

Assessment of Customer's Level of Satisfaction on Water Supply Service Delivery at Debre Markos Town: A Case of Debre Markos Town Selected Condominium Sites, Community Based Cross Sectional Study, Debre Markos Ethiopia

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Abstract

Many regions of the world are experiencing a shortage of water resources, which is made worse by the rate at which demand and population growth are accelerating. Recent strategies for improving urban water supply services have emphasized environmental improvements and have been implemented in urban planning, public transportation systems, parks and recreational areas, low-income housing and downtown areas where people feel the most in need of essential services. Water supply is a key issue in condominiums. The general objectives of the study are to assess customers' level of satisfaction on water supply service delivery at condominium sites at Debre Markos town. The data was collected from all household representatives using questionnaires and semi-structured face to face interviews. The collected data was coded, edited and entered into SPSS (Statistical Package for Social Science) version 24 for further statistical analysis. *Chi-square* test and multiple logistic regression model was conducted to assess the associations. Among a total of sampled households, 131 (45%) and 112 (38%) were in the age ranges of 30-39 years and 40-59 years, respectively. Out of the total 291 respondent's household heads, 232 (79.7%) were males and 59 (20.3%) were females, respectively. The respondents were found to have different levels of education, among which, 205 (70.4%) were above degree and 53 (18.2%) of the household heads had only completed their secondary education level. In This study the satisfaction level with water supply service delivery was found to be 45.4%. This study revealed that household heads were found have a variety of socio-demographic characteristics such as different age groups, sex, education level, marital status, family size and different average monthly income. Among the different households' characteristics, education, marital status, previous residence and average daily water consumption were found to be significantly associated variables influencing customers' satisfaction level. Based on this survey study result the author recommends to the city water supply officials to make additional effort in developing new water sources such as digging additional water sources to balance the fast growing township of the city Debre Markos.

Keywords: Water service • Customer satisfaction • Water supply • Service delivery • Satisfaction

Abbreviations: AOR: Adjusted Odds Ratio; COR: Crude Odds Ratio; DMU: Debre Markos University; GDP: Gross Domestic Product; MDG: Millennium Development Goals; MOWR: Ministry of Water and Resource; MWUD: Ministry of Work and Urban Development; NGO: Non-Governmental Organizations; SPSS: Statistical Package for Social Sciences; UAP: Universal Access Plan; UNDP: United Nations Developmental Program; WB: World Bank; WDM: Water Demand Management; WHO: World Health Organization

Introduction

Background of the study

Water is vital for human growth and well-being. It is also necessary for the achievement of other development objectives, like gender equality, healthy eating, education and the reduction of poverty [1]. The UN General Assembly states that access to sanitary facilities and clean water is a basic human right. Despite the fact that billions of

human right. Depeople worldwide still lack access to clean water and adequate sanitation the majority of whom reside in South Asia and Sub-Saharan Africa governments everywhere encounter significant challenges in effectively managing their water resources [2].

It is a mere fact that water is the vital resource and is a great necessity for food production, drinking purposes sanitation and many other uses. It is indispensable for the welfare of human beings and their natural environment. Different international agreements have

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recognized the access to clean water and sanitation as basic human right [3]. Despite the efforts of numerous international commitments, a significant number of populations are lacking access to safe water and sanitation. In developing countries 1.1 billion people have inadequate access to water and 2.6 billion people lack basic sanitation [4]. Due to the lack of access to safe water and basic sanitation at least 1.6 million children under the age of five die every year. In developing countries, the wide inequality in opportunity has worsened the access problem; the poor has less access to safe water and sanitation; consume less, pay more for the service and suffer more from water related diseases [5].

Due to the high proportion of household spending on water supplies in many poor communities, as well as the financial costs of poor health and the time and effort required to collect water, a lack of access to safe and sufficient water supplies contributes to ongoing poverty. It has been well reported that by the UNDP that Human Poverty Index for developing countries places a high priority on access to water services [6].

Previously done literatures well highlighted that many African countries lack appropriate water and sanitation, resulting in a high frequency of communicable diseases that impair the vitality and economic productivity of the growing population. The population of Sub-Saharan Africa is expected to more than double by 2050, rising faster than the global population. The significant disparity in opportunity in developing nations has exacerbated the access problem; the poor have less access to safe water and sanitation; they consume less, pay more for the service and suffer more from water-related ailments. The situation in Africa, particularly in sub Saharan Africa is worst [7].

Access to and use of safe drinking water can make an immense contribution to health, productivity and social development. Many people in developing countries continue to rely on unimproved water sources that is the main need of all communities and the government [8].

Satisfaction is a function of service performance in relation to customer expectations. This means that a customer may estimate or believe what the service performance should be and if the service performance meets or surpasses the customer's expectation, the customer will be satisfied. Customers, on the other hand, are more likely to be unhappy if the service performance falls short of their expectations. The problem on the phenomenon is the existence of complaints from customers about the quality of service to consumer satisfaction [9].

Ethiopia's water supply service level, in terms of coverage quantity and quality, is very poor due to issues such as geography, water reserve sources, distribution networks, treatment facilities and community health centers. Because of its instability and non-sustainability, the existing service level in many sections of Ethiopia is lower than the required levels. Poor water supply and sanitation facilities, as well as other infrastructure services, have a substantial influence on national and regional development, affecting both urban and rural areas. Customer satisfaction with public water provision in

Nigeria and most developing countries is still a great challenge due to several reasons such as poor budgetary allocations [10].

Statement of the problem

Substantial amounts of financial and human resources are provided to improve service provision of water supply and sanitation, yet there seemingly to be less improvement occurring. Misappropriation and misdirection of funds tends to be the order of the day. As a consequence, marginal improvements are recorded that do not even match the amount of resources allocated for such developmental projects [11]. The main issue with city water supply is a lack of available water to meet the city's growing demand. The water service is unable to meet the demands of newly developed settlements in a timely manner. The current bore holes are deteriorating over time and some of them have entirely dried up, putting the source's sustainability into question. Low-income populations, in particular, have been exposed to complicated economic and social problems. The main causes of water service disruption are a lack of water supply, failure to maintain broken pipelines on schedule and power outages. Other issues that reduce customer satisfaction include new customers' bills not being published on time, customer handling, delayed responses to customer requests and a malfunctioning water meter [12].

More than half of the water delivered is lost owing to poor management before it reaches the user, a result of the ongoing deterioration of water infrastructure, which takes the shape of pipes and channeling systems. Because the water is not adequately cleaned and passes through an unclean piping system before reaching the client, it poses a health risk. In a similar vein, public sewerage and mostly untreated sewage are unavailable to a huge number of individuals, resulting in poor sanitation coverage. As a result, there is a persistent risk to public health, fundamental needs are not satisfied and the environment continues to deteriorate [13].

Debre Markos town is becoming more populated and have fast township fashion, with an alarming pace of immigration. This unprecedented increase in population and settlement expansion has put strain on the city's public facilities, particularly the water supply service, which has become a major source of dissatisfaction among the urban population; coverage is low, supply is less than 50% of demand, service is unreliable, distribution is unfair and inequitable and service interruptions are common. Furthermore, industrial and construction water consumption is increasing, accounting for approximately half of all produced water. Particularly the peri-urban communities that have lately been incorporated into the metropolis are complaining about poor service and inequity. This lack of access has exacerbated their predicament by putting them vulnerable to water-related hazards, contamination due to unsafe disposal of waste and water borne diseases out breaks have been observed in these areas. The low income residents who use public taps are also facing long physical effort in collecting water, waiting long time on queues and paying extra money to vendors and others [14].

