Practical Paper

Determinants of households' intention to pay for improved water services: an application of the Theory of Reasoned Action

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ABSTRACT

Providing a sustainable and improved water service to the increasing urban population across the developing world remains one of the biggest challenges towards meeting the water target set out in the millennium development goals. Increasingly, the application of marketing principles to water services is being promoted as an essential requirement for providing a sustainable water service. In this study, the theory of reasoned action was employed in examining the factors that underpin the behaviour of the urban poor towards paying for improved water services. The findings show that both perceived social pressure and household's attitude have similar importance in predicting and explaining households' intention to pay for improved water services. Concern for a more comfortable life was the most important predictor of households' attitude, while "the family" was the most important referent group. The major determinants of households' intention to pay for improved water services were the reliability of the service and the time of supply. The study showed that there is scope for marketing improved water services using a social marketing approach. However, focusing on hygiene-related benefits is unlikely to have a significant influence on the urban poor's intention to pay for improved water services.

Key words | Ghana, intention-to-pay, theory of reasoned action, urban poor, water service

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INTRODUCTION

Empirical studies from various parts of the developing world have provided compelling evidence to suggest that urban poor households have a high demand for improved services (Komives, 2001; Slattery, 2003). This demand is demonstrated by their willingness to pay higher fees for improved services (Whittington *et al.* 2002), buying water at exorbitant prices from water vendors (Collignon & Vezina, 2000), and the fact that poor households often cite access to improved water supply services as one of their priority need (Chambers, 1997). This not withstanding, water utilities struggle to meet this demand exhibited by the urban poor.

Over the past couple of decades, there has been an increased global trend towards private sector participation (PSP) and marketisation of water services. Njiru & Sansom (2003) note that the application of marketing principles to water services provides a legitimate means of improving cost recovery, service management and efficiency, and attracting the needed investment to improve and expand services. They, however, remark that the successful application of marketing principles to water services requires a good understanding of the consumers. This is in view of the fact that the core proposition of marketing entails the identification, creation and maintenance of mutually satisfying exchange relations with customers (Barker, 1995). Addo-Yobo & Njiru (2006) also note that application of conventional marketing techniques for water services to the

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urban poor may not always be appropriate in view of the peculiar attributes of water, and the distinguishing traits of the urban poor. They go on to argue that an understanding of the water-related behaviour of consumers is a pre-requisite for the provision of a sustainable water service to the urban poor. Consequently, they propose the use of consumer behaviour studies as a tool for designing and marketing a sustainable water service to the urban poor.

In this paper, we present part of the findings of a research carried out in two cities in Ghana – Accra and Kumasi. The study examined the water-related behaviour of urban poor households and established the implication of this behaviour for the design and provision of improved water services for the urban poor. This article focuses on households' intention to pay for improved water services, and looks at the fundamental determinants of this behaviour. The next section of the paper provides a brief overview of the Theory of Reasoned Action (TRA), which was employed in this study. This is followed by a description of the methodology used for the study and a discussion of the research findings.

THE THEORY OF REASONED ACTION MODEL

The theory of reasoned action (TRA) is based on the notion that human beings usually behave in a sensible manner; in that they "make systematic use of information available to them" and are "not controlled by unconscious motives or over powering desires" (Ajzen & Fishbein 1980). The TRA maintains that, baring any unforeseen events, people are likely to act in accordance with their intentions, and therefore posits that "behaviour intention" is a sufficient predictor of behaviour. According to the TRA, a person's intention to carry out a particular behaviour can be predicted from two behavioural components – an attitudinal component, and a social or normative component (subjective norm). These two components act independently to shape a person's behavioural intention. The attitudinal component is based on personal factors, while the normative component is based on perceived social pressure. Both the attitudinal and normative factors are influenced by the beliefs associated with the behaviour in question. Hence, a person's beliefs constitute the fundamental determinants of his/her behavioural intention and consequent actions. Factors such as age, sex, culture and social class are not considered as independent variables in the TRA model because it is assumed that their influence acts through the attitude and/or subjective norm variables (Fishbein & Ajzen 1975; McCarthy *et al.* 2003). The TRA can be expressed algebraically as follows:

$$B \approx BI = (A)w_1 + (Sn)w_2;\ A \propto \sum_{i=1}^{n} b_i e_i;\ \text{and}\ Sn \propto \sum_{j=1}^{m} Nb_j Mc_j$$

where B = the behaviour in question
BI = behavioural intention
A = attitude towards the behaviour
Sn = subjective norm relating to the behaviour
w_1, w_2, = empirical weights indicating the relative importance of A and Sn
Nb_j = the jth normative belief
Mc_j = the jth motivation to comply
b_i = the ith behavioural belief
e_i = the ith outcome evaluation
n,m = the number of behavioural beliefs and referent groups, respectively.

