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Determinants of Adoption and Usage of ICT by Small and Medium Enterprises in Kenya: The Case of Kikuyu Sub-County in Kiambu County

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Strategy

Determinants of Adoption and Usage of ICT by Small and Medium Enterprises in Kenya: The Case of Kikuyu Sub-County in Kiambu County

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Abstract

Purpose: Small and medium-sized firms are helping to generate employment opportunities and creation of wealth in the economies that are developing and also the developed ones. However, SMEs appear to have lagged behind and are not as fast in adopting and using ICT. The purpose of this research was to investigate the influence of stakeholders' support on adoption and usage of ICT by SMEs, and to establish how training /skills of staff is a determinant of the usage and adoption of ICT by SMEs in Kiambu County. This study was carried out in the County of Kiambu, Kenya.

Methodology: Descriptive research design was used in the study. To obtain primary data, a structured questionnaire was administered to the sampled population. A sample size of 153 CEOs/proprietors of SMEs was used in the study out of a target population of 1507 registered SMEs by Kikuyu Sub-county Authorities. Stratified sampling and simple random sampling were used to draw the sample-size from the study population. Descriptive statistics was used to analyze the obtained data.

Findings: The data findings show that taking other independent variable to be constant, an increase of one unit of Stakeholders' support would cause a 0.877 increase in Adoption and usage of ICT by small and medium enterprises and a unit increase in training /skills of staff lead to a 0.705 increase in Adoption and usage of ICT by small and medium enterprises.

Conclusion and policy recommendation: This concludes that Stakeholders' support contribute more to the usage and adoption of ICT by small and medium enterprises followed by training /skills of staff. Therefore, the study recommends that training programs for personnel at all levels of the SMEs in Kiambu County should be conducted to help them understand their responsibilities in adoption and usage of ICT.

Keywords: *Adoption, Usage, ICT, Small and Medium Enterprises, Kiambu County*

1.0 INTRODUCTION

Information and Communication Technology (ICT) is greatly altering methods of production, business and work methods, consumption and patterns of trade among enterprises and between enterprises and consumers. The introduction of ICT products and Personal computer has contributed significantly to the increased adoption and usage of information and communication technology by small businesses. The socioeconomic improvement and growth of an economy, particularly of developing countries would greatly hinge on SMEs using and adopting information and communication technology (Apulu & Latham, 2011). Alberto and Fernando (2007) argue that the use of internet is creating avenues for small and medium businesses to participate on similar levels with large enterprises, while implementation of Information communication technology will enhance their competitiveness in business. Small businesses are expected to realize greater benefits by playing a part in the national and international markets, aided by advancement in ICT, lowering of trade restrictions and increased levels of globalization (Mutula & Brakel, 2006). To achieve a better working relationship with customers and suppliers, improved competency and ability to compete in the global arena, these businesses need to adopt ICT in their operations (Chong *et al.*, 2001). With this consideration, SMEs need to should view (ICT) as a vital tool to employ in their operations. Ashrafi and Murtaza (2010) contend that information communication technology will enable SMEs gain entry into new market, deliver innovative goods and services, improve efficiency and business processes and the ability to respond quickly and effectively to actions of its competitors’.

Thus, for SMEs to gain entry into the international market and compete effectively in face of increased free trade, globalization and technological changes, they will have to employ state-of-the art technologies (Sharma & Bhagwat, 2006). Adoption and usage of ICT by SMEs would make it easier to market themselves both locally and internationally, provide customer’s support, carry out electronic transactions and gather business information.

1.1 Statement of the problem

Small and Medium Enterprises (SMEs) seem to be slow in adopting and using ICT as compared to large business enterprises, which are benefiting through employment of ICT in their operations. SMEs are considered to be better placed to respond to and adopt change and technology because of their perceived flexibility (Ritchie, 2005). However, there is proof that SME take time to respond and point towards hampered progress towards adopting Information communication technology (Small *et al.*, 2011). Although ICT is not a panacea to all challenges of development, it offers huge prospects for SMEs to generate and deliver services and products on a global scale, be able to compete and enhance their income growth. SMEs managements are progressively applying ICT-based ecommerce to expand into the international market and increase their competitiveness (Ghobakhloo, *et al.*, 2012). For enterprises to improve their business operations, they will need to speed up their ICT adoption and usage. This makes it vital to look into the significant factors that influence the growth of ICT as well as offer suitable recommendation to help in acceleration of adoption and usage of ICT Therefore, this study intends to examine the factor affecting the use and adoption of ICT in small and medium enterprises in Kikuyu sub-county, Kiambu County.

