

## Marketing urban water services: information needs for water utility managers in developing countries

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**Abstract** A decade ago the 'Dublin Principles' shifted global thinking towards treating water as an economic good. The concern was that overly supply-driven approaches had been financially unsustainable, and therefore failed to reduce the service gap. Accompanying this conceptual shift has been a wider move towards focusing on the customer's needs and preferences and their willingness to pay, and applying marketing techniques to meet those needs in a financially sustainable manner. Although regarded as a positive move, its success is heavily dependent on how well water utilities understand their customers. This paper examines existing literature on the determinants of customer willingness to use and pay for improved water services in developing countries. The contribution of past research to our understanding of the behaviour of customers, with regard to service level choice and payment for services, is critically analysed. Basing on this analysis, we develop and discuss a generic model of a water consumer's decision-making process. The model serves two purposes. First, it consolidates past research into a coherent framework to facilitate implementation of the marketing approach. Secondly, we use the model to identify critical customer information that water utility managers need to know in order to be customer-focused.

**Keywords** Customer; developing countries; marketing; urban water services

### Introduction

As a result of urbanisation and rapid population growth, urban water utilities in developing countries face enormous challenges in meeting the water needs of urban dwellers. The twin objectives of closing the coverage/service gap while achieving financial sustainability is a key concern for many water utilities and municipalities. However, most utilities continue to use the conventional supply-driven approach to water provision, which has not been successful in meeting the water needs of the growing populations (Njiru and Sansom, 2003). Indeed, many water utilities and municipalities fail to serve as many as 50 to 80 percent of the people living in their urban areas (Sansom *et al.*, 2004). The unserved people often rely on water vendors, to whom they pay high prices, or use alternative water sources of questionable quality. In addition, utilities in low-income countries face considerable difficulties in recovering the much needed revenue from among those customers connected to their networks.

In recent years, a growing number of sector professionals (e.g. Njiru, 2002; Nickson and Franceys, 2003; Njiru and Sansom, 2003; Sansom *et al.*, 2004) have pointed out that a marketing approach to water services delivery has the potential to improve coverage and financial sustainability in low-income countries. This approach is seen as an effective way for water service providers to be customer-focused and therefore demand responsive. Indeed, a marketing approach to urban water services delivery is consistent with the new public managerialism paradigm that is currently guiding internal reforms for public water utilities in developing countries (Nickson and Franceys, 2003; World Bank, 2004).

However, while a marketing approach seems much more relevant to the service problems at hand than the conventional supply-driven approaches, the degree to which its implementation will succeed is heavily dependent on how well water utilities understand the consumer. Marketing functions within the business realm are heavily dependent on the knowledge of consumer behaviour (Loudon and Dell Bitta, 1993). This is attributed in part to the desire of business firms to obtain a competitive advantage by basing marketing decisions on information about the factors that determine the customers' preferences among products or services and their willingness to pay.

In this paper, we examine existing literature on the determinants of customer willingness to use and pay for improved water services. Basing on the literature, we develop and discuss a generic model of a water consumer's decision-making process as regards service level choice and paying for services. The model attempts to consolidate past research into a coherent framework to guide water utilities in developing and implementing customer-oriented service improvements. In particular, it enables utilities to identify critical customer information on which to base strategies for increasing uptake of service options and promoting positive bill payment behaviour.

### **The urban water supply market in developing countries**

Urban water utilities in developing countries operate in an environment where both their existing and potential customers have access to alternative water sources and service providers. Case studies carried out in Africa and South Asia have revealed a dynamic water market, supported by socially complex networks of access and distribution (Whittington *et al.*, 1988; Collignon and Vezina, 2000). Across a typical town or city, residents use private water vendors, individual household on-selling/buying, family and institutional boreholes, hand-dug wells, streams, rainwater and springs to supplement, replace or substitute direct utility water. Although these alternative supplies are often unregulated, unreliable and costly, a big proportion of urban dwellers use them regularly either through necessity or choice. Indeed, these sources of water supply attract reasonably loyal customers, and therefore, could be said to represent a certain degree of competition to conventional water utilities. Whether this level of competition is sufficient to drive urban water utilities into new larger markets (such as informal settlements) is yet to be resolved. Nonetheless, utilities do have a social responsibility to provide sustainable clean water services to all urban residents at an equitable price. In addition, recent institutional reforms also require that urban water utilities ensure increased cost recovery in order to enhance service sustainability. In light of the mounting social and commercial pressures, water utilities in developing countries are being argued to change their business approach from being supply-driven to engendering customer focus (Kayaga *et al.*, 2004).