Urban population growth was accompanied by notable increases in customer satisfaction, water supply services and sanitation services. Spending on sanitation and water supply has not kept up with growth and there are large differences in infrastructure and water supply spending between cities in high and low-income nations. Because clean water supply infrastructure is lacking in Sub-Saharan African countries like Ethiopia, poor sanitation is contributing to the spread of disease and deaths. Consequently, in order to solve difficulties on the administrative, budgetary and technical fronts and support a consistent, balanced approach, the administrative entities at the national, regional, zonal and local levels must [15].

In the previous 50 years, the world's urban population has quadrupled and cities now house roughly half of the world's population. While urban populations increased significantly, so did the use of water supply services, customer satisfaction and sanitation services. Water supply and sanitation spending has not kept pace with expansion and there are significant disparities in infrastructure and water supply spending between cities in low- and high-income countries. As a result, it was estimated that between 30% and 60% of the metropolitan population in most countries was underserved. If current trends prevail, majority of urban dwellers will be living with poverty in unplanned or informal settlements without access basic services such as water and sanitation affecting public health adversely [16].

In condominium houses house, the issue of water supply is crucial. For this reason, expansion of water supply infrastructures in the newly establishing condominium housings becomes mandatory. However, no enough data is available concerning the water supply service delivery and level of customer satisfaction on the service in condominium sites at Debre Markos town. Therefore, the current study is aimed to assess the water supply service delivery and customer level of satisfaction at selected condominium sites in Debre Markos town.

Research questions

In order to achieve the research objectives and seek answers for the stated problems, the following major research questions are designed.

- Developing billing and collection system that best overcome specific constraints faces by various groups of customers.
- Actively survey customers to learn about their needs and expectations.
- Informing customers timely about the service change or interruption.
- Developing mechanism for handling customers compliant.

Research objectives

General objective: The general objectives was to assess the customers' level of satisfaction on water supply service delivery at selected condominium sites at Debre Markos town, North West Ethiopia

Specific objectives: To determine the customer's level of satisfaction on water supply service delivery at selected condominium sites at Debre Markos town, North West Ethiopia

To identify factors affecting consumer's level of satisfaction on water supply service delivery at selected condominium sites at Debre Markos town, North West Ethiopia

Scope of the study

To deliver an outstanding service delivery, a company must go above and beyond its consumers' expectations and aspirations. One crucial aspect of providing good service is keeping promises and not guaranteeing things that cannot be achieved. Because of time and resource constraints, the spatial scope of the study will be limited to three selected condominium sites focusing on analysis of factors affecting customer's satisfaction towards water supply service delivery at Debre Markos town selected condominium sites.

The current study had looked into water supply service delivery in households of condominium houses in the study area. The issues in the water service delivery system, such as water quantity sufficiency, infrastructures and technical capabilities in human power of the local water authority, will be explored. Opportunities to improve the water supply service delivery system will also be studied. The community's practices for delivering water supply services will also be evaluated. The research will also determine the level of consumer satisfaction in the study area. The current study was also limited to a few condominium sites in Debre Markos town, East Gojjam zone, Amhara regional state, North West Ethiopia.

The scope/the area unit of the study/of this paper was confined to Debre Markos town targeting respondents from different age group, Gender, income groups, settlements, Marital status, family size and educational levels. Here, the study is going to assess the existing service provision and customers' level of satisfaction in relation to the water service delivery. Although many variables could affect the satisfaction level of customers, only variables related to water use, tariff/cost, Interval of water delivery time, distance and time consumed to fetch water, customer's perception towards reliability and equitability of water distribution in the city and settlement variation are among the variables which are going to be assumed to be relevant in the study and was analyzed. In order to extract results, descriptive and inferential statistical analysis technique had been employed accordingly to disclose the results of the survey. For this purpose, the SPSS software version 22 was used for the statistical analysis.

Significance of the study

The primary purpose of the study was to gather data on customer satisfaction with water service delivery and users of water supply services. In order to increase customer satisfaction with current water resources and delivery, it is therefore more practical to evaluate the significance of water service use rather than providing more water to users through potential utilization techniques.

Ethiopia's government has focused more of its effort in recent years on ensuring that citizens have access to clean, dependable water supplies. The utilization and availability of clean drinking water can have a significant impact on societal progress, productivity and health. Nonetheless, a large number of people in developing nations still rely on outdated water sources.

According to the United Nations Development Program, nearly one-sixth of the world's population obtains drinking water from unimproved sources and in many developing areas, progress in expanding clean water coverage is modest. In Sub-Saharan Africa, for instance, the proportion of the population that depends on unimproved sources has declined only slightly, from 52 percent in 1990 to 44 percent in 2004. Access is an intermediate output and has to be combined with favorable demand to generate desired outcomes among users [17].

In view of the problem statement, assessing the subject 'customer satisfaction' in relation to water supply service provision will be of paramount importance for the following reasons. Several factors influence customer happiness or discontent with urban water supply service. The findings of this study will contribute to current knowledge on customer satisfaction/dissatisfaction levels based on certain characteristics, as well as distribution and equitable aspects related to service sustainability. Currently, the primary impediments to enhanced service are regarded to be technological and budgetary issues.

The author strongly believes that findings of this paper will provide information for concerned bodies and serves as a basis for taking action and develop strategies and programs to mitigate dissatisfaction conditions of customers in general and the service provision for the disadvantaged group of the town in particular.

Organization of the study/paper

The paper had been organized in chapters. Each chapter had an independent topics and sub-topics.

Chapter one: this chapter encompasses introduction, background of the study which illustrates the prevailing general conditions regarding the subject matter under study, statement of the problem, major and specific objectives and research questions, significance of the study, scope of the study, limitations of the study and organization of the paper.

Chapter two: Deals with review of related literatures. Conceptual frame works and empirical investigations and experiences of countries/urban centers/ from different regions of the world and city level have been developed in this. More importantly, the relationship among physical, social and economic variables and customer satisfaction or dissatisfaction level has been addressed in it.

Chapter three: This chapter describes the methodology that had been employed in the study. It contains description of the study area, research approach used, the sampling design, study population, source of data collection, data collection, data analysis and result dissemination and finally the issue regarding research ethics had been discussed in detail more.

Chapter four: It deals with disclosure of results and discussion part. Socio-demographic and other related variables were analyzed by using SPSS Version 22 software.

Chapter five: This chapter comprises of summary, conclusion and recommendations followed by references and annexes (questionnaire parts).

Materials and Methods

This chapter generally presents a literature review of the study in relation to water supply service delivery and level of customers' satisfaction towards it. The chapter gives theoretical literature review, empirical literature review and the conceptual framework.

Theoretical literature review

General review on water demand and customer satisfaction: Governments everywhere are spending more money to change the water sector due to the industry's inefficiencies and subpar service performance. The process of adapting and putting into practice a plan by a water institution or consumer to influence water demand and usage in order to achieve any of the following goals: Political acceptability; economic efficiency; social development; social equity; environmental protection; and water supply and service sustainability [18].