1.2 Objective of the study

- i. To find out the effect of the stakeholders' support on adoption and usage of ICT by SMEs in Kiambu county.
- ii. To establish how training /skills of staff is a determinant of adoption and usage of ICT by SMEs in Kiambu County.

2.0 Literature Review

The section offers a review of literature that relates to the study going by the study objectives; the effectiveness of the stakeholders' support on usage and adoption of ICT by SMEs; the effect of training and skills on the usage of ICT by SMEs. It has the Theoretical Review and Empirical Review.

2.1 Theoretical Review

2.1.1 Unified Theory of Acceptance and Use of Technology (UTAUT)

Unified Theory of Acceptance and Use of Technology was proposed by Venkatesh *et al.*, (2003). The UTAUT combines eight models dealing with adoption of technology by organizations. It has four main focal points that determine usage and intention. These are: performance expectancy, expected effort, influence from the society, and the fourth are the facilitating conditions. These four are moderated by the volunteers of system use, age, gender and previous experience. These factors may affect behavior intention of potential users of technology. They act as behavior predictors (Venkatesh *et al.*, 2003).

2.1.2 Theory of Perceived Attributes

The Theory of Perceived Attributes (Rogers, 1995) postulates that an innovation will be adopted by individuals if it has the following characteristics. One, the innovation should be superior to the current one being used and offer more benefits than the status quo. Two, the innovation need to be attuned to the adopter's previous skills, existing values and procedure. Thirdly, the invention should be easy to understand and use. The fourth point on innovation is that it can be tried initially by the adopter before he can adopt it. Lastly, it should present observable results. The initial experience with an innovation will determine if an individual will accept further innovations.

2.2 Empirical Literature Review

Muraya (2009) asserts that, an SMEs adoption and usage of ICT maybe greatly influenced by factors in its external environment. These include policies by government on ICT, customers, suppliers and pressure created by competitors. Appropriate implementation of Information communication technology by enterprises depends on organizational and external environment characteristics. Alila & Ove (2011) argues that the government plays a crucial role, as a key external factor, in ICT usage and adoption by SMEs. Its influence are felt in the areas of taxation on ICT infrastructure, supportive ICT policies and in financing. Mingaine (2013) argues that pressure from an enterprises' suppliers and consumers are a major factor in influencing the business decision to adopt and use information communication technology. Mingaine argues that, without this external pressure, most of owners of enterprises might view ICT adoption and usage as a waste of resources and time. From the foregoing, it can be concluded that most SMEs are not totally employing ICT in their businesses and cannot reap benefit of adoption.

Ghimire and Abo (2013) conducted a study in West Africa SMEs' on unlocking their capabilities. The study points out that, past experience and knowledge of employees of an SME have an influence on management decision to use and adopt ICT. Thus, the enterprise should decide on the experience and

skills to have on its workforce. When an SMEs' owner possesses adequate ICT knowledge and experience, it increases the prospects of adoption and usage by the firm. According to Thong and Yap (2011), SMEs Owners would not be quick to use and adopt more complicated and newer technologies if they don't understand the existing one which is more basic. Mingaine (2013) found that there are few employees with the requisite technical knowledge necessary for adoption and use of ICT. He contends that this deficit of training-based workforce may thwart and even hamper the use and adoption of ICT if the owner think its implementation would only be possible by using specialized staff only. Even where SMEs have installed computer hardware and software, and their employees lack adequate knowledge and experience where implementation calls for sharing of training, expertise and advanced ability by IT users, there is restricted use of ICT which has led to firms not gaining maximum benefits by adopting (Ghobakhloo *et al.*, 2010).

