

Profitability of ICT Usage towards Productivity of Small Business Enterprises in Tanzania

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Abstract

This study assesses the use of ICT for small business enterprises' performance in Tanzania (SBEs). The study focused on finding out the use of ICT in SBEs in aspects of business performance, productivity, and profitability. This study employed a quantitative methodology whereby structured questionnaires and sampling technique was used in which the Chi-square technique for analyzing data was used to ascertain the impact of ICT usage on small business performances. The study findings show that ICT is used in SBEs in their daily activities and is helpful in productivity, market accessibility and profitability which includes an increase in their business functionality, increased profit margin and enable them to advertise their product and services worldwide. The study concluded that ICT usage is vital in SBEs and therefore, there is a need for Small Business Enterprises to support knowledge management to achieve their business goals. The study recommended for ICT training and a well-articulated policy which will focus on ICT usage in SBEs specifically on the costs reduction of ICT related equipment.

Keywords: *Entrepreneur; Entrepreneurship; Small Business Enterprises; ICT; Productivity; Profitability; Tanzania.*

1. Introduction

Small Business Enterprise (SBE) has been seen as a hub for generating income for the majority of urban dwellers with no formal paid employment. In Tanzania, entry into small business entrepreneurship is usually not seen as a problem. One can start small business at any time and in any place. However, the development of this sector has been profoundly characterized by two parallel phenomena which are perhaps contradictory in character. The first phenomenon is the increasing politicization effort encouraging people to engage in Small Business Enterprise (SBE). This led to the proliferation and mushrooming of small business most of which are in the form of petty trading, at least everywhere in the urban centres.

The second phenomenon is the parallel increase in Information and Communication Technology (ICT) use in business suggesting prevalence of its use which affect SBEs and counter reaction from the small traders. This is characterized by the increasing demand of technology skills on entrepreneurs in the competitive world market which is evident in most urban areas. Generally, the sector is characterized by constant tension and demand between small traders and ICT in urban centers. In principle ICTs have always been available since the advent of the printing press. The only difference is that from the late twentieth century, rapid advances in technology changed the traditional ways in which information was processed, communications conducted, and services available (Adu, 2002).

In global ICT perspective, Lonergan *et al.*, (2004) reported that at the beginning of 2004, there were over 1.3 billion ICT users of internet, mobile phones and personal computers worldwide and by 2007; the demand for the three ICT services would have grown at an average annual rate of 9.1%. The Global System of Mobile Communications (GSM) Association estimates that the GSM technology is used by more than one in five people of the world's population, representing approximately 77% of the world's cellular market and is estimated to account for 73% of the world's digital market and 72% of the world's wireless market (GSM Assoc., 2006).

According to the African Development Bank report 2011, there were fewer than two million ICT users of internet, mobile phones and personal computers in the continent 13 years ago. The number grew to over 400 million in 2009. Industry estimates show that there are currently more than 500 million ICT subscribers in Africa, up from 246 million in 2008. By March year 2012, slightly over 21 million of these were in Tanzania.

Moreover, in 2010, the number of internet, mobile phones and personal computers ICT users in Africa first exceeded that of fixed technology in place. In Tanzania, that happened the following year when the number reached 275,557 from the 2000 level of 110,518 against the fixed line figures of 177,802 and 173,591, respectively (The Citizen Newspaper, 2011). In Tanzania ICT sector is the fastest growing sector of the economy for instance in 2009, recording 21.9% growth, up from 20.5% in 2008. The sector contributed 2.1 % to the GDP in 2009, up from 2.5% in 2008 (URT, 2010/11). The ICT sector is governed by the Tanzania Telecommunication Act of 1993 as amended by Act, No.12 of 2003, and by the institution formed under the Act, the Tanzania communications Regulatory Authority (TCRA, 2009). The business of ICT began in 1997 with very few companies adopting it (TCRA Report, 2011). The number of subscribers has been increasingly substantially for instance, report of Tanzania Communication Regulatory Authority (2011) depicted that there were 275,557 subscribers in 2001 but by November 2010 the number was increased to 17,985,919.