It has been well speculated that the construction of condominium housing in Ethiopia is aimed to address many of the city dwellers' difficulties. It helps the occupants to meet and solve fundamental needs such as water supply, shelter and other infrastructure (Toilets, Kitchen, waste water Solid waste collection and so on). Many countries around the globe, including Ethiopia, initiated this initiative for social and economic reasons. However, challenges in water supply service delivery, utilization and customer satisfaction remains to be one of the basic issues in such housing system in the country [19].

Economic measures are founded on the notion that water, in addition to being a social good, is also an economic good. As a result, an increase in water prices should result in less water consumption. In addition to raising the water price, it adds fines for excessive water use as a supplement to the bill price to provide financial incentives for water efficiency.

Structural-operational solutions comprise technical and technological solutions that aim to reduce water use without compromising customer service levels.

Therefore, it is important conducting survey measuring satisfaction by identifying gaps between expectations/experience [20].

Furthermore organoleptic characteristics like taste, odor and clarity have a big impact on how risky users perceive. The biggest determinants of service quality and cost are the customer's perception of the water quality and the payment method. Perceived health risk and service quality also have a detrimental impact on consumer satisfaction with water and service quality. Reducing the disparity between perceptions

and realities requires an understanding of how perceptions are formed. This research sheds light on these mechanisms.

Tap water and customer service delivery: Water that is delivered to people via a water distribution system is known as tap water. It originates from a private or public source. Water is a necessary resource that must be used immediately. It is essential to daily living and has an impact on everyone's wellbeing. The goal of the majority of governments worldwide is to ensure that their citizens have access to clean, safe drinking water and many industrialized nations have already achieved this goal by providing tap water that meets basic criteria.

Service delivery remains a concern in Africa, to the point where individuals are continually protesting to demand service delivery. The lack of suitable guidelines, limited infrastructure and individuals' inefficient water usage are all contributing factors to the service delivery ultimatum. In reality, service delivery errors are unavoidable and managing them can be difficult for service businesses. However, when service delivery is not achieved as expected, clients become dissatisfied and their loyalty to service organizations deteriorates, tarnishing the organization's reputation. Municipalities should be administered by essential morality that imposes convenience. Services should be affordable, fit for purpose, timeously delivered, harmless and accessible on a constant basis.

Customer service delivery is differentiable and stem from the expectations of customers. Hence, it is necessary to identify and prioritize expectations for customer service and incorporate these expectations into a process for improving customer service delivery. Implementing and evaluating customer service is a very complex process and two aspects need to be taken into consideration when evaluating customer services, which are Content and Delivery.

Service quality and efficiency: A service is any act or performance provided by one party to another that is primarily intangible and does not result in ownership of something. Its creation may or may not be associated with a physical product. Quality is one of the elements that consumers look for in an offer, of which service happens to be one. Quality can also be described as the sum of a product or service's traits and characteristics that bear on its capacity to satisfy stated or implied needs. It is obvious that quality is tied to the value of an offer, which may elicit satisfaction or dissatisfaction from the user. It is a determinant of customer satisfaction, because service quality comes from outcome of the services from service providers in organizations. Service quality is more diverse than product quality because customers prefer tangibles with good appearance of service facility, equipment and human resources that serve them during the service interaction. Customers are attentive on reliability of the service; therefore, service providers should be constantly competent in order to deliver guaranteed service dependably and accurately.

Customer satisfaction: Customer satisfaction might mean different things to different people. It may include variables such as delivery speed, price, conformance and professionalism or it may just be a response to consumer requests. Customer satisfaction research is critical for pushing service providers to improve their performance. This is true even in the case of government-owned organizations that provide critical services like water supply. Infrastructure services are

provided by state-owned enterprises in the majority of developing countries, including India. Due to the monopolistic nature of the organizations, there is no or little inclination to ensure consumer satisfaction.

Customer satisfaction is the ultimate goal of business. Customer satisfaction associated with the stable market demand of product/service, loyal customer, profitability, growth, success and positive corporate image. Customer satisfaction is defined as pleasure from product and service utility, fulfillment of expectation. It is obvious that customers are important stakeholders in organizations and their satisfaction is a priority for management. Customer satisfaction has been a subject of great interest to organizations and researchers alike. In recent years' organizations are obliged to render more services in addition to their offers. The quality of service has become an aspect of customer satisfaction.

Socio-technical issues of using water delivery and utilization management: The significant readiness among university students to embrace recycled water systems in the absence of potable water suggests a potential possibility to replace water sources with community support. University students appear to be quite supportive of utilizing recycled water for non-potable purposes, despite the fact that just purifying water to a level adequate for subsequent use would result in expenses and energy use.

The opportunity for source substitution is particularly significant with regards to water use for toilet flushing given that the survey showed 97% of university students would approve of using recycling water for this purpose. Approximately 63% of the water used in public environments or offices is for flushing toilets. Replacing the current potable water stream with reused water would significantly reduce the demand for potable water on university campus.

The public perception on grey water recycling surveyed in England about 300 respondents, which were distributed sufficiently to ensure that the findings of the survey were representative of the population. Over all the survey revealed a broad willingness to accept urban recycling as long as public health is not compromised. Respondents willing to recycle is 88% for toilet flushing, whereas 12% of the survey revealed a willingness to accept for drinking.

Water demand management considering grey water reusing: Quantifying the benefits of grey water systems in Georgia stated on the American water works association website, the use of grey water has the ability to reduce water usage an additional 26.7% if only used for toilet flushing. Out of 100%, 34% of the fresh water used in the United States is used for irrigation. This 34% is the second largest percentage only preceded by thermoelectric at 48%. It should be noted that this 34% of water usage is used for agricultural irrigation. Reducing the amount of potable water for residential landscape irrigation should be a very high priority. Water utility service is a fundamental service in urban society. Urban citizens expect a high quality of service that made the service provider company should be responsible to provide it.

Treatment of shower and sink drainage and recirculation for toilet flushing is estimated to reduce water use in the building by 20%, an amount 3,300 m³/year. At municipal water and wastewater utility rates, the annual savings are around \$6,000 and will not provide a reasonable return on investment for the capital cost of the dual plumbing and treatment systems.

Satisfaction on the service delivery is poor and perceived pressure has a major impact on the satisfaction on service delivery and consumption, hence indicating that perceived pressure has a close relationship with the discharge. Further, the study confirms that socio-economic parameters are influential on the risk perception and satisfaction of the consumers. It can be concluded that proper management of available water quantity will increase the level of satisfaction in terms of service delivery.

Satisfaction is an important goal in total quality management. In order to meet this goal, it is necessary to use an evaluation model to measure customer satisfaction. This proposes an evaluation model for measuring the satisfaction level in a water supply domain. Some important criteria such as water quality, water quantity and responsibility of the company are distinguished and used in the proposed model. To integrate all of these criteria in a unit index, the analytic hierarchy process technique is used.

Condominium housing: The developments of condominium housing were intended to solve many problems of the urban residents. The development and introduction of condominium housings has been multiple goals to solve problems of housing and other important infrastructure facilities for the urban.