Being customer-focused implies that utility services are organised and directed towards the demands and desires of the customer. To achieve this, a water utility would have to execute a management process involving: (1) investigating customer demand for different service options; (2) identifying groups of consumers whose requirements could be better satisfied; (3) developing reliable service options to meet changing demands; (4) pricing the service at a level which the market will bear and which will meet the financial objectives of the utility; and (5) promoting the service so that a desired unit or revenue volume of demand is achieved (Sansom *et al.*, 2004). Such a process is considered key to improving utility performance. However, its success relies heavily on accurate knowledge of the customer. Further, in order to apply marketing tools and techniques, such as market segmentation, service differentiation and appropriate pricing, water utility managers need to develop a comprehensive profile of both their existing and potential customers. In the following sections, we review existing literature on the determinants of customer

decisions to use and pay for improved water services, and develop a framework that puts consumer behaviour at the centre of a water utility's efforts to improve performance.

#### **Studies on domestic water demand behaviour in low-income countries**

Understanding domestic water demand behaviour in low-income countries has been a top priority for many international financing agencies since the end of the 1980–1990 International Water and Sanitation Decade. In particular, research has focused on understanding the determinants of household demand for services and their willingness to pay. Some of the studies are briefly reviewed as follows, and their contribution to our understanding of the behaviour of water consumers in low-income countries is assessed.

#### **Factors affecting service level choice**

Most urban dwellers in developing countries have a choice between obtaining a private connection and using other options such as public water kiosks, shared connection, water vendors, and public wells/boreholes. A few studies have investigated the factors that influence this decision. Many of the studies are conceptually based on the assumption that water consumers (either individually or as part of a household unit) use an implicit economic cost-benefit framework to guide their decisions. For instance, a study carried out in Ukunda, a small market town in Kenya (Mu and Whittington, 1990) reported a significant influence by two economic factors: the price of water and collection time. Other studies, focusing on household decisions to connect to piped water systems, have revealed that in addition to socio-economic factors such as income, gender and education levels, tariffs and connection fees negatively affect the likelihood of households to connect to public piped water systems (Altaf *et al.*, 1993; Singh *et al.*, 1993; Mcphail, 1994). Similarly, a recent study in three Kenyan cities of Nairobi, Mombasa and Kakamega (Gulyani *et al.*, 2005) found that consumer's decisions to connect are significantly influenced by only three factors: (1) current unit cost of water; (2) current per capita use; and (3) time spent daily in collecting water. According to this study, a household is more likely to maintain its current water supply status, the lower the unit cost it bears for water, the lower its per capita water use level, or the longer the time it spends daily collecting water (Gulyani *et al.*, 2005).

In contrast, other studies have reported a lesser role of economic factors (price, quantity and time) in service-level choice decisions. Asthana's (1997) study in the city of Bhopal in Central India showed that the decision to connect to a public water supply system was strongly influenced by household expectations or experiences of alternative sources. A similar study (Whittington *et al.*, 2002) in five municipalities in Kathmandu valley, Nepal found that household preference for improved services was influenced not only by socioeconomic/demographic factors and the existing water situation, but also by their perceptions of water quality and public policy. Furthermore, a study carried out in rural parts of the Philippines showed that households value an in-house piped water supply highly relative to other characteristics of their homes (North and Griffin, 1993).

On the whole, results from the above studies appear to suggest that economic and service factors (such as price, reliability, quality and quantity), rather than socio-economic/demographic factors (such as income, gender, and education) explain much of the variation in household decision-making. It is also evident that internal psychological factors such as beliefs/perceptions, expectations and attitudes towards improved services and utility policy have an influence on customer decision-making, although their role has not been fully explored in the research reports reviewed.

