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Sanitation markets in urban informal settlements of East Africa

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ABSTRACT

This article analyses sanitation markets in the informal settlements of three case study cities, namely Kigali (Rwanda), Kampala (Uganda) and Kisumu (Kenya), to identify how sanitation markets in East Africa can be made to function more effectively. It is based on a mixed method approach where 1794 households from Kigali, 1666 households from Kampala and 1927 households from Kisumu were surveyed. This was complemented by qualitative research involving 83 focus group discussions, 99 interviews and 3 deliberative forums. Findings reveal similarities and strong differences between the cities in terms of sanitation markets. While construction and emptying services are more available in Kampala and to lesser extent in Kisumu, organic solutions are mostly available in Kigali. However, the purchase of products and services is generally low. One of the reasons is that households are provided with products they do not want to buy. The sanitation intervention should be focused on the households rather than the suppliers of sanitary products. This involves understanding consumers' needs, desires, habits and the circumstances required for a facility to be acceptable and meet the needs of users rather than what fits the supplier.

1. Introduction

In East Africa, countries have rapidly increasing urban populations, with well over half their urban populations living in unsanitary and overcrowded conditions in informal settlements - 55% in Kenya, 63% in Uganda and 68% in Rwanda (Eyakuze, Salim, & Hersi, 2012). Some researchers have argued that improving sanitation in the informal settlements of Sub-Saharan Africa requires the development of sanitation markets. According to the basic principles of supply and demand, a market without available goods occurs for two main reasons: either, because there is no demand for the good, and therefore it is not lucrative to supply it; or alternatively, because demand is so high that supply has run out (Oti & Quinby, 2012). Although demand is important in sanitation, a key component of sanitation market is supply. Initially four, and more recently seven, factors relating to supply are discussed in the sanitation market literature as being key to having a functioning market (Leonie, 2011). These factors are product, price, place, promotion, policy, partnership and people.

In this article, we are mainly concerned with only three factors (product, price and promotion). According to Peal, Evans, and Van Der Voorden (2010), the product can be an item (e.g. a latrine) or a service. Services which are needed in informal settlements include construction/installation of sanitation facilities, supply of sanitation products, repair/maintenance of facilities, emptying services, transportation/treatment/safe disposal of waste and education/sensitisation of the community about good hygienic practices. However, there is insufficient private sector involvement in the sanitation sector because of lack of a commercial market, low creditworthiness and low potential for income generation (Van Der Hoek, Evans, Bjerre, Calopietro, & Konradsen, 2010; Trémolet, 2012). Promotion of sanitation might include something which helps to get the customers' attention and convince them to buy the product or make use of the service (Cairncross, 2004). However, often the key users of the services, particularly women who are traditionally involved in the health of a household, are not aware of the services available (Okurut, Kulabako, Chenoweth, & Charles, 2014; Outlaw, Jenkins, & Scott, 2007).

Furthermore, the development of sanitation markets requires businesses operating in the informal sector such as Small-Scale Independent Providers (SSIPs). SSIPs are sanitation business owners who provide a range of services to the poor that fall into

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three broad categories: latrine construction, latrine management, and latrine emptying (Oti & Quinby, 2012). However, in spite of the successes associated with the SSIPs' services to the urban poor, the fees charged by some SSIPs for their services are exploitive (Mcgranahan & Owen, 2006). The services may also be of inferior quality as a result of being sourced and/or conveyed from sub-standard sources and/or systems (Allen, Dávila, & Hofmann, 2006; UN-HABITAT, 2009). The practice of some SSIPs has also led to environmental concerns as they ignore environmental impact that is associated with their services, such as the depletion of ground water resources (UN-HABITAT, 2009). This article reports on an investigation of three case study cities, Kigali (Rwanda), Kampala (Uganda) and Kisumu (Kenya), to identify how sanitation markets in East Africa can be made to function more effectively and provide residents with more adequate services, services that meet their needs and are affordable.

1.1. Background to the study areas

All three countries have a Presidential System of Government. They are also administered under decentralised local government systems. While there are four provinces and the City of Kigali (holding a statute of a province) in Rwanda, Uganda has 112 districts with the capital city of Kampala as one of districts, and Kenya has 47 counties that form the devolved government (Kisumu is one of the counties). Furthermore, all three countries have various policies and laws regarding sanitation. One important difference between the three countries is the role played by the government in organising community involvement in the development process. Kenya and Uganda envisage a role for CBOs and NGOs in the development process and expect the private sector to deliver services (Otsuki, Gera, & Mungai, 2013).