The use of ICT and technology has affected every aspect of business, transforming not only the way that business is conducted but also creating new business sectors and jobs by providing a room for modern managerial and business operational issues like external management of business, business operational control, online procurement and marketing of merchandise, Outsourcing and part time professional business consultations and e-commerce. In Tanzania, for example ICT has evolved from its traditional “back office” role toward a “strategic” role being able to support current business strategies and also to shape new business strategies (Keen, 1991). Because of the noticed pervasiveness and dependence on ICT in small business enterprise, the importance of alignment between ICT use and the small business enterprise direction has appeared. In this sense, the need to evaluate and analyze the impact that has been arisen following the use of ICT whether small businesses have actually changed in their business performance with the advent of ICT and how this new input has been exploited on productivity, profitability and market accessibility. If this gap is not properly researched and analyzed, the level of stakeholders’ understanding pertaining the importance, education, support and use of ICT in small businesses will be very low which will in turn jeopardizes the performance and sustainability of those enterprises. In view of that, the current study was then set out to investigate and analyze for the actual situation with regard to impacts.

The reasons towards selecting Arusha to be the focal point of the study was based on the fact that, it is one of the vibrant growing city and very strategic business hub in the East Africa Integration federation formed; it generates huge income for the central government courtesy to tourism and business activities; it is visited by almost 400,000 tourists per year as it is the gateway to the northern safari circuit and above all Arusha has a huge number of ICT companies, small business enterprises and electronic equipment’s as evidenced in Arusha Regional report (2011). **H_aiii:** ICT usage has significant on profitability of Small Business Enterprises in Tanzania at alpha=0.05 **H_{ai}:** ICT usage has significant on productivity of Small Business Enterprises in Tanzania at alpha=0.05.

2. Material and Methods

Profitability means the surplus remaining after total costs are deducted from total revenue, and the basis on which tax is computed and dividend is paid. It is the best known measure of success in an enterprise (Solow, 2009). The same author argued that, ICT can impact the profitability of SBEs in many aspects including being one of the significant input factors for both formal and informal SBEs and contribute positively to revenue generation. Mobile phones have overtaken computers as tools in supporting the running of SBEs, given their prevalence and accessibility. Mobile phones and internets are used right across the business operations. This situation has arisen by default rather than through regulatory intervention.

According to little theoretical and empirical evidence, ICT claimed to offers benefits for a wide range of business processes and improves information and knowledge management within the firm, leading to better performance. Firms can manage their processes more efficiently and, as a consequence, they increase their operational efficiency. Moreover, it is claimed to reduce the coordination costs of the firm because of lower procurement and inventory costs and closer coordination with suppliers (Tachiki *et al.*, 2004; and OECD, 2004), further adds that, communication based on ICT and the Internet can also improve external communication, reducing the inefficiencies resulting from lack of co-ordination between firms, and increasing the speed and reliability of information processing and transfer.

Productivity is a measure of the efficiency of a person, machine, factory, system, etc., in converting inputs into useful outputs (OECD, 2004). The computation of Productivity involves dividing average output per period by the total costs incurred or resources (capital, energy, material, personnel) consumed in that period. Productivity is a critical determinant of cost efficiency. Recently there have been many challenges and variations in the

forces for productivity during the last decade. One that has acquired substantial attention over the past few years is concerned with the impact of information and communication technology on productivity growth of firm performance (OECD, 2004). The widespread diffusion of the Internet, the mobile phone and the broadband networks shows how influencing these technologies have become.

However, according to the literature review on the impact of ICT on the firm performance, it has seen to be the diversity of theoretical approaches and empirical evidence on the role of ICT in the improvement of the firm performance. Solow (2009), remarked that 'people can see the computer age everywhere but in the productivity statistics'. Research on the 'Solow paradox' since then has thrown the contribution of computers, software and telecommunication hardware into sharper relief. There is now persuasive evidence that the information and computer technology (ICT) investment boom of the 1990's has led to significant changes in the absolute and relative productivity performance of firms, sectors and countries. In general, all the studies analyzed about impacts of ICT on productivity contain the idea that, to achieve a more competitive position, the firm should complement ICT investments with an appropriate use of these technologies, for which, implicitly, complementary resources are required Nyangarika *et al.*, (2020b)