It can be seen from the above expressions that a change in the strength and/or importance of a belief is likely to influence behavioural intention. This knowledge is widely employed in marketing strategies by focusing on the strength and/or importance of one or more of consumers' beliefs in order to increase their positive outlook towards a product or service (Assael 1989; Kotler 1994; Brassington & Pettitt 2000). The application of the TRA is primarily concerned with identifying the factors underlying the formation and change of behavioural intention. The various constructs of the model are operationally defined and amenable to quantitative analyses, thus providing a rapid assessment tool for capturing the strength and importance of the beliefs underpinning a particular behaviour.

METHODOLOGY

Data for the study were collected from four low-income urban communities in Ghana – namely Nima, Teshie, Buokrom and Kwadaso. Both qualitative and quantitative data were collected from households using semi-structured

interviews, questionnaire survey, and focus group discussions in that order. Responses obtained from the interview phase were used in designing sections of the questionnaires, while the focus group discussions were used to gain more insight into some of the key issues that came up during the interview and questionnaire survey phases. Respondent households for the questionnaire survey were selected using a systematic sampling approach. Since houses in the communities were not arranged according to any recurring pattern, there was no danger of selecting houses which shared common characteristics (Babbie 1979; Kemper *et al.* 2003) – a situation that would invalidated the survey results. Respondents for the interviews and focus group discussions were, however, selected using a purposive, rather than a probability sampling, technique. The focus here was on selecting the "right" people who were knowledgeable in the issues of interest in the study. Focusing the selection of respondents in this way was useful in enhancing the credibility of information obtained (Babbie 1979; Patton 2002; Kemper *et al.* 2003). In all, 368 completed questionnaires, 25 interviews and 7 focus group discussion were analysed in this study.

The TRA questionnaire was based on the behavioural and normative belief elicited from respondents during the interview phase. All components of the model were measured on a 5-point semantic differential scale during the questionnaire survey (see the Appendix). Although semantic differential scales are ordinal in nature, their use as interval data in statistical procedures is a common practice in social science; provided the scale item has at least 5 categories (Bryman & Cramer 1993; Oppenheim 1993). Data from the semantic differential scales were treated as interval data, hence making the data amenable to a wide range of statistical analysis. Data from the TRA questionnaire were analysed using correlation and regression analyses. Correlation coefficient values (r) less than 0.3 were described as showing a weak linear relationship. Values between 0.3 and 0.5 were classified as showing satisfactory relationships, while r values greater that 0.5 were classified as showing strong relationships. Results were deemed to be significant if the probability value (p) was less than 0.05. All probabilities reported were based on two-tailed tests since the directions of the relationship between each pair of variables were not predicted prior to the analyses. Linear multiple regression analyses were carried out to examine the relative importance and explanatory power of the predictor components in the TRA model. The predictive power of the predictor variables were assessed by comparing their standardised β values. All the statistical analyses were carried out using the Statistical Package for Social Scientist (SPSS) software (version 11) and Microsoft Office Excel 2003. The results of the statistical analyses are discussed in the next section.

RESULTS AND DISCUSSION

Respondents identified six (6) behavioural beliefs and four (4) normative beliefs as being important factors that influence their intention to pay for an improved water service. These beliefs are shown in Table 1. Reliability and item analyses of the measuring scales showed that item B4 (water shortage) exhibited poor internal consistency with other items on the behavioural belief scale; hence it was excluded from further analysis of the TRA model. The removal of item B4 from the behavioural belief scale improved the Cronbach's alpha (α) value from 0.619 to 0.701, thus satisfing the minimum acceptable value of 0.7 recommended by Nunnally (1978). All the normative belief factors helped improve the reliability of the normative belief scale, hence all items were retained in the TRA model. The Cronbach's alpha (α) value for the normative belief scale was 0.744. Summary results of the regression and correlation analyses are shown in Table 2 and Figure 1, respectively. The overall efficacy of the TRA in the context of the urban poor's intention to pay for improved water services by the statistically significant R and r values obtained from the analyses.