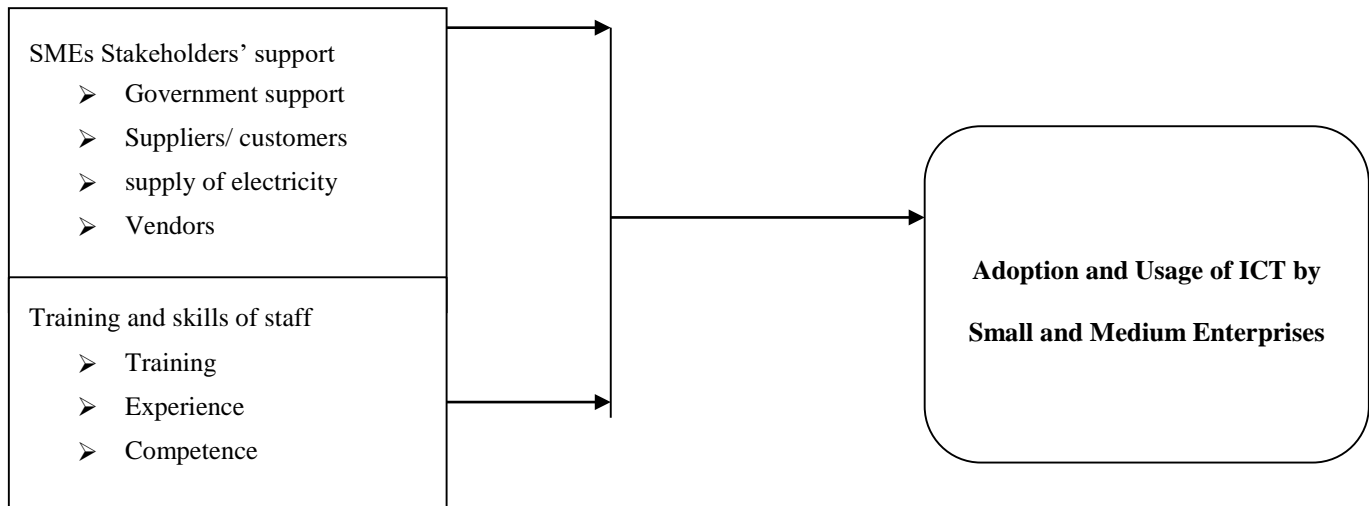
In general, insufficient information and skills regarding IT by managers of SMEs may be considered a hindrance to adopting Information technology, due to its dynamism and availability of many options of IT tools, leaving them puzzled (Sarosa & Zowghi, 2003; Venkatesh & Brown, 2001). However, when owners of SMEs positively viewed ICT as beneficial, the major obstacle to adopting ICT was attributed to shortage of skilled and experienced employees. Enterprises that are considering ICT adoption will require an adequately skilled and knowledgeable workforce on how to use the technology.

Mehrtens *et al.*, (2001), in their study, concluded that where a firm's employees understood and were able to use the particular technology, ICT adoption went on smoothly. What mattered was for these employees to have an interest in using the technology even if they were not ICT professionals. Outsourcing of ICT services can be used to address shortage of skilled workforce in the firm. However, the high costs associated with this expert advice may be prohibitive to the SMEs, which may let the opportunity pass. Training and development is a vital requirement in IT adoption. Continuous change in technologies implies that acquired knowledge need regular updating and dynamism.

Sarosa and Zowghi (2003) point out that in-house guidance is seen as necessary and a way of sharing information on technology. The total number of employees, their level of education and ICT understanding, mostly on computers do influence ICT adoption by a firm. Sakai (2012) in his study on Taiwan SMEs established that knowledge of computer use and possession of technical skills were indicators of ICT usefulness and impacted positively on ICT usage and adoption.

2.3 Conceptual Framework

Mugenda, (2008) defines conceptual framework as a diagrammatical or visual way of representing the variables considered in the study. The relationship between the dependent variable and the independent variables is clearly depicted. In this study, the conceptual framework considered these variables, stakeholders' support and training /skills of staff on how they influence ICT use and adoption by SMEs.



The Conceptual Framework Figure 1

3.0 Research Methodology

Descriptive research design was used in this study. According to (Kerlinger 1973) descriptive research design is an appropriate method to apply when a research work sets out to get the opinion of a sample that represent the population under study so as to have a general insight of the whole population. It assists to portray a situation as it occurs naturally (Burns & Grove, 2007). Descriptive research design is considered appropriate as it helps in collecting information on perceptions and attitudes of respondents in adopting and using ICT in their organization. Questionnaires and interviews were used to obtain primary data.