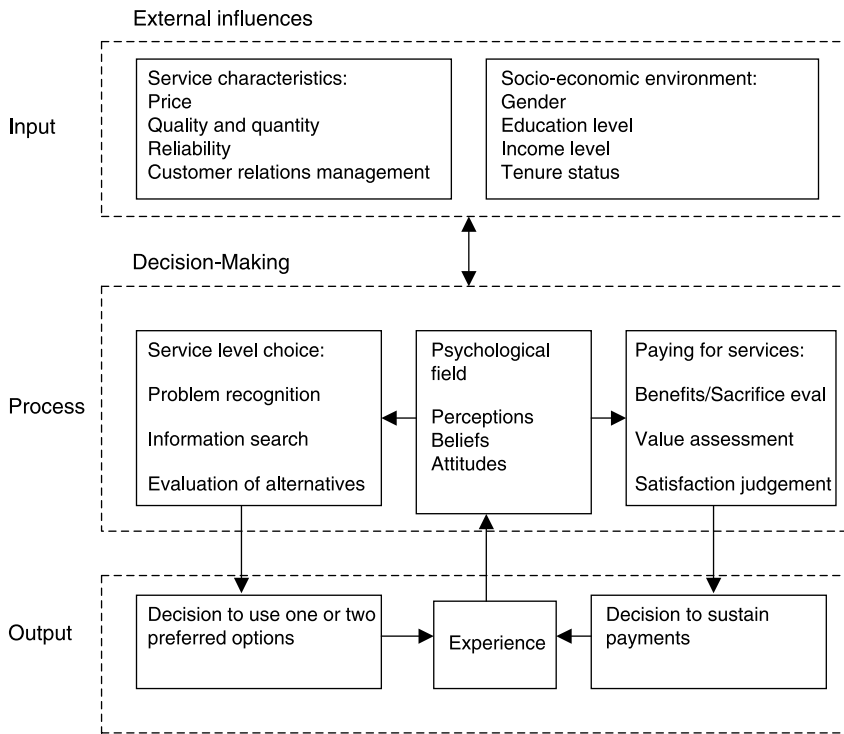
### **Paying for water services**

Predicting consumer behaviour regarding payment for water services has been a subject of intense research in the past two decades. Several studies (e.g. Katko, 1990; Whittington *et al.*, 1990; World Bank Water Demand Research Team, 1993; Mani *et al.*, 1997) have been conducted in various low-income countries to establish factors that influence WTP for water services. In the context of urban water services, the set of influencing factors as revealed by past research can be broadly categorised into: (1) factors within the full control of the water service provider organisation, e.g. service level, service quality and reliability, reputation of service provider, policy environment, and transparency of financial management; (2) factors within the partial control of the service provider, e.g. perceived benefits, opportunity cost of time, water for production; and (3) factors beyond the control of the service provider, e.g. characteristics of alternative sources, income levels and myriad other socio-economic/cultural factors. WTP studies are now widely considered as forming part of an improved planning methodology for water supply in developing countries. This is because they provide a basis for distinguishing financially viable projects from those that are destined for failure. However, as experience in several low-income countries suggests, cost recovery is still a major problem even for those projects with good initial financial models.

Consequently, the research community is now interested in providing a deeper understanding of the factors responsible for translating the consumer's self-reported WTP into actual payment behaviour. For instance, Kayaga *et al.* (2004) attempted to establish the influence of customer perceptions of utility services on bill payment behaviour using empirical data from Uganda. Their findings showed that customer perceptions of service quality, service value and corporate image were strong predictors of customer satisfaction, which in turn, significantly predicted favourable consumer attitudes towards paying water bills or customer loyalty (Kayaga *et al.*, 2004). In an attempt to predict actual bill payment behaviour (measured as mean bill payment period), the influence of various attitudinal variables (i.e. service value perceptions, corporate image, customer satisfaction and, customer loyalty) was modelled. With the exception of customer loyalty, all other variables did not have a significant influence on mean bill payment period (Kayaga *et al.*, 2004). Moreover, the size of the variation in mean bill payment period explained by the regression model was quite small (7 per cent), hence suggesting the presence of other potential influences on bill payment behaviour. Therefore, although the existing literature makes a strong contribution to our understanding of the factors influencing WTP for improved water services, little research has focused on explaining variations in actual payment behaviour. Water utility managers facing difficulties in recovering bills from their existing customers would greatly benefit from a greater understanding of the factors that influence the payment behaviour of their customers.

### **The water consumer's decision-making process**

From the above review, it is apparent that domestic water demand behaviour in low-income countries has received only limited research attention. Paradoxically, the demand responsive/marketing approach advocated for by many sector professionals as the way forward for improving the financial sustainability of water services in low-income countries requires that service providers have a deeper understanding of the behaviour of their existing and potential customers. Consumer decision-making is one aspect of consumer behaviour that market-oriented water utilities should strive to understand. In this section, we develop and discuss a generic model of a water consumer's decision-making process as regards service level choice and paying for services. The model, presented in Figure 1, is designed to consolidate the existing literature reviewed above into a coherent



**Figure 1** A generic model of a water consumer's decision-making process

framework to facilitate implementation of the demand-responsive/marketing approach. It does not presume to provide an exhaustive picture of the complexities of consumer decision-making. Rather, it is developed to synthesise and coordinate relevant concepts into a significant whole.