However, there is poor NGO-government program coordination at the local level. In contrast, Rwanda actively coordinates the different sectors and ensures that the very poorest are able to access basic services (Republic of Rwanda, 2013b). Another indicator of suitable policy is the World Bank's assessment of Rwanda's state effectiveness, which compares favourably with other countries in Africa including Uganda and Kenya. Notable are Rwanda's high scores for control of corruption and government effectiveness while Kenya and Uganda score very poorly on control of corruption and have significantly lower scores than Rwanda for government effectiveness (Kaufmann, Kraay, & Mastruzzi, 2012).

Each of the study cities has faced rapid expansion of its urban population beyond its capability to provide adequate housing, resulting in a large proportion of the population in each city living in informal settlements. For example, the population of Kigali grew from around 6000 in 1960 to 1,100,000 inhabitants by 2012. It is estimated to grow to 3,000,000 by 2020 (Republic of Rwanda, 2013a). Kampala had only 46,735 inhabitants in 1959. By 1980, the population increased to 458,503, and in 2002 the city had as many 1,659,600 inhabitants (Republic of Uganda, 2011). Kisumu has grown rapidly from only 400 inhabitants in 1910 to 50,000 in 1969, 349,000 in 1999 and 679,861 inhabitants in 2009 (Republic of Kenya, 2009).

In Kigali, only 13% of people are reported to live below the poverty line, compared to 41.5% in other towns in the country (Republic of Rwanda, 2012). About 12% of the residents in Kampala live below the poverty line (Ekane, Nykvist, Kjellén, Noel, & Weitz, 2014). Kisumu is ranked as the poorest city in Kenya, with 48% of the residents living below the poverty line (Republic of Kenya, 2011). The reported population growth rates in the cities range from 2.8% in Kisumu to 5.7% in Kigali, but the growth rates in the informal settlements can be much higher, with growth rates in Bwaise III, a parish in Kampala, estimated to be 9.6% in 2002 (Republic of Uganda, 2005).

2. Methodology

The study addressed the following research questions:

1 What sanitation products/services are currently available to the household and at what price?
2 What are the barriers to use of existing sanitation products and services and what are potential solutions for overcoming these barriers?

In order to answer the above questions, a participatory mixed methods approach using both quantitative and qualitative research methods was employed. The study was conducted in eight informal settlements which were purposely sampled because they have some of the poorest sanitation facilities found within their cities. The settlements are also characterized by high levels of poverty, high rates of illiteracy, high unemployment, poor housing, a lack of access to quality health care and transportation, and an unhealthy environment.

A simplified formula was used (Israel, 1992a, 1992b; Sapsford & Jupp, 2006) to determine the sample size: $\mathbf{n} = \mathbf{N}/\mathbf{1} + \mathbf{N}(\mathbf{e})^{\mathbf{2}}$. Where: $\mathbf{n}$ = sample size; $\mathbf{N}$ = total population; $\mathbf{e}$ = sampling error.

The samples sizes were determined using the national statistics of the study settlements for the three cities for sampling errors of **5**% (desired level of precision), at a confidence level of **95**% and were large enough to allow for comparative analysis of sub-groups of households of different socio-economic status (KNBS, 2010; NISR, 2008; UBOS, 2011).

Within each settlement, a sample of zones was selected using random sampling techniques and in each sampled zone a random route was used to select households to survey so that every household in the case study communities had an equal chance of being selected and in proportion to the population of the study areas. The questionnaire was administered face to face by trained interviewers in the preferred language of the respondent, with an adult (18 years and over) who was asked to respond on behalf of the household. Three call-backs were made before a household was recorded as a non-response. The questionnaire was developed by the team, piloted in each city and amended as necessary. Quality assurance included a 10% call-back and the rejection of any questionnaire with more than 10% of questions unanswered. The achieved sample of valid responses was 5387 households - 1794 in Kigali, 1666 in Kampala and 1927 in Kisumu.

Survey data were analysed using SPSS 20. Categorical variables were summarized using proportions, percentages and frequencies. The tests of significance that have been used included chi-square (x^2) Cramer's V to test the significance between nominal/categorical independent variables and nominal/categorical dependent variable. In order to understand the factors that contribute significantly to sanitation improvement, binary logistic regression was used. It was taken into account all factors together and constructed two models − one without the variable of the city and the second with the addition of the city to see if the city makes a significant difference.

The results of the survey were complemented by the qualitative research. Purposive sampling was used to select informants for participation in Focus Group Discussions (FGDs) and in-depth interviews. This was to enable us to capture their perspectives, allowing for more in-depth information on sanitation to be gathered and aid understand as to why and how sanitation markets work. The study conducted 83 FGDs (26 in Kigali, 23 in Kampala and 34 in Kisumu), each single gender groups, 99 interviews (28 in Kigali, 28 in Kampala and 43 in Kisumu) and 3 Deliberative Forums (DFs), one in each city. FGDs, interviews and DFs were facilitated by trained researchers with notes taken by another member of the