3.1 Target population

The study population consisted of the proprietors and CEOs of SMEs in the Kikuyu Sub-county of Kiambu County. According to Kikuyu Sub-County, there were 1,507 SMEs in Kikuyu sub-county, in 2014. Definition of SMEs differs between countries and regions. For the Kenyan case, several parameters are used to define SMEs.

These are: total turnover in an year, the number of workers employed, fixed assets owned as well as its registered capital. An organization with less than 100 employees in its workforce, and with between Kenya shillings, five million to eight hundred million shillings in turnover is categorized as SMEs (Mwangi, 2013).

Table 1: Total Population Distribution

SME Category	Population	Percentage
Medical and health	56	4

Building and Construction	15	1
Entertainment	45	3
Transportation	302	20
Food industry	345	23
Agriculture	424	28
Computers and Communication	67	4
Education and Employment	135	9
Travel and Tourism	10	1
Finance and Insurance	15	1
Engineering and Technology	13	1
Art and Crafts	17	1
Other	63	4
Total	1507	100

Source: Kikuyu Sub-County Authorities (2014).

3.2 Sample size and sampling techniques

Stratified sampling was used to choose the SMEs CEOs/Proprietors from different sectors of SMEs in Kikuyu sub-county, while random sampling was used to select the organization's managers and CEOs in the SMEs that had embraced ICT usage in the sector. Orodho (2009) defines simple random sampling as a process that gives an equal opportunity to each individual member of the target population to be part of the sample size selected.

Table 2: Distribution of Sample Size

SME Category	Population	10%	Sample size
Medical and health	56	10%	6
Building and Construction	15	10%	2
Entertainment	45	10%	5

Transportation	302	10%	30
Food industry	345	10%	35
Agriculture	424	10%	42
Computers and Communication	67	10%	7
Education and Employment	135	10%	14
Travel and Tourism	10	10%	1
Finance and Insurance	15	10%	2
Engineering and Technology	13	10%	1
Art and Crafts	17	10%	2
Other	63	10%	6
Total	1507	10%	153

3.3 Data analysis and presentation

Statistical Package for Social Science (SPSS) version 22 and MS Excel were used to analyze the data that had being collected. Descriptive statistics and inferential statistical tools (regression analysis) were used to analyze data. Percentages and frequencies were used to present the generated information. According to Mugenda and Mugenda (2003), the role of descriptive statistics is to help understand better and to meaningfully describe how the scores are distributed. The results of analyzed data was presented using frequency distribution tables.

4.0 Research Findings and Discussions

4.1 Response rate

The study targeted a total of 153 proprietors and CEOs of SMEs in the Kikuyu Sub-county of Kiambu County. All of them were issued with a questionnaire. Out of this, 147 forms were received back duly filled. This translated to 96% rate of response. This feedback rate was satisfactory for data analysis and conforms to Mugenda and Mugenda (2003) specification that consider as satisfactory for analysis and reporting a 50% rate of response ; a 60% response rate is good and a 70% and over response rate is very good.

4.2 Demographic Information

In this section, the study presents the respondents demographic information. This information on demography of the respondents incorporated education levels attained, gender, age and number of years in business. From the analysis, male respondents were 57% while 43% were female. The difference between the two is small. We can conclude that both genders are almost equally involved in entrepreneurship in the Kikuyu sub-county. On the level of education, a majority (30%) of respondents were certificate/diploma holders. 25% of those who responded indicated that they held university degree in different fields of study. This high number of respondents with at least college education may be attributed to the fact that the studies targeted Proprietors/CEOs of SMEs in an urban area surrounded by tertiary institutions. Of the total respondents 18% form four certificate holders, where a minority (10%) had primary school certificates, while (17%) had attained postgraduate qualifications which included masters. Based on the findings, majority (37%) of the Businesses were Sole Proprietor

Business followed by Private Limited with 26%. It was also established that 19% of the Business Ownership were Partnership while 18% of the Business Ownership Status were Family-Owned.