Relative importance of attitude and subjective norm

The results of the regression and correlation analyses indicate that households' attitude and subjective norm had similar predictive power with regards to households' intention to pay for improved water service (standardised β values of 0.281 and 0.304, respectively). This indicates a similarity in their importance with regard to understanding and predicting the urban poor's intention to pay for improved water service. This finding suggests that urban poor households were not only concerned about the

Table 1 | Households' salient behavioural beliefs and referent groups

Behavioural beliefs	Normative beliefs/referent groups
Paying for improved water services will lead to …	The following will agree/disagree with paying for an improved water service:
• Reduction in TIME spent collecting water (B1)	• Neighbours (N1)
• Reduction in MONEY spent on water (B2)	• Family (N2)
• Adequate water QUANTITIES for the home (B3)	• Government (N3)
• Water WASTAGE (B4)	• Opposition political parties (N4)
• A more COMFORTABLE life (B5)	
• Improved personal HYGIENE (B6)	

Table 2 | Summary results for regression analysis

Outcome variable	Predictor variables	*R*	*F* ratio	Standardised β	Variance Inflation Factor (VIF)
I. Intention		0.499	57.582^{**}		
	Attitude (A)			0.281^{**}	1.192
	Subjective norm (Sn)			0.304^{**}	1.192
II. Attitude					
		0.522	27.146^{**}		
	Time (B_1)			0.108^{*}	1.338
	Expenditure (B_2)			0.121^{*}	1.547
	Water quantity (B_3)			0.099^{*}	1.309
	Comfortable life (B_5)			0.387^{**}	1.508
	Hygiene (B_6)			-0.003^{ns}	1.549
III. Subjective norm		0.447	22.647^{**}		
	Neighbours (N_1)			0.031^{**}	1.647
	Family (N_2)			0.383^{**}	1.636
	Government (N_3)			0.008^{**}	1.493
	Opposition parties (N_4)			0.091^{**}	1.533

**Significant at $p \leq 0.01$.
*Significant at $p \leq 0.05$.
^{ns}Not significant ($p > 0.05$).

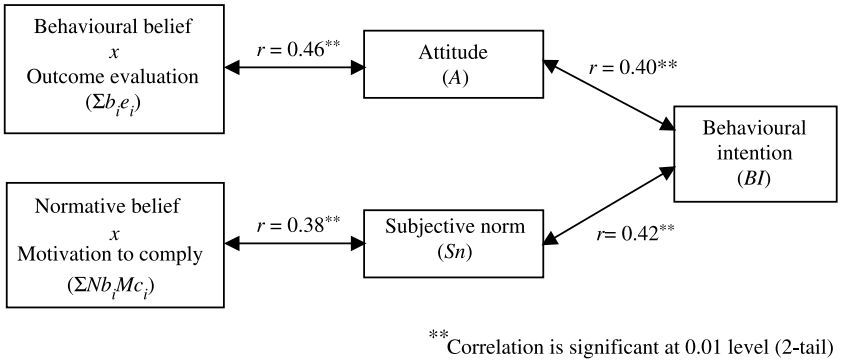

Figure 1 | Model overview of correlation coefficients between constructs of the TRA model.

functional advantages/disadvantages that they are likely to derive from paying for an improved water service, but were also equally concerned about the acceptability of this behaviour to some important groups of people. This also reflects the important role that the perceptions and opinions of other important people play in shaping the intention of urban poor households to pay or not to pay for improved water services. In effect, interventions that are most likely to be successful in changing households' intention to pay for improved water services are those that will attempt to increase both their attitude and subjective norm towards such behaviour. Hence, an effective means of providing and marketing water services to the urban poor will be by paying considerable attention to major beliefs that underpin households' attitude and perceived social pressure (subjective norm) towards paying for improved water service.

Attitudinal factors

The sum of weighted behavioural beliefs ($\Sigma b_i e_i$) correlated satisfactorily with households' attitude ($r = 0.46$, $p < 0.001$) as postulated by the TRA. The most important factor that influenced households' attitude towards paying for improved water service was the belief related to a comfortable life. Households' yearning for a more comfortable lifestyle can be traced to the mental, economic and physical distress that residents went through each day in their bid to get water. An underlying cause of the various forms of distress cited by respondents was the intermittent and erratic nature of the water supply. The unreliable nature of water service had contributed to exorbitant water prices, inability to get adequate quantities of water, and spending considerable time in collecting water. Interestingly, the task of fetching water per se did not appear to be a major problem issue. This could be due to the fact that, for many households, the task of collecting water was seen as part of the daily morning chores. The key problems that were of concern to urban poor households revolved around the amount of time spent collecting water and the unreliable nature of the water service itself.