**Theoretical perspective**

Theories of consumer decision-making vary, depending on one's assumption about the nature of humankind. The two dominant perspectives found in the literature include (Schiffman and Kanuk, 1997): (1) the economic perspective; and (2) the cognitive perspective. The economic perspective characterises a consumer as a rational decision-maker; aware of all available alternatives and capable of correctly ranking each alternative in terms of its benefits and costs in order to identify the one best alternative. This perspective dominates most of the earlier research on domestic water demand behaviour in developing countries. However, consumer researchers have often criticised this view as unrealistic because consumers rarely have all of the information, or sufficiently accurate information, or even an adequate degree of involvement or motivation, to make the so called perfect decision (Schiffman and Kanuk, 1997). In the water sector, the major weakness of the economic perspective is that it takes a narrow view of water demand behaviour, explaining it only in terms of price, quantity and time. The cognitive perspective, on the other hand portrays the consumer as a thinking problem solver (Schiffman and Kanuk, 1997), who seeks not to make a perfect decision, but a satisfactory one. It focuses on the processes by which consumers seek and evaluate information about alternatives. Within the context of the cognitive model, consumers are viewed as information processors. Information processing leads to the formation of preferences and, ultimately, to satisfactory decisions.

The generic model shown in Figure 1 is developed to reflect the cognitive consumer. The model has three sets of variables: input variables, process variables, and output variables. The input component draws on external influences that serve as sources of information. The process component is concerned with how potential customers make decisions about whether to connect or not, and how existing customers make decisions about whether to sustain bill payment or not. Internal psychological influences on the decision-making process include beliefs, perceptions and attitudes towards the specific behaviour. The output phase of the model concerns the post-decision activities of the consumer, i.e. whether the consumer continues to use the service level option chosen, and sustains payment for it.

#### **Input component**

In this model, input components exert external influence on the decision-making process by acting as external sources of information. From previous research (e.g. Mu and Whittington, 1990; Altaf *et al.*, 1993; Singh *et al.*, 1993; Asthana, 1997; Whittington *et al.*, 2002; Gulyani *et al.*, 2005), we can identify two types of input. The first type is the service characteristics, i.e. price (tariffs and connection fees), water quality and quantity, reliability of supply and customer service. These factors represent the external influence on behaviour that is within the full control of the water utility. The second external input to the decision-making process is the socio-economic/cultural environment. Several case studies from developing countries have revealed myriad socio-economic and cultural factors that influence consumer willingness to use or pay for a particular service, e.g. gender, education, income levels, and tenure status (World Bank Water Demand Research Team, 1993; Kayaga *et al.*, 2003).

#### **Process component**

The process component is concerned with how consumers make decisions. To understand this process, water utilities must consider the influence of psychological factors such as beliefs/perceptions and attitudes. Regrettably, previous research has not adequately investigated these influences. Psychological factors represent the internal influences that affect consumer-decision making processes (Schiffman and Kanuk, 1997). In the case of service level choice, the three basic stages that potential customers go through in order to reach a decision about which level of service to use are represented in the model as: (1) problem recognition – which is usually the periodic lack of adequate water; (2) information search, e.g. asking neighbours where they obtain a reliable source and the costs involved; and (3) evaluation of alternatives – which may involve use of one or two alternatives over a short period of time before making the final decision. Similarly, in the case of existing customers, the decision to sustain bill payment is represented in the model as a three-stage process, i.e. (1) evaluation of benefits and sacrifices of sustaining payments; (2) assessment of service value; and (3) satisfaction judgements or comparison of service expectations and performance. As depicted in the model, the psychological field acts as an internal source of information, i.e. held beliefs/perceptions and attitudes towards the behaviour. For instance, the decision to acquire a private connection can be internally influenced by: (1) beliefs about the likely outcomes (e.g. benefits and costs) of having a private connection and the evaluation of those outcomes (i.e. whether they consider them desirable or not); (2) perceptions of social pressure (from friends, family and community) to connect; (3) perceptions of how easy or difficult it is to acquire a private connection; and (4) beliefs about the presence of factors that may facilitate or make it difficult to acquire a private connection. Similarly, in the case of existing customers, the decision to sustain bill payments can be internally influenced by the corresponding beliefs/perceptions



relating to benefits and costs, social pressure, and presence of impediments and facilitating factors.