4.3 Extent of stakeholders' support influence on usage and adoption ICT

The study sought to investigate to what extent stakeholders' support influence use and adoption of information communication technology by SMEs in Kiambu County. 59.1% of the respondents indicated that stakeholders' support influenced usage and adoption of ICT by Small and medium enterprises in Kiambu county to a very great extent. 18.2% denoted that stakeholders' support influence usage and adoption of ICT by SMEs in Kiambu county to a great extent, 6.8 % indicated that stakeholders' support influence usage and adoption of ICT by SMEs in Kiambu county to a moderate extent, 13.6 % pointed out that that stakeholders' support influence usage and adoption of ICT by SMEs in Kiambu county to a low extent while 2.3 % indicated that stakeholders' support influence adoption and usage of ICT by SMEs in Kiambu county to a very low extent.

This results are similar to the finding of Muraya (2009) he asserts that, factors outside of the firm do have a great influence on many SMEs decision of using and adopting technology in their businesses. These stakeholders includes: its customers, sellers, competitors and government policies on ICT.

4.4 Extent to which training /skills of staff influences adoption and usage of ICT

The study wanted to evaluate to which degree, does training /skills of staff influence usage and adoption of ICT by small and medium enterprises in Kiambu County. 13.6% of those who responded indicated that training /skills of staff influence adoption and usage of information communication technology to a very great extent, 47.7% indicated that training /skills of staff influence usage and adoption of ICT by SMEs in Kiambu County to a great extent, 25.5 % pointed out that training /skills of staff influenced usage and adoption of ICT by SMEs in Kiambu County to a moderate level, 4.5 % pointed out that training /skills of staff influence usage and adoption of technology by SMEs in Kiambu County to a low extent. 4.5 % implied that training /skills of staff influence adoption and usage of ICT by SMEs in Kiambu County to a very low degree.

4.5 Regression Analysis

Multiple regression analysis was conducted to determine the adoption and usage of ICT by SMEs of Kikuyu sub-County in Kiambu County. Coding, entering and computing of measurements for multiple regressions were carried out using Statistical package for social sciences (SPSS).

Table 3: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
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1 .897 .805 .533 .2764

Coefficient of determination indicates the degree and direction of relationship between the independent variables and the dependent variable. It specifies the percentage of dependent variable variation that is attributed to all independent variables (Stakeholders' support, and training /skills of staff). Results are shown in table 3.

The independent variables used in the study, explain about 80.5% of the adoption and usage of ICT by SMEs represented by the R^2 . This implies that 19.5% of adoption and usage of ICT by SMEs in Kiambu County can be attributed to other factors not in the study. Thus, there is need for further studies to look into other reasons that affect adoption and usage of ICT by SMEs in Kiambu county.

Table 4: ANOVA (Analysis of Variance)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.342	6	.254	53.1233	.000
	Residual	99.970	147	1.244		
	Total	109.685	153			

The value of significance is .0000 which is below the 0.05 threshold (Table 4). Thus, we can conclude that the model is statistically significant in predicting adoption and usage of ICT by small and medium enterprises. At 5%, the level of significance was 7.9 for F-critical. The F calculated is greater than the F critical (value = 53.1233), this indicates the significance of the overall model.

Finally, a multiple regression analysis was done to establish the nature of relationship between the dependent variable and the independent variables. From the SPSS figures generated, the equation

$(Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon)$ becomes:

$$Y = 2.976 + 0.877X_1 + 0.705X_2 + \epsilon$$

Where Y is the dependent variable Adoption and usage of ICT by SMEs), X_1 is the Stakeholders' support variable, and X_2 is, training /skills of staff variable. From the regression equation generated and considering the study factors (Stakeholders' support, training /skills of staff) constant at zero, Adoption and usage of ICT by small and medium enterprises choice will be 2.976. An increase by one unit in Stakeholders' support will lead to an increase of 0.877 in adoption and usage of ICT by SMEs while holding other independent variable at zero. A unit increase in training /skills of staff will lead to a 0.705 increase in Adoption and usage of ICT by small and medium enterprises.