Condominium housing name has been given to the form of housing tenure where each resident household owns their individual unit, but equally shares ownership and responsibility for the communal areas and facilities of the building, such as hallways, heating systems and elevators. Usually, the external maintenance of the roof and walls are undertaken by a Condominium Association that jointly represents ownership of the whole complex, employing strict management to ensure funding from each homeowner.

Shortages of affordable housing were one of the serious challenges that affect economic competitiveness and quality of life. On the other hand, most municipal governments and housing providers are unable to meet housing need. Like other poor countries, the urban housing problem in Ethiopia, particularly at Debre Markos town condominiums, was mainly due to continuous population increase, low level of economic performance, inefficient land service delivery and inadequate urban management and regulatory framework.

Ethiopia planned condominium housing development program since 2003. Accordingly, the first pilot test condominium housing units were constructed in Addis Ababa at Bole sub city between the year 2003 and 2005. In the subsequent years, regional and federal government of Ethiopia borrowed money from the commercial bank of Ethiopia and constructed the subsidized condominium houses at the capital city and some selected towns.

Condominium housing and water supply: Condominium water supplies and sewerage systems was first developed in Brazil in the 1990's and have been used in many cities such as Durban, La Paz and Buenos Aires and smaller urban centers like Iquitos, Peru and various small urban centers in Brazil.

The best example was Parauapebas in the Northern Brazilian state of Para. Here, the cost savings achieved by the condominium water supply network were considerable: The cost per connection was only USD 45 (1997 USD) vs. USD 167 for a conventional water supply network, despite the basic design criteria being the same in both cases which meant that substantially less 'public' excavation was required.

Water supply systems are important even for the smallest metropolitan centers because of the potential cost savings associated with a piped water delivery network. Smaller metropolitan areas, particularly those in sub-Saharan Africa and Asia, were unable to replicate some of the system's features, such as the high water use per home and the availability of connections for every household. However, the fundamental idea is still true: If the water agency supplies groups of homes (such as cooperatives or condominiums) rather than individual homes and these groups handle the connection to each home, the cost of the public distribution network can be significantly lowered.

Numerous studies provide evidence that consumer satisfaction is positively linked to economic returns and brand loyalty. It has become a key concern in the modern business world. Also public entities and regulators are increasingly interested in the subject, but having a rather different motivation than profit maximization. The level of satisfaction of consumers, regulators have the chance to positively influence their policies by shifting the perspective from the supply to the demand-side. While service outputs and service outcomes are traditionally the two prevailing mechanisms to assess the performance of public services, consumer satisfaction has become a popular strategy to access the quality of services and institutional efficiency and to encourage service providers to improve their performance. Performance of urban water supply and sanitation authority for such a long time became very poor due to different problems such as dissatisfaction of customers making them delay paying their bills on time in lieu of unreliable services.

Water supply challenges and opportunities in condominium housings: In high rising condominium housings, the water pressures fluctuate at each level throughout the building and should be considered in system layouts and when choosing equipment and pipe materials. Providing water to the upper floors were necessity and also one of the main challenges of a high-rise building project. Moreover, explained that the model of condominium house project provides all sites with drainage and sewer pipes. One important thing in condominium housings water supply systems is participation brings a number of advantages; among them are further reductions in connection costs as a result of training local residents to construct and maintain their own condominium branches.

Community involvement helps to improve the acceptability of the infrastructure, promoting network connections and provides an entry point for imparting hygiene education. Condominium water and sewerage systems were pioneered in Brazil during the 1980's as way of bringing piped sanitation services within the economic reach of poor households. Regarding the challenges in condominium housings were concerned, due to the ever-increasing population in search of better opportunities and services the drainage and sewer pipes were frequently busting and blocked because they are failing to cope with the increasing pressure.

Besides, stated that, the other common grievances in condominium housings were the weakness of the inadequate water pressure on the top floor of the buildings resulting in a noticeably weaker water supply at this level. Furthermore, during times of water shortages, families must collect water in buckets and carry them to their flats as there are no water tanks to generate a secondary water supply in case of such emergency. Some literatures showed that the challenge in water supply and sanitation as in the provision of adequate clean water and sanitation facilities to urban dwellers were related to capacity of the nations, (*i.e.*, Technological know-how and institutional), inadequate finance, rapid urbanization and population growth. In case of condominium needed large finance, technological know-how and institutional effectiveness and efficiency than conventional housings.

Water service has strong natural monopoly characteristics, it is mostly provided by sole provider, this makes important to control the service either it is public or private. Government regulates the service with different objectives such as; improving the service, extending the service to the poor customers and managing environmental impacts to ensure that the service is provided according public interest. Particularly the economic regulation objectives are designed to ensure service provision at reasonable price.

Service delivery remains a challenge in South Africa, such that citizens are constantly demonstrating despondency with protests to demand service delivery. Described service delivery as an economic activity offered by the government to fulfill basic needs of the citizens. Among contributing factors to service delivery ultimatum is the absence of appropriate guidelines, insufficient infrastructure and wasteful water usage by individuals. In fact, service delivery failures are unavoidable and recalling them can be daunting to manage for service organizations. Nonetheless, when service delivery is not realized as probable, customers get dissatisfied and their devotion to the service organizations deteriorates, which ultimately tarnishes the organization's standing.

Customer satisfaction with public water provision in Nigeria and most developing countries is still a great challenge due to several reasons such as poor budgetary allocations by the respective governments, ageing pipes resulting in frequent breaks, poor infrastructure investment, unstable power supply, unmotivated staff, poor revenue collection, urbanization, corruption and a highly politicized tariff setting regime.

Water utility companies are among the most important utilities for many economic activities, such as energy and food production. It plays a role in ensuring the availability of sanitized water in every household. In addition, water utility companies serve as a safe supply for the domestic, industrial, commercial and agricultural use of water. Thus, water utility companies must operate more efficiently, especially in the face of increasing uncertainty about the availability of water resources due to climate change. Different countries have adopted several sustainable water management techniques in response to the raging phenomena of climate change. Governments worldwide implement these techniques to ensure that water utility companies manage and distribute the water supply in ways that meet the needs of the present without compromising the ability of future generations to meet their own needs.

Definition of terms

Satisfaction: According Lovelock and Wright definition satisfaction is like judgment following a purchase act or a series of consumer product interactions.

Customers need and expectations: customers buy goods and service to satisfy their specific needs. When people feel need, they are motivated to fulfill their needs by purchasing goods and services. Identifying specific needs of customers is important for segmentation and providing customer oriented service. According to Lovelock and Gummesson customers have certain service standards in mind before consumption these are their expectations. After the service delivered customers compare it to their standards and then form satisfaction judgment. The positive or negative feedback also used to improve the service level.

Customer oriented service: Studies in marketing showed that all successful service firms are customers oriented. According to a study by world bank successful water utilities are the utilities which listen to the clients or those which give customers oriented service. In providing customers oriented service the fundamental task is to identify the major categories of customers, their needs and interests and the service is provided according to their varied needs; this require three basic tasks; customer appraisal, complaint management, purchasing behavior.

The study by World Bank indicated that in most utilities the customer oriented service includes four important points.