From the regression analyses in Table 2, "hygiene factor" came out as an insignificant predictor of households' intention to pay for improved water services ($r = -0.003$, $p > 0.05$). This was in spite of the fact that households attached great importance to improved hygiene, and believed strongly that paying for improved water service was likely to lead to improved hygiene conditions. While households' beliefs about the link between improved water services and improved hygiene were stable, these beliefs did not have a significant influence on their "intention to pay". This finding suggests that placing emphasis on health and hygiene concern in marketing improved water services is unlikely to result in a significant change in households' intention to pay for improved water service. Hence, promotional campaigns need to depart from the traditional emphasis on health and hygiene and move to other issues that are likely to have a significant impact on households' intention and consequent behaviour. Providing improved water services to the urban poor should therefore address the issue of service reliability and the time factor. In situations where a 24 h service cannot be provided, the times and duration of water supply should ensure that households get optimum access to the service provided.

Perceived social pressure

The family was the only significant predictor of households' subjective norm towards improved water services (see Table 2). Also, the belief that "the family" will approve payments for improved water service was a more important determinant of households' intentions than "motivation to comply". In other words, influencing households' beliefs about their family's approval for paying for improved water service is likely to have a huge impact of their intention to pay. This provides an important channel for influencing the intentions and consequent actions of the urban poor. Children have proved to be good agents for promoting behavioural change at the household level and could be used as agents for influencing households' demand and willingness to pay for improved services.

The not too important impact of "neighbours" on households' intention is an indication of the weak social ties typical of urban settlements. Amis (1995) and Wratten (1995) note that the relatively weak social ties in urban areas is a major factor that differentiates urban poverty from other types of poverty. It has also been observed that the weak social ties makes the urban poor more vulnerable to social and economic changes as it greatly hampers their ability to withstand or recover from unexpected circumstances.

CONCLUSION

This study has provided evidence that the theory of reasoned action (TRA) is a useful tool for probing the water-related behaviour of urban poor households. The analysis of the TRA model identified the important factors that influence the urban poor households' intention to pay for improved water service. These important factors provide useful clues for the design and marketing of water services. The study showed the important effect of households' attitude and perceived social pressure on households' intention to pay for an improved water service. This study also showed that focusing on the health benefits of improved water services was unlikely to achieve much success in marketing of improved water services to the urban poor. The major determinants of households' intention to pay for improved water services were the reliability of service and time of supply. This implies that an effective means of transforming the urban poor's "willingness-to-pay" into actual paying behaviour will be to supply water at suitable times, and ensuring a reliable service. Importantly, improvements should be geared towards making access to water services less distressful and cumbersome. Furthermore, promotional campaigns should aim at increasing households' perception of the acceptability of their actions to their referent groups, particularly their families. As is common with human behaviour, the acquisition of new information and changes in social and economic situations may lead to the formation of new beliefs, with a resultant effect on behavioural intentions and actions. These changes may, over time, affect the stability of the Theory of Reasoned Action model for the urban poor's intention to pay for improved water services. Hence, there is the need to regularly assess consumers' beliefs and behavioural intention. As noted by Ajzen & Fishbein (1980), certain conditions may inhibit people from carrying out their behaviour intentions. An examination of such factors in the context of the urban poor across the developing world would be useful knowledge to guide policies and practices within the urban water sector.

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APPENDIX – EXAMPLE OF THE SEMANTIC SCALE USED FOR TRA MODEL

I intend to pay for an improved water supply service for my household within the next five (5) years.

Likely ☐ extremely ☐ quite ☐ neither ☐ quite ☐ extremely Unlikely

Paying to get access to an improved water service is

A good idea ☐ extremely ☐ quite ☐ neither ☐ quite ☐ extremely Not a good idea

Most people who are important to me (family, friends, neighbours, etc) would think that paying to get access to an improved water service is:

Good ☐ extremely ☐ quite ☐ neither ☐ quite ☐ extremely Not Good

Spending less time in collecting water is:

Beneficial ☐ extremely ☐ quite ☐ neither ☐ quite ☐ extremely Not Beneficial

Getting access to an improved water service will mean spending less time collecting water:

Likely ☐ extremely ☐ quite ☐ neither ☐ quite ☐ extremely Unlikely