We can then conclude that Stakeholders' support contribute more to the adoption and usage of Information communication technology by small and medium enterprises followed by training /skills

of staff. At 5% level of significance and 95% level of confidence, Stakeholders' support had a 0.001 level of significance; and training /skills of staff showed a 0.002 level of significant.

5.0 Summary, Conclusions and Recommendations

5.1 Stakeholders' support

The study finding point out that respondents agreed with the statement that stakeholders' support enacts activities that will allow a business to achieve its objectives, vision and mission. A study conducted in Malaysia by Thong and Yap (2011) established that support by SMEs' management, conducive government policies and supposed benefits of ICT, positively influences decisions on use and adoption of ICT by SMEs. Lack of stakeholders' support to adoption and usage of ICT will lead to inadequate planning; that In my organization, stakeholders' involved in allocation of organizational resources to address adoption and usage of ICT; that Stakeholders' support plays a crucial role in accelerating adoption and usage of ICT idea as well as focusing ISM alignment to the business goals and strategies. This relates to what Mingaine (2013), found out in his study that sellers and customers of the firm do exert pressure on it to use ICT in its transactions with them ; that In my organization, the Stakeholders' support motivates employee towards adoption and usage of ICT; that Stakeholders' support is vital in creating awareness and need for training program, focused on adoption and usage of ICT.

5.2 Training /skills of staff

The study also established that Lack of training /skills based employees might hinder or prevent ICT adoption if the owner believes that this technology can only be employed using specialist staff; that past experience and understanding of ICT by employees in an organization may encourage it to adopt and use ICT. So, SMEs need to consider the level of training/ skills of its workforce in Kiambu County. A research work conducted in Taiwan by Sakai (2012) found that SMEs were likely to adopt and employ ICT in their transactions, when technology was viewed as beneficial, the workforce had computer skills and technical support was offered. The lack of suitable training /skills of employees with sufficient information technology knowledge is a great hindrance to adopting and using ICT by SMEs. This is in line with Ghobakhloo *et al.* (2010), inadequate levels of training and knowledge of IT has contributed to restricted use of ICT with less benefits being realized by SMEs using computer software and hardware.

5.3 Conclusion

The study objective was to investigate the effect of the stakeholders' support on adoption and usage of ICT by SMEs in Kiambu County. On this objective, the study concludes that stakeholders' support influences adoption and usage of ICT by SMEs in Kiambu County to a great extent. The study indicated that Lack of stakeholders' support to adoption and usage of ICT will lead to inadequate planning; that In my organization, stakeholders' involved in allocation of organizational resources to address adoption and usage of ICT; that Stakeholders' support play a crucial task in accelerating the adoption and usage of ICT initiative while aligning ISM with the firm's goals and strategies; that in my organization, the Stakeholders' support motivates employee towards adoption and usage of ICT; that Stakeholders' assistance is responsible in creating need for training as well as instructional programs geared towards adoption and usage of ICT.

The study concludes that Lack of training /skills based employees maybe a barrier or prevent adoption of ICT if SMEs' management perceives that the use of the technology is dependent on using experts; So SMEs need to decide on the level of training/ skills of its workforce since their past skills and understanding have an impact on decision to use and adopt ICT by SMEs in Kiambu county; that the lack of suitably trained / skilled employees with sufficient information technology capability was another hindrance to ICT adoption by SMEs. Lack of information system knowledge was a major impediment to adoption of ICT

5.4 Recommendations

The study found that stakeholders' support and training /skills of staff is a determinant on adoption and usage of ICT by SMEs in Kiambu County. Therefore, the study recommends that training programs for personnel at all levels of the SMEs in Kiambu County should be conducted to help them understand their responsibilities in adoption and usage of ICT, and that they use accurately and safeguard information resources which are handed over to them. Creation of awareness will offer a blended solution of actions that will encourage adoption and usage of ICT, enhance accountability, and alerts the workforce of concerns regarding adoption and usage of ICT.

Training should seek to provide ICT information and competencies to SMEs employees that will support adoption and usage of ICT and equip them with individual knowledge of their role in adoption and usage . The study also recommends that collective responsibility among stakeholders should generate accurate designs, cost and time estimates and commitments of clients to adoption and usage of ICT, financing obligations as they are the determinants of successful adoption and usage of ICT.

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