- Developing billing and collection system that best overcome specific constraints faces by various groups of customers.
- Actively survey customers to learn about their needs and expectations.
- Informing customers timely about the service change or interruption.
- Developing mechanism for handling customers complaint.

Factors affecting water service

Urbanization and water service: Rapid urbanization with industrialization has brought many development opportunities for developing countries urban residents, but besides this opportunity numerous social problems have been observed. Uncontrolled and unregulated urban physical expansion created crises on the existing poor social services. The high density development needs efficient public service delivery because high concentration of people leads to a public health risk. In these high density areas, the low income residents are living without most basic water and sanitation service. Rapid urbanization has generally out stripped the provision of basic services such as water, sanitation and refuse disposal. Urbanization has been associated with the increasing number of people living in poverty. The basic service such as water has been stressed due to the explosive demand growth and increasing population densities.

Africa is the least urbanized continent and relatively the urbanization rate in Ethiopia is less than most African countries, but still the social and economic consequences are evident. Ethiopia urban policy document identified the main urbanization problems of the country such as lack of sufficient infrastructures, lack of housing, lack of social services, pollution, sanitation problems and lack of sewage system as common feature of all urban centers. With this rapid urbanization and mismatch with the existing limited urban service, large urban population is living under poor social and economic situation. Urbanization is one of the driving factors for rapid proliferation of slum areas and urbanization born social problems.

Water is a basic need for every living creature in this world, including humans. Without water, humans will experience difficulties in sustaining their lives, therefore the processing must be arranged in such a way that it can be utilized effectively and efficiently. Water is a national resource that concerns the lives of many people, so the management and management of water is managed by the government.

Unemployment and underemployment have been identified as one of the major causes of urban crises. The flow of migrants from rural areas to urban is high in the low income and middle income countries because cities realize the better quality of life for many migrants from rural area, but the urban institutions, the infrastructure facilities such as, water supply, housing and waste disposal service capacity of these cities is at the lowest level. In urban areas the environmental hazards are very high, many urban dwellers die of easily preventable illness from environmental hazards in their food water and air.

Studies shows that, although urban incomes are generally higher and urban services and facilities are more accessible than the rural, but poor city dwellers suffer more than rural households are from certain aspects of poverty. Water is increasingly becoming a stressed natural resource. Exploding population, indiscriminate withdrawal and wasteful attitudes have all been contributing factors for the state of water that it is in today. Additionally, climate change effects on water resources further compound the problem. The Fourth Assessment Report, "climate change 2007", of the inter-governmental panel on climate change has eliminated many aspersions that previously shrouded both scientific and policy discussions about climate change.

Study of customer satisfaction is of prime importance in encouraging performance improvement of any service provider. This is true even in the case of government-owned organizations such as those which provide essential services such as water supply. In most developing countries, including India, infrastructure services are provided by state-owned organizations. Due to the monopolistic nature of the organizations, there is no or little inclination to ensure consumer satisfaction. The requirements and satisfaction of customers are low on priority in government owned organizations, mainly due to lack of professional approach in customer services. Satisfaction is defined as the fulfillment and gratification of the need for a stated good or service. The level of satisfaction is, therefore determined by the perceived performance of a company or utility, which is an evaluation of the delivered good or service viewed in the light of the consumers' needs. It is generally expected that a higher level of service quality is expected to lead to customer satisfaction and eventually to better customer loyalty.

Social and economic factors affecting water service: Psychologists have long argued that individuals tend to assess their situations by using a benchmark. Benchmarks may be internal, for instance the person's past situation and experience; or external, achieved through social comparison. Past studies in the economics literature have shown that social comparison-satisfaction compared to some benchmark—is an essential determinant of subjective well-being. Social comparison is a vital characteristic, if not a key characteristic, of human social life.

Water serves for drinking, food preparation, domestic hygiene and collective usages at the community levels. Using polluted water for drinking and bathing is one of the principal path ways for infection by disease that kills millions and sicken more than a billion people each year, about 3 million people across Africa die annually as a result of water related disease.

Water resources pollution is most serious problems in urban centers of developing countries where most rivers and springs contaminated severely by human and industrial wastes because controls of industrial emission are not enforced and treatment plants are lacking. Most of the poor communities live and work in these areas exposed to different level of environmental hazards some of them facing extreme difficulty in accessing water and sanitation service.

According estimates at any one time close to half the urban population in Africa, Asia and Latin America are suffering from one or more of the main diseases associated with inadequate water and sanitation provision, particularly the sub Saharan Africa's population has the world's worst provision for urban water and sanitation. In low income cities less than one half of the households are connected to water and sewage and per capita water consumption is half of the cities with lower middle income cities. This basic service is denied to the poor based on several socio economic factors, such as, location, structural bias, squatter settlements, failure of planning process unauthorized colonies.

The case study in Dhaka, Bangladesh shows that the denial of public service to the urban slums and squatter settlements has created favorable environment to the parallel growth of an informal water market which impose high price on the poor consumers.

Water supply service to the poor: Appropriate water and sanitation service provision is one component in poverty reduction efforts; lack of access to clean water and sanitation has been identified as a key indicator of poverty; without this provision, it is impossible to improve the health of the poor. Most of the time, the urban poor are refused access to public amenities such as water and sanitation because the services are built or positioned for medium and upper income groups. The poor buy water from informal vendors or land owners often paying excessive prices.

Mainly the crisis in water and sanitation is the crisis of poor and women. Different studies documented dramatic increase in well-being with access improvements of households. Study in Indonesia by Isham and Kahkonen found that access to a piped water system among households increased the probability of improved health by 0.29 probability points. Other empirical studies show that having piped water in the house lowers the incidence by 70% in Ghana and by 40% in Ethiopia and Vietnam many studies indicated that any health crises can quickly reverse any progress the poor have made in moving from subsistence.

According to organization for economic development in many developing countries urban centers service priority is given to the rich neighborhood. Other study in south and southeast Asia countries also shows the waste water related services are not accessible to poor because the drainage and sewer system does not connect the poor communities of informal sector.

Governance failure: It has been well explained by a research done by Nawab, et al., that the failure in decision making process at different level it can be at state level, local level or sector level. National governments of developing countries accepted different international commitments and formulated explicit domestic policies on access to safe sufficient water, sanitation and environment. However, they are not successful in its implementation. In developing countries there is no integrated and efficient management of water resources. The root problem in these low income and middle income nations is weak governance; government structures have not developed to address the problems. Accordingly, weakness is mainly due to lack of capabilities, intention and commitment of the high level government officials that are not willing to empower local institutions and scarcity of financial and skilled man power. In most African countries the by-laws give the waste management responsibility to municipalities which are poorly equipped to deal with the problem of waste collection and disposal ECA/CFSSD, 2009.

Studies in Ethiopian cites identified the inadequacy of municipalities in delivering adequate urban service is due to their low institutional, financial and technical capacity. In Many developing countries the attention given to water and sanitation and environment is very low and this can be reflected in the political commitment, budget, man power and others. Many of the urban poor suffer from environmental hazards and inadequate access to fresh water because of government low priority. The breakdown of governance has

been recognized as a major cause for environmental degradation and obstacle to sustainable development. The causes for the water supply limitation are factors such as insufficient governance low investment rather than water resource limitation.