Wolf (2001), in his study on determinants and impact of ICT use for African SBE, mentions that the focus on production processes might be too narrow and those ICTs might exert their influence through product-quality improvements and improved services. He put it further that, ICTs might additionally help SBEs in the administration of their businesses and enhance procurement and marketing processes. Besides that, Hallberg (2000), in his paper concern ICT market-oriented strategy for small and medium enterprises argues that, when a new technology, product or service emerges, individuals evaluate both its economic profitability and other variables - degree of risk, decrease in discomfort, savings in time and effort and immediacy of rewards and go for it. In addition to that, Schubert and Leimstoll (2007) conducted a quantitative study regarding the relationship between ICT usage and SBEs business operations. His research was conducted using 38,016 companies with number of employees ranging from 10 to 249 and grouped in such that 30% were CEOs, 35% were CIOs, 24% as other executives in commercial and technical areas, and 11% had other functions in the company. His study shows that "(i) SBEs are using ICT in their daily business, especially in field like financial and accounting, human resource management; (ii) there is a high degree of inter-organizational ICT usage; (iii) ICT is strongly rooted in management, that is high involvement and skills of managers; and (iv) ICT can successfully supports competitive strategies if well used. Information and communication technologies (ICTs) make large, medium and small companies more flexible. Especially, the importance of ICTs for Small Business Enterprises is increasing in time since the share of SBEs in countries is about 95-98 % and they have some difficulties to finance and manage their companies, enter market and produce their goods and services.

Furthermore, Ofafa and Kiveu (2013), assert that, ICT improves the market level of business enterprises. According to the study conducted by Kärrberg and Liebenau (2009), Information and communication technologies continued to make businesses more efficient in the conduct of key tasks as well as more productive overall. Besides, Solow (2009), comes up with the following impacts of ICT on profitability: ICTs are significant input factors for both formal and informal SBEs and contribute positively to revenue generation; Mobile phones have overtaken computers as tools in supporting the running of SBEs, given their prevalence and accessibility; Mobile phones and internets are used right across the business operations. This situation has arisen by default rather than through regulatory intervention.

Msabila (2012), in her research on impacts of ICT to Entrepreneurs focused on the challenges it brought them and the study revealed that, Entrepreneurs are having obstacles which hinder them not to utilize ICT fully which is the lack of resources and skills to do so. Her study didn't analyze the other side of positive impacts it brought them. However, it stated that, there could be many possibilities for Entrepreneurs to gain more advantages by engaging further ICT into their business. According to Barba (2007), who did a research on Benefits of ICT Adoption by Small Business Enterprises (SBEs), ICTs was found to have a valuable potential for developing SBEs through more effective use and better integration of ICTs in business processes while assisting them to make more efficient decisions relevant to their performance.

According to Falke (2001), who did a study on the effect of ICTs on small enterprises in developing countries, discovered that the most potential adopters have the new technology the speed of diffusion decreases again until the saturation level is reached, where entrepreneurs might not see a benefit of the new technology but fear to have a disadvantage if they don't use it. Moreover, Arendt (2008) presents the results of the research into barriers to ICT adoption to Entrepreneurs, according to his research, the major issue is not the access to ICT but rather the lack of appropriate education, knowledge and skills on the part of managers and employees. It is evident that small and medium enterprises suffer from the problem of a lack of human resources needed for

using ICT. Based on Beckinsale and Ram (2006), the perceived benefits of ICT adoption often include focus on improving business efficiency; operational effectiveness and the need to reach out for new markets and opportunities. Furthermore, USAID (2013), shows that, ICT has revolutionized the marketing practice among agriculturalists. In different context, Mwakaje (2010), Nyangarika *et al.*, (2020a) asserts that, ICT helps to decrease cost of the price for products due to decrease operational costs, increases sales volume, and wide market access.

On top of that, Solow (2009), in his research on the role of Information and Communication Technologies in business, argued that the widespread uses of ICTs are changing the way people or companies work. It is a feature of the technological advancements of this period in history where there has been immense innovation in information management and communication so that in many countries, information and knowledge are easily conveyed, accessed and used. The gaps observed here are that, there are no and or very little scholarly research in the Impact of ICT usage in SBEs performance especially in the productivity, profitability and marketing aspects of small businesses in Tanzanian context. As can be seen from the review of various researchers above, their studies focused on the ICT determinants and adoption factors in SBEs, the relationship of ICT and SBEs, the barriers to ICT implementation in SBEs and the challenges of ICT in SBEs, and the general impacts of ICT on Entrepreneurs but none of the study has investigated on the impacts that ICT usage has brought in SBEs performances specifically in the productivity, profitability and marketing aspects.