**Output component**

The output phase of the model concerns the decision outcome and post-decision activities of the consumer. For instance, in the case of service level choice, evaluation of alternatives may yield one or two preferred options, and the decision is made to go for one or both. In the case of two options (e.g. public tap stand and vendor-delivered water), the consumer’s ongoing behaviour may be to stay with one option as the primary source and retain the other as a supplementary source. Customer experiences with the chosen service provide the feedback route to the process component of the model. Experience in this case acts as an additional internal source of information for subsequent decisions. Further, in the case of existing customers, satisfaction with the service offering is expected to translate into an increased desire to sustain the service through continuous and prompt bill payments (Kayaga *et al.*, 2004).

**Getting to know the customer: information needs for water utility managers**

The conceptual model of consumer behaviour discussed above enables us to identify critical customer information that water utility managers need to know in order to successfully implement the demand-responsive/marketing approach. To understand the customer in a comprehensive manner, particularly if a utility is to increase service coverage and maximise customer satisfaction, the information required is grouped into the following three categories, based on the degree of control a utility has over the issues revealed.

**Category 1: The perceptions of existing and potential customers with regard to:**

- the water supply services provided by the utility in terms of key service characteristics such as quality, quantity, collection time, frequency, reliability, and supply pressure
- the utility’s water charges, and billing arrangements
- the utility’s customer services in general, in terms of dealing with requests and responding to complaints
- the ease or difficulty of acquiring connections and paying water bills

This information reveals critical service issues that are important to customers. These issues relate to service characteristics and therefore are within the *full control* of the water utility. In order to influence consumer decision-making and behaviour, utility managers need to know which service attributes have a significant influence on the decision making process. This would facilitate the design of cost-effective intervention strategies for increasing service coverage and promoting bill payment.

**Category 2: The beliefs of existing and potential customers with regard to:**

- the benefits and costs (including time and effort) of acquiring, using and paying for utility water services
- the relative advantages and disadvantages of water services provided by competitors, such as water vendors and community-based groups
- overall satisfaction with utility water services

This category of information taps into the consumer’s psychological field, and therefore utilities have only *partial control* of the issues revealed. However, this information provides important clues for service improvement, as well as enabling the utility to design effective promotional strategies. For instance, understanding the benefits consumers expect from an improved service and the factors that influence their behaviour patterns would be an important input in the design or development of services that consumers will

readily appreciate. With such knowledge, the water utility would be able to develop service options that meet the needs of different consumers. Additionally, by addressing the benefits consumers expect from a service, water utilities could potentially increase consumer's willingness to pay services.

### Category 3: Socio-economic information

This category concerns information on (1) the socio-economic characteristics (such as gender and education levels) of existing and potential customers; and (2) their geo-demographic characteristics such as type of dwellings, type of employment and income level. Previous research has shown these to have a significant influence on willingness to use and to pay for improved water services (World Bank Water Demand Research Team, 1993; Kayaga *et al.*, 2003). In terms of designing behavioural change strategies, socio-economic issues are *beyond the control* of the water utility. However, such information helps in providing a detailed profile of the various customer groups in the service area, allowing the development of well-targeted utility services and promotion strategies that address the preferences and needs of each group. In addition, geo-demographic characteristics can be used to draw market segments for a water service area, thus allowing utilities to deliver differentiated service levels at different prices for the benefit of all consumers and the utility.

### Conclusion

Mounting social and commercial pressures on urban water utilities and municipalities in developing countries have forced a re-think of the traditional supply-driven approaches to a more demand-responsive approach using marketing-type techniques. Such a shift inescapably requires utility managers to have a deeper understanding of the customer, and the factors that determine their preferences and behaviour. This paper has examined existing literature on the subject. Findings from several case studies carried out in the developing world have been combined into a unified framework to explain customer choice decisions with regard to service levels and payment for improved services. It is hoped that this framework will serve two purposes. First, it enables utility managers to easily identify the critical inputs to customer decision-making and design intervention strategies aimed at increasing service coverage and promoting bill payment. To enable water utilities to understand their customers in a comprehensive manner, we have identified and discussed critical information needs for water utility managers. Secondly, the model discussed in this paper provides a useful conceptual basis to guide future research on domestic water demand behaviour in developing countries. In particular, the role of internal psychological factors in influencing behaviour is a subject for investigation.

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