According to the world bank, the division of duties within the water sector has led to a lack of coordination in planning, duplication of efforts and wastage of resources. It's also been suggested that the water crisis is a governance crisis, given the inadequate institutional performance and local governance that contribute to the poor's inability to receive improved water supply services. Other research also demonstrates that the urban crisis results from flaws in the governing process rather than from the lower class or from a failure of the market. In particular, the question of governance is central to the equity in public service; equitable and just allocation of costs and benefits necessitates sound governance. The greatest failure of water institutions is their failure to address the equity issue properly, this failure occurs when institutional dimensions of water management and decision making do not effectively take into account the needs of poor households.

Policy frame work: The Government of Ethiopia, has endorsed national water resource management policy and developed water sector strategy for the proper implementation and clarification of the policy. Based on this strategy document several plans, guide lines, laws and regulations have been issued. One of the important documents is the Water Sector Development Program (WSDP) which is released in June 2002. This program enhances integrated and comprehensive approach to the water resource management which consists various programs and projects in different sub sectors such as Water Supply and Sanitation Development Program (WSSDP), Irrigation development, Hydro power and drainage sub sectors MoWR, 2002. National master plan also developed and finalized in 2003 for the water supply and sanitation sector, this has reviewed the targets set by WSSDP and forwarded important directions for the sector. The endorsement of policy and strategies is one step forward to fulfil international commitment such as; the Millennium Development Goal (MDG) and Universal Access Plan (UAP) and others. In the policy document the government has given recognition to the world wide accepted principles of water service provision.

The policy demands integrated and comprehensive approach for the utilization and protection of water resource development. The basic water supply and sanitation should be delivered inseparably at all planning and implementation levels in sustainable manner. Partnership between government, community and NGO's have been identified as important element for delivery of integrated sanitation service and further the integration with hygiene awareness program have been promoted. Studies suggested that the integration of water resources and waste management as a single department deliver better health achievements.

The national environmental policy has also addressed the key issues of urban environment and human settlement, it forwarded that improving environmental sanitation would be on the highest federal and regional agendas. It also gives emphasis the adequate water supply as important component in addressing the issue of sustainable and healthy urban environment. The national policy on urban development also put that water supply infrastructure on the first priority from other urban infrastructures.

The actors at all levels Federal, regional and woredas water and sanitation authorities and village community have low understanding of the policy. Poorly defined duties and responsibilities, communication gaps, confusing legal structures, weak integration, lack of monitoring system and different interests are major problems. Particularly the lack of integration between the water, health and education sectors slowed the progress in implementation. This is a major policy implementation problem observed in many developing countries, particularly the waste water management is not effective due to poor coordination among responsible ministries and departments of central governments.

A study in water management option for urban areas in Asia showed that cities are centers of dynamic economic growth, but this fast growth is resulting high demand for water and increase of solid and liquid waste. In most developing countries the problem faced by water utilities is largely attributed to ineffective and misguided policies, thus the study recommends several measures to save the necessary resources to support sustainable economic growth in the cities and to reverse the deterioration of urban environment.

Insufficient investment: Studies conducted by many authors has well-articulated and indicated that increasing investment in households' access to safe water by 0.3% is associated with 1% increase in GDP, but in most developing countries the amount of investment made to the water sector is very low. Water utilities are not able to bear the high investment cost and maintenance costs for the fast growing population. According to some estimates, US\$ 7 billion per year or 2.7% of GDP, is needed for the MDG water and sanitation targets and according to another study, US\$ 4 billion for water and US\$ 14 billion for sanitation are needed to cover the investment costs for the MDG, as well as an additional US\$ 42 billion for operation and maintenance in all developing countries. However, the majority of these countries' low-income economies are unable to mobilize the necessary resources. The finance gap is particularly substantial in sub-Saharan Africa and yearly development aid to developing nations has not exceeded \$3 billion USD. Cross country analysis showed that current spending on the sector is only 0.3 of GDP annually compared with some Asian countries it is very low; Bangladesh 1.41%, Sri Lanka 6.0%, Nepal 4.0%, Myanmar 2.9% of their development out lay is allocated to the sector.

Empirical literature review

Even in sophisticated nations where drinking water can be obtained directly from the tap, however, recent decades have seen an increase in the global consumption of bottled water. In 2015, Americans consumed 138.17 L of bottled water annually on average, compared to 104.1 L in the European Union. This increase in consumption is due to higher prices for bottled water. Over the course of five years, the total amount of bottled water consumed worldwide increased by more than 1/3, reaching a record-high 329.33 billion L in 2015.

In Western Europe, bottled water first became a significant, widely consumed commercial beverage category. The US industry then experienced remarkable growth. Despite the availability of drinkable tap water, certain Asian nations have recently emerged as big bottled water markets. Nevertheless, a significant amount of bottled water is still consumed in these three regions. Hong Kong has consistently ranked among the top 20 nations and regions in the world for the amount of bottled water consumed annually per person, reaching 123.78 L in 2014. Bottled water sales in Singapore reached \$134 million in 2015, a 24% increase from five years' prior.

Empirical studies undertaken by Neng Qian in three regions: Singapore, Hong Kong and Macau. Besides the common fact that municipal tap water has high direct drinking standards, the three cities have other similarities: They are all islands relying on the import of fresh water from their neighbors, they are categorized as high income cities, their populations consist of a large majority of ethnic Chinese, etc. Further, in the three university campuses of interest: The National University of Singapore, Hong Kong University and Macau University, filtered tap water drinking fountains and dispensers are generally available and commonly in use. It is merely a personal choice of each student to choose between tap water and bottled water as major drinking water source on campus (Figure 1).

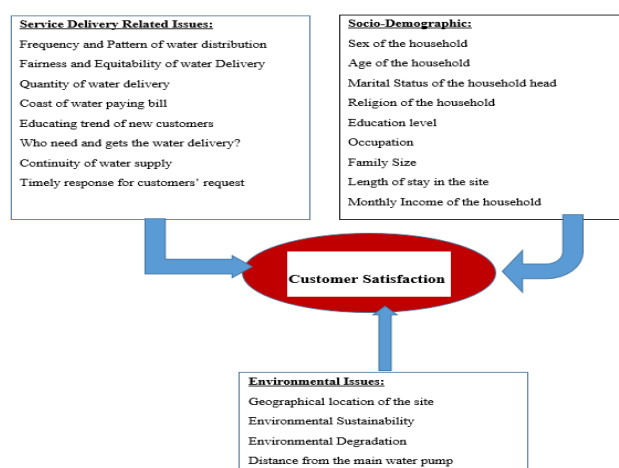


Figure 1. Conceptual framework showing factors determining level of customer satisfaction.

Summary of literatures

Conceptual framework: This chapter describes the methodology that will be employed in the study. It contains description of the study area and study setting, the research approach that will be used, the research design that will be employed, the sampling design, study population, source of data collection, methodology for data collection, instrument for data collection, methods for data analysis, result dissemination and finally the issue regarding research ethics will be discussed in detail more.

