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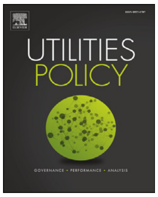

Analyzing water customer service expectations: A case study of the City of Guelph

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ABSTRACT

The present study applies a business model framework to a water utility using a case study. A survey was developed and conducted with residential water customers in the City of Guelph, ON, Canada, with the objective of assessing their expectations in order to improve the business. Preferences differed by user type, underlining the benefit of distinguishing between customer segments (or user types) and customizing messaging. Users were not aware of all services covered by their water bill, and although expecting high quality services they did not support rate increases. Stakeholder collaborations could be used to improve awareness, offer decentralized solutions, and resolve issues collectively.

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1. The water utility business model and the role of stakeholder feedback

Business models and tools can be applied to public policy areas, specifically to the provision of public services that relate to economic development and that require long-term investments, such as water infrastructure. Analogous to business managers, utility managers (private or public), often aim to create value in a sustainable manner. Value is herein defined holistically to signify not simply financial gain, but to also be held in high regard. According to Osterwalder and Pigneur (2010), “a business model describes the rationale of how an organization creates, delivers, and captures value”. Values may be more quantitative (e.g., the price or speed of service) or more qualitative (e.g., the customer experience). Osterwalder and Pigneur (2010) describe a business model through nine basic building blocks:

- Customer segments – types of users an enterprise means to reach or serve;
- Value propositions – bundles of products and services that create value for a specific customer segment;
- Channels – how a company communicates and reaches its customer segments to deliver a value proposition;
- Customer relations – types of relations a company establishes with its customer segments;
- Revenue streams – how a company generates revenue from different customer segments;
- Key resources – key physical, financial, intellectual, or human resources that allow for creating value propositions, reaching customer segments, and earning revenue;
- Key activities – essential activities for making the business model work;
- Key partnerships – network of suppliers and partners; and
- Cost structure – costs incurred to operate a business model.

Utilities deliver water to a variety of customers who use it in a variety of ways. Boyle et al. (2011) assert that there is no “average user”. Thus, the customer base can seldom be treated as a single homogeneous mass. Rather, utilities should implement data mining and personalization techniques to identify groups of customers, create profiles of these, and tailor services to best fit them. Beal and Flynn (2015) conducted a survey with Australian and New Zealand water utilities regarding the implementation of smart metering programs and found it essential for utilities to understand their business goals. For instance, although customer satisfaction, community acceptance, customer engagement, and trust are difficult to quantify, all respondents identified these as program benefits.

The interdependencies among water users leads to issues associated with externalities, commons, organization of collective enterprises and public regulation. These circumstances require the collaboration of stakeholders and application of collective decision

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rules (Ostrom and Ostrom, 1972). Sproule-Jones et al. (2008) emphasize that in order for decisions to be made, for policy-makers and analysts to ensure sustainability, a fundamental understanding of the properties of water and its multiple uses is essential. According to Whelton et al. (2007), an important resource for water utilities that often is overlooked is customer feedback. Hall et al. (2007) note that even though public opinion is generally assumed to be uninformed and self-interested, it can be used to bridge mere consultation and direct democracy. At some level, users, located throughout the system, automatically and continuously monitor water quality, public health, and the state of infrastructure. Benefits of proactive customer monitoring programs in other industries include increased customer loyalty, better process control, improved product quality, and protection of the company's public image.

In the present study, a survey was developed and conducted with residential water customers in the City of Guelph, ON, Canada, regarding expectations of service to inform planning with regard to various aspects of the utility business model, such as user characteristics, infrastructure, conservation programs, water-supply alternatives, communication and feedback, cost coverage, and rate structure.