3. Methods

This study employed quantitative methodology whereby structured questionnaires and sampling technique was used in which Chi-square technique for analyzing data was used to ascertain the impact of ICT usage on small business performances. The study collected both primary and secondary data. With respect to primary data, the study applied survey approach using questionnaires and observation. The questionnaire instrument was structured with both open and closed ended questions while secondary data were collected through documentary sources review. The research aimed at reviewing data from TEMDO as one of the local Small Business Enterprises found in Arusha city specifically in the productivity, market and profitability trend of their operations before and with ICT era. On this ground, historical and business performance trend data were reviewed to widening understanding of the researcher and support the primary data.

4. Results

ICT has contribution on the profitability of the business Nyangarika *et al.*, (2020d). The first profitability item studied was the volume of sales. Table 4.1 shows that, 5 respondents (12.5%) strongly agree, 20 respondents (50.0%) agreed, 5 respondents (12.5%) were neutral, 5 respondents (12.5%) disagreed whereas 5 respondents (12.5%) strongly disagreed. This means the findings suggest that, ICT helps to increase volume of sales. The findings correlate with the literature reviewed from Mwakaje (2010) which asserts that, ICT increases sales volume due to wide market access and decreases costs of operations which in turn raises the profit margin.

The study also investigated whether ICT extends customer base. Table 4.1 shows that, 4 respondents (10%) strongly agreed, 20 respondents (50%) agreed, 7 respondents (17.5%) were neutral, 4 respondents (10%) disagreed whereas 5 respondents (12.5%) strongly disagreed. Hence the findings suggest that, ICT extends customer base. The findings are supported by those of Hallberg (2000) in his paper concerning ICT market-oriented strategy for small and medium enterprises which argued that, when a new technology, product or service emerges, individuals evaluate both its economic profitability and other variables - degree of risk, decrease in discomfort, savings in time and effort and immediacy of rewards and go for it.

Another issue studied was whether ICT increases income due to large sales. Table 4.1 shows that, 6 respondents (15%) strongly agreed, 20 respondents (50%) agreed, 5 respondents (12.5%) were neutral, 4 respondents (10%) disagreed whereas 5 respondents (12.5%) strongly disagreed. These findings suggest that, ICT increases income from the large sales made and they are supported by the findings from the study conducted by Solow (2009), on impact of ICT on businesses of which the following impacts of ICT on profitability was found, ICTs are significant input factors for both formal and informal SBEs and contribute positively to revenue generation.

Another aspect of profitability was whether ICT has a negative impact. At first respondents were asked if profit decreases due increased costs of ICT implementation. Regards to this, Table 4.1 shows that, 3 respondents (7.5%) agreed, 9 respondents (22.5%) were neutral, 17 respondents (42.5%) disagreed whereas 11 respondents (27.5%) strongly disagreed. This means that, ICT does not decrease profit of SBEs. The findings correlate with

the literature reviewed from Mwakaje (2010) and Nyangarika *et al.*(2020c) which asserts that, ICT increases sales volume due to wide market access and decreases costs of operations which in turn raises the profit margin.