Description of the study area

The study will be conducted at Amhara regional state in Debre Markos town. Debre Markos town was founded in 1852 by Dejazmach Tedla Gualu who was the then administrator of the town. Its name was initially called Menkoror. The name of the town was changed to Debre Markos following the establishment of Saint Markos church by King Teklehaimanot. Debre Markos is one of the reform towns in the region and has 4 sub city divisions (Nigus Teklehymenot, Tedlagualu, Menkore and Abima), town administration, municipality. There is only one Municipality which serves all. The selected Condominium sites known as Hospital site, Abayikuno site and Getermenged site, which are found in Kebele 05, 07 and 06 respectively.

Debre Markos town is located in the North-west of the capital city of the Federal Democratic Republic of Ethiopia, Addis Ababa at a distance of 300 Km and 265 km to the capital of Amhara Nation Regional State Bahir Dar. Specifically, it is located in the Amhara regional state, East Gojjam zone. The geographical location of the study area is located between $10^{\circ}17'00''$ to $10^{\circ}21'30''$ N latitudes and $37^{\circ}42'00''$ to $37^{\circ}45'30''$ E longitudes and its elevation ranges in altitude from 2350-2500 meters above the sea level. It is the capital of the East Gojjam administrative zone with 10 Kebeles. Based on the Central Statistical Agency (CSA) of Ethiopia's population projection of towns as of July 2021, the population of Debre Markos had been estimated to be 153, 263. Its elevation ranges from 2350 to 2500 m above sea level. It has an average annual temperature of 15.9°C and 1321 mm average annual rainfall (climate-data.org).

From the total cover of the city boundary, 20%, 75% and 20% cover swampy areas (slope of 0%-2.5%), working landscapes (with a slope of 2.6%-20%) and gullies, ridges and escarpments respectively (Figure 2).

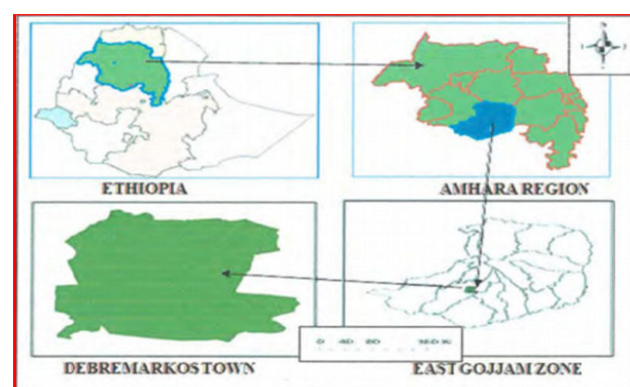


Figure 2. Geographical location of the study area.

Research design and approach

The aim of this thesis is to gather information on water supply service delivery and the level of satisfaction at selected condominium sites at Debre Markos town. A community based Cross-sectional study will be conducted from July 1, 2023 to August 30, 2023 at selected condominium sites, At Debre Markos town, Amhara regional state, Debre Markos, Ethiopia. Both qualitative and quantitative approaches will be used to analyze the information that will be gathered concerning the respondents' characteristics, water supply situation, customer water utilization and level of satisfaction towards the service. Moreover, information on the possible challenges and opportunities on the water delivery system will likely be analyzed.

Source and study population

Source population: All the residents of Debre Markos town are the potential sources of population for the study.

Target population: All the residents of Debre Markos town who are currently living at condominium sites

Study population: All the residents of the house hold who are living at the selected condominium sites during the study periods.

Eligibility criteria

Inclusion criteria: All Volunteer households living at the selected condominium sites at Debre Markos town during the study period will be included.

Exclusion criteria: Residents of the household who lived less than six months in the selected condominium sites.

Variables of the study

Independent variables: Socio-demographic and anthropometric measurements of the household (age, sex, ethnicity, religion, educational status, income, residency and family size, occupational and marital status).

Dependent variables: Customers' level of satisfaction on water supply service delivery (Satisfied or dissatisfied).

Sampling method and sample size determination

A simple random sampling technique namely lottery method was used to select the study condominium sites at from the total available condominiums at Debre Markos town. It means that, the selected condominium sites were also selected as a study site with simple random technique.

The selected sites are Hospital site, Gettermenged and Abayukuno with a total of 4, 14, 14 housing blocks with living households of 204, 235 and 336 respectively. From the three sites there are a total of 32 housing blocks and 775 living households.

The sample size has been determined by using the sample size determination formula, which is developed by Yamane (1967:886), to determine the sample size for the study. $n = N / (1 + N(e)^2)$

$$= 775 / (1 + 775(0.05)^2)$$

$$= 264$$

By adding 15% none-response rate the final sample size will be 304.

Where; n = Sample size,

N = Population size,

e = Margin of error/Confidence level of the study to be at 95%

From a total of 775 households, 304 representatives were taken as a sample. Systematic random sampling technique was employed to appropriately allocate the household representative from each center. The sample sizes for this study were all the heads of the house hold, which is a survey were conducted in each household's representatives.

Finally, proportional allocation was made to determine the samples to be taken from each site, with sample of 80, 92 and 132 at hospital, Gettermenged and Abayukuno sites respectively.

Data collection methods

The data had been collected using a semi-structured questionnaire to collect information on water service delivery, utilization and customer satisfaction levels on the water supply system. In addition, collection of other necessary data also had been conducted to collect information on water delivery service, challenges from the Debre Markos town water and sewerage system administrative as needed officials.

Survey: To generate information at household level, a semi-structured questionnaire will be used. Prior to conducting the survey, pre-test of the survey schedule was under taken and accordingly remedial action had been made. Then, the survey was conducted to the selected condominium site respondents in the study area.

Personal observation: Observation was carried out in order to obtain information how residents of Condominium housings collect water when there was no water in the building and some other important situation related to water supply. Therefore, the researcher would carry out documentation of the area's water collection and storing methods with photographs. The researcher made various visits to the site to make preliminary assessments. This initial observation was followed by a more focused survey to identify the main characteristics of the study area.

Methods of data analysis and model specification

Data from the answered questionnaires in this study was analyzed by using percentages and other data presentation strategies. The collected data had been checked for consistency and then frequencies and percentage were used to show responses of the distribution. The result had been presented in tables and percentages accordingly. Then, interpretation was made under each table by explaining the result in detail and theoretical explanation had been used to make clear the given data. Based on this analysis and interpretation of the research, conclusion and recommendations had been made accordingly.

After collecting the data, it was coded, edited and entered into SPSS version 22 for further statistical analysis. The data had been presented by tables and figures to give a condensed picture of the data. *Chi-square* test was employed to see whether there is a significant satisfaction difference or not between different variables. In addition, the logistic regression method was conducted to find the determinant factors that affect the total satisfaction of customers.

Model specification: This thesis used logistic regression technique to develop customer satisfaction model basing from the fact that Outcome dependent variables is categorical. A chi-square test was employed to indicate how well the logistic regression model fits the data and to test the independence of the independent variables.

Thereafter, logistic regression coefficients were estimated for using of the likelihood ratio.

Statistical model:

$$Y = \beta_0 + \beta_1 X_1 + \dots + \beta_{in} X_{in} + \mu$$

Y = Customer satisfaction

B_0 = The constant

β_{in} = The regression coefficients

X_{i1} = Factors affecting customer satisfaction

μ = Residual/The error term

Description of variables

Socio-demographic variables: Sociodemographic characteristics include, for example, age, sex, education, migration background and ethnicity, religious affiliation, marital status, household, employment and income.

