on the gains of audio-visual aids ICT support system, as the result so far does not corroborate their strength in learning. The integration and installation of this support system is highly recommended if desired result is expected in Accounting practice.
- iii. Finally, the need for proper integration and utilization of Accounting laboratories/ICT personnel is reinforced by the study. The presence of these support systems is cardinal as no person learns to swim without available pool. Therefore, where they exist, Accounting lecturers and students should explore them very well to their advantage.

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