Table 4.1: Summary of ICT usage on SBEs performance

Contribution of ICT on Productivity	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Easier operation	5(12.5%)	10(25%)	25(62.5%)	-	-
Improved business	5(12.5%)	10(25%)	25(62.5%)	-	-
Business success.	5(12.5%)	10(25%)	25(62.5%)	-	-
Challenges and costs	-	-	3(7.5%)	31(77.5%)	6(15%)
ICT usage has lowered the productivity	-	-	2(5%)	33(82.5%)	5(12.5%)
Role of ICT on Market accessibility	Highly satisfied	Reasonably satisfied	Neutral	Dissatisfied	Highly dissatisfied
Information accessibility on new markets	10(25%)	15(37.5%)	10(25%)	4(10%)	1(2.5%)
Safe financial accessibility and payment mode	10(25%)	15(37.5%)	6(15%)	4(10%)	5(12.5%)
Wide marketing coverage	10(25%)	15(37.5%)	10(25%)	2(5%)	3(7.5%)
Improved marketing strategies	10(25%)	15(37.5%)	8(20%)	2(5%)	5(12.5%)
Reduced adverts costs	5(12.5%)	20(50%)	5(12.5%)	5(12.5%)	5(12.5%)
Contribution of ICT on Profitability	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
ICT increases volume of sales	5(12.5%)	20(50%)	5(12.5%)	5(12.5%)	5(12.5%)
ICT Extended customer base	4(10%)	20(50%)	7(17.5%)	4(10%)	5(12.5%)
ICT increases income	6(15%)	20(50%)	5(12.5%)	4(10%)	5(12.5%)
ICT decreases profit	-	3(7.5%)	9(22.5%)	17(42.5%)	11(27.5%)
ICT reduces costs	4(10%)	25(62.5%)	4(10%)	5(12.5%)	2(5%)

Source: Field data (2020)

This study commenced with two important hypotheses which were tested at significance level (alpha) of 5% using chi square analysis. With chi square a calculated chi square value is compared with table value. The researcher was guided by the principles that 'a null hypothesis is accepted when the calculated value is smaller than the table value otherwise it is rejected'. When the null hypothesis is rejected the alternative hypothesis is automatically accepted. This group was hypothesized by the following hypotheses; **H₀₁**: ICT usage has no significant contribution on productivity of Small Business Enterprises in Tanzania; **H_{a1}**: ICT usage has significant contribution on productivity of Small Business Enterprises in Tanzania. In order to test these hypothesis two selected representative variables in the proclivity section were cross-tabled to the rate of the ICT usage. These items were; ICT has made it easy for operating the business than before and I feel that ICT usage has greater contribution in my business success. Nevertheless, the remaining variable had the same responses. The first cross-tabulation was ICT has made it easy for operating the business than before. Against Use the following five-point scale rate your level of ICT usage.

Table 4.2: Cross-tabulation-ICT made easier operation

ICT has made it easy for operating the business than before it. * Use the following five point scale rate your level of ICT usage						
Count						
		Use the following five point scale rate your level of ICT usage				Total
		1	2	3	4	
ICT has made it easy for operating the business than before it.	Strongly agree	0	0	0	5	5
	Agree	8	0	2	0	10

	Neutral	2	13	10	0	25
Total		10	13	12	5	40

Source: Field data (2020)

Another usefulness of ICT in regards to profitability is reduction of cost. Table 4.2 shows that, 4 respondents (10.0%) strongly agree, 25 respondents (62.5%) agreed, 4 respondents (10%) were neutral, 5 respondents (12.5%) disagreed whereas 2 respondents (5.0%) strongly disagreed. The findings show that 62.5% of the respondents agreed on the costs reduction of ICT usage. They correlate with the literature reviewed from Mwakaje (2010) which asserts that, ICT helps to decrease cost of the price for products due to decrease operational costs, and increases sales volume, and wide market access

Table 1.3 : Chi-Square Tests-ICT made easier operation

Chi-Square Tests			
	Value	Degree of freedom	Asymp. Sig. (2-sided)
Pearson Chi-Square	61.707 ^a	6	.000
Likelihood Ratio	51.199	6	.000
N of Valid Cases	40		
a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .63.			

Source: Field data (2020)

Observations: the calculated value was 61.707 (Table 4.3), the table value at 5% and 6 degree of freedom significance level is 12.529. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. The second cross-tabulation was done for I feel that ICT usage has greater contribution in my business success against Use the following five-point scale rate your level of ICT usage responses of which are summarized in Table 4.4;

Table 4.4: Cross-tabulation-ICT has greater contribution in business

I feel that ICT usage has greater contribution in my business success * Use the following five point scale rate your level of ICT usage						
Count						
		Use the following five point scale rate your level of ICT usage				Total
		1	2	3	4	
I feel that ICT usage has greater contribution in my business success	Strongly agree	0	0	0	5	5
	Agree	8	0	2	0	10
	Neutral	2	13	10	0	25
Total		10	13	12	5	40

Source: Field data (2020)

Observations: the calculated value was 61.707 as shown in Table 4.5 whereas the table value at 5% significance level and 6 degree of freedom was 12.529. Therefore, the null hypothesis was rejected and the alternative hypothesis adopted. Generally, statistically, there is a significant impact of ICT on the productivity of the small enterprises at the 5% level of significance. In this part the study found five important issues; simplification of business operations, current extent use of ICT, quality of operations under ICT, hindrance and challenges brought by ICT, and negative impacts of ICT on the productivity.