In the water sector various user surveys have been conducted to assess current performance in a specific area, or willingness to effect change. Aini et al. (2001) surveyed water customers regarding water crisis management. Questions covered user satisfaction, coping strategies, and effect of crisis on user behavior. Yurdusev and Kumanhoglu (2008) surveyed residential water customers on the frequency and types of water use and willingness to conserve water in order to estimate domestic water saving potential. Silva et al. (2010) studied the correlation between conservation and utility communication strategies. Conrad et al. (2012) assessed public perceptions and preferences of water-demand management. Tapsuwan et al. (2014) focused on household willingness to pay for decentralized rainwater and greywater systems. Franceschini et al. (2010) interviewed customers and authorities on water and sewage service quality indicators (reliability, responsiveness, competence, access, communication, credibility, security, understanding, tangibles).

The World Economic Forum Global Risks Report, developed from a survey of more than 1000 experts from industry, government, academia, and civil society, revealed that on a global scale water supply stresses are considered to have a high risk of impacts. Water supply stresses are believed to be more likely than major systemic financial failure in the next ten years (World Economic Forum, 2013). The Royal Bank of Canada (2013) conducted a survey of almost 2300 Canadians regarding water attitudes. Results were weighted according to gender, age, region, and community size in order to reflect the composition of the Canadian population. Canadians were found to rank the economy as the most important national issue, while water pollution and supply were ranked among the lowest. Concerns over the quality of surface water and the long-term supply of fresh water, however, were found to be high. Ten years from now, Canadians were found to expect the following to be the greatest water-related issues, in decreasing order of importance: water pollution, safety of drinking water, state of the water supply system, shortages of drinking water, state of waste water treatment systems, flooding caused by extreme weather, and state of storm water systems.

2. Case study of water service expectations in the City of Guelph

The City of Guelph is located in southwestern Ontario and currently consists of a largely middle-class population of approximately 120,000 inhabitants. A recent analysis by the local municipal utility confirmed that the existing groundwater supply capacity will not meet future needs. Therefore, the water utility has actively been seeking to balance multiple user needs and constraints, as population grows and water availability is restricted, a challenge that is faced by other cities as well.

In recent years the City of Guelph has implemented various water conservation strategies, including.

- Rebates for dual flush or high efficiency toilets;
- Rebates for high efficiency washing machines;
- Rebates for residential greywater systems;
- Rebates for rainwater harvesting systems;
- Rebates for homes meeting the Blue Built© water efficiency standards;
- Financial assistance for industrial, commercial, and institutional facility audits as well as implementation of capital retrofits;
- Outside water use program that notifies users of the recommended level of usage (careful use, reduce outside use, or reduce or stop non-essential use) given local weather and watershed conditions;
- Free landscape assessments.

Although population has consistently grown, the gamut of conservation initiatives applied by the city has contributed to a reduction in residential consumption to nearly 180 L (48 gallons) per capita per day.

While the City of Guelph has already conducted water user opinion surveys related to programs and by-laws, the proposed study assessed system-wide expectations in order to gauge and improve the correlation between user and utility concerns. The research is intended to inform the City's current Water Supply Master Plan Update, which seeks to update the Water Supply Master Plan components related to public consultation, population and water demand projections, water supply capacity, water supply alternatives, and plan implementation. Nevertheless, many of the questions are relevant to most water utilities and their current issues, especially water scarcity and customer engagement, and can be adapted and applied elsewhere.

2.1. Survey methodology

The survey questions fall under eight user-related categories: demographics, characteristics, awareness, concerns and issues, initiative and motivation, priorities, communication, and business model (water supply and rate structure alternatives). The survey, made up of 31 questions, takes about 15 min to answer and is comprised of five question types: open ended, yes or no, multiple choice, ranking, and rating.

The telephone survey was conducted with 400 water customers (18 years of age or older), representing approximately 1% of households in the City of Guelph, stratified by six wards of residents as defined by the City. A market research firm appointed by the City, OraclePoll, completed the calls in March 2014. The sample size was defined for a margin of error of 0.05 and p equal 0.5, where p is the population proportion parameter.

Respondents were classified according to their demographics and user characteristics. These were correlated to the other answers in order to evaluate the relation between user characteristics and other parameters. Because frequencies were found to be low in various questions, Fisher's exact test was applied to the analysis of the contingency tables. If a p-value of less than or equal to 0.05 was found, the null hypothesis, equivalent to the independence of answers, was rejected.

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