Table 4.5: Chi-Square Tests-ICT has greater contribution in business

Chi-Square Tests			
	Value	Degree of freedom	Asymp. Sig. (2-sided)
Pearson Chi-Square	61.707 ^a	6	.000
N of Valid Cases	40		
a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .63.			

Source: Field data (2020)

This study found that 37.5% of the respondents have simplified their business operation due to ICT installation and usage. The remaining portion of the population was neutral. However, on observation it was discovered that 62.5% of the studied population has not used any ICT program or they have not used for long time. Generally,

as implied by the experienced respondents, ICT simplifies business operations. The empirical findings by Robert (2000) in his research on the role of Information and Communication Technologies in business, supports the findings that, ICT simplifies business operations. Therefore, this shows that, ICT has contributed much to business operations simplifications. This study had found that only 37.5% of the studied population was satisfied with the extend ICT is helping their business. The remaining 62.5% was neutral. This neutrality is due to the fact that this portion of the sample had not been in use or had used ICT for a short time. Therefore, the current usage of ICT is very low (only 37.5%). However, those who use ICT are satisfied that ICT contributes to the success of their Businesses. One of the advantages for using ICT in the business operations is that it increases quality of the production. It was found in this study that those who use ICT have their quality improved. This quality is due to short time of services, low rate of congestion, and accuracy of the operations. Like many other technologies, ICT might have its challenges which might negatively impact the production of the business. This study found no hindrance challenges to the production of the enterprises, thus, respondents were unaware of any challenge brought by ICT to the productivity of the enterprise. Negative impacts of ICT in the production can take many forms such as jamming of software, communication breakdown, and unnecessary queuing of information. During this study however, no evidence of these and other impacts were found.

5. Conclusion

It can be concluded from the study that, ICT usage is vital in Small business enterprises in Tanzania, especially in their daily activities in the productivity, market accessibility and profitability which include increase of their business functionality, increased profit margin and enable them to advertise their product and services worldwide. However, there were many possibilities for the small enterprises to gain more advantages by engaging further ICT into their business. But they were having obstacles that hinder them not to utilize ICT fully which are the lack of resources such as capital for acquiring the high costs ICT systems and the skills to operate the systems. Lack of skills applied in both, the technical and business areas and makes the IT strategy approach gaining advantage largely unworkable to Small Enterprises. Therefore, the findings from this study indicate the need for Small Enterprises support in knowledge management to achieve the ICT goals. This support could be in terms of education and training, developing new tools and methods for acquiring and managing knowledge of ICT in SBEs and reduction of costs of ICT related equipment's. Hence, to make ICT meaningful for small business enterprise in Arusha and Tanzania at large, these challenges need to be dealt upon vigorously to ensure all identified challenges are under control. Recommendations form an important part of this study. Born of different findings of the study this paper gives the following recommendations. To the government: There should be reduction of the cost of ICT related equipment's; this study found that only the business enterprises with annual income of above 1,500,000/= are able to acquire ICT system. The main reason why lower income earners do not use ICT is that the acquisition cost is relatively high mainly due to VAT. The author therefore, recommends that there should be reduction of VAT on items such as computers, scanners, fax machine and printers to encourage entrepreneurs to implement ICT. To policy makers: ICT trainings and a well-articulated policy which will focus on ICT usage in SBEs specifically on the costs reduction of ICT related equipment's. To small business enterprises and community: To educate themselves on the use of the ICT related equipment's; this study found that many entrepreneurs do not use ICT due to the fact that they do not know well how to use the related equipment's such as computers, scanners and fax machines. Therefore, the author recommends that entrepreneurs and community as a whole should take initiatives to educate themselves on how to administer ICT in order to avoid missing full ICT utilization in their business and or reduce experts hiring charges.

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