Independent variables: An independent variable is a variable believed to affect the dependent variable. This is the variable that the researcher, manipulates to see if it makes the dependent variable to

have changes. An independent variable is exactly what it sounds like and stands alone which isn't changed by the other variables researchers are trying to measure the research outcome. The independent variables (service delivery) are:

Status of continuous water supply: Timely maintenance of broken pipes, offering of materials to the customers, absence of water interruption/irregularity and early announcement of problems).

Customer handling practices: There branches to educate customers, customers complain always get solution, Customer staff communication is very good, employees are always ready to help customers, employees are fast in serving customers, there is communication instruments, the tap water is always pure and clean, there is no any change when the water comes after interruption, bill paying services are affordable, the water meter readers come monthly

Water supply service delivery affecting satisfaction level: The water flows weekly, monthly bill payment is high, the water you getting is sufficient, the average daily water flow is enough, you use the same source of water, during interruption you pay more to buy water.

Dependent variable: It is something that depends on other factors. The dependent variable is the variable a researcher is interested in. The changes to the dependent variable are what the researcher is trying to measure with all their fancy techniques (customer satisfaction).

Logistic regression: Logistic regression estimates the probability of an event occurring, such as voted or didn't vote, based on a given dataset of independent variables. Since the outcome is a probability, the dependent variable is bounded between 0 and 1. logistic regression uses either true categorical outcomes or conventional/dichotomized categorical variables.

Tap water: The water that comes into houses and other buildings from the local water system.

Service delivery: Service delivery is a component of business that defines the interaction between providers and clients where the provider offers a service.

Customer satisfaction: Measures how well the expectations of a customer concerning a product or service provided by the company have been met.

Water supply: Supplying of clean water for human use.

Water supply service: Delivering water services for domestic and non-domestic purposes.

Dissemination and utilization of the results

The result of this study will be submitted to department of economics, college of business and economics, DMU; presented in annual research conference of the university, on annual conferences in the town and on annual conference of corresponding Associations and it will be submitted to internationally and locally accepted journals for publication.

Results

This chapter describes the results of the study and their interpretation. It starts with presenting demographic and background information of the respondents and descriptive analysis of the measurement results of service delivery and customer satisfaction is presented. Correlation analysis and regression analysis results are then presented respectively.

The data collected to meet the general and specific objectives were analyzed using different approaches. Both qualitative and quantitative approaches were employed to organize and analyze the data collected. First, the data from the answered questionnaires were manually transferred to SPSS software version 22. Statistical analysis was conducted using SPSS software version 22.

For quantitative data, the data were presented using frequencies and percentages and the findings were presented in the form of tables and figures.

Socio-demographic characteristics of the study participants

Out of 304 questionnaires distributed to the respondents the researcher was able to collect about 291 questionnaires with a response rate of 95.7%. Of the total respondents 4 were missed due to unavailability at their home for a while and from 300 questionnaires collected 9 of them were non-usable due to incomplete response of the data; then after 291 questionnaires with a complete data were used for analysis purpose

Among a total of sampled households, 131 (45%) and 112 (38%) were in the age ranges of 30-39 years and 40-59 years, respectively. Out of the total 291 respondent's household heads, 232 (79.7%) were males and 59 (20.3%) were females, respectively. The respondents were found to have different levels of education, among which, 205 (70.4%) were above degree and 53 (18.2%) of the household heads had only completed their secondary education level. The households were having a family size ranging from a single person to 9 individuals in which the majority 99 (68.4%) of the households had a family size of 1-3 individuals. Regarding to the marital status of sample households, out of 291 sampled heads of households in sample the population, Majority of them 177 (60.8%) were married.

About half of the households 137 (47.1%) had an average monthly income of 2000-5000 Ethiopian Birr (ETB). In terms of occupation, about 183 (62.9) and 83 (28.5%) of the total respondents were Government employees and merchants respectively (Table 1).

Table 1. Socio-demographic characteristics of the study participants, Debre Markos selected condominium site, Debre Markos Ethiopia, 2024 (n=291).

Characteristics	Frequency	Percent
Gender		
Male	132	79.7
Female	59	20.3
Household head age (Years)		
18-29	38	13.1
30-39	131	45
40-59	112	38.5
>=60	10	3.4
House ownership		
House rent	253	86.9
Privately owned	21	7.2
Government	12	4.1
Others	3	1.7
Level of house hold head education level		
Unable to read and writ	3	1
Read and write only	4	1.4
Primary education	14	4.8
Secondary education	53	14.2
Diploma	12	4.1
Degree and above	205	70.4
Household head marital status		
Single	87	29.9
Married	177	60.8
Divorced	7	2.4
Separated	20	6.9
Family member/Size		
1-3	199	68.4
4-6	81	27.8
7-9	9	3.1
>9	2	0.7
Household head occupation		
Merchant	83	28.5
Government employee	183	62.9
Private employee	8	2.7
Retired	9	3.1
Others	8	2.7

Previous residence of the household		
Sub city	227	78
Woreda	38	13.1
Kebele	9	3.1
No house	17	5.8
Household average monthly income/ETB		
<2000	9	3.1
2000-5000	137	47.1
5000-10000	124	42.6
>10000	21	7.2
For how long did you live in the condominium		
<1	40	13.7
1-3	107	36.8
4-5	119	40.9
>6	25	8.6
Total	291	100

Water supply service situation at the selected condominium houses

In this part the summary of respondents were responded on water supply and utilization related questions, that were, the availability of pipes connected to their condominium unit, whether tap water flows weekly or not, availability of other sources to fetch water around their residence, expensiveness of their monthly water bill, water adequacy to meet their basic requirements, availability of enough daily water

flow for consumptions such as drinking, cooking, bathing, toilet flushing; whether the water price per liter was affordable to their condo site; about an interruption/or irregularities in the water supply in the condominium site; variation in the amount of water supply in each floor of the building; quality of water supplied to the Condominium units (Table 2).

Table 2. Water supply service situation at the selected condominium houses (n=291).

Items	Frequency (Percent)
Days of water flow in the condominium sites	
1-2 days per week	45 (15.5%)
3-4 days per week	12 (4.1%)
Once per 15 day	153 (52.6%)
Irregular	81 (27.8%)
Average Jerika (liters) of water need for the household per day	
1-2 Jerika	49 (16.8%)
3-4 Jerik	119 (40.9%)
5-6 Jerikas	98 (33.7%)
7-8 Jerikas	25 (8.6%)
Average payment as water bill per month	
<50 Birr	36 (12.4%)
50-100 Birr	115 (39.5%)
101-150 Birr	111 (38.1%)

151-200	13 (4.5%)
201-250 Birr	9 (3.1%)
>250 Birr	7 (2.4%)
For what purpose the water used for	
Cooking, bathing, washing, toilet	81 (27.8%)
Toilet	5 (1.7%)
Bathing and washing	3 (1.0%)
All	202 (69.4%)
In which floor do you live in your condominium?	
Ground	48 (16.6%)
First floor	81 (27.8%)
Second floor	81 (27.8%)
Third floor	81 (27.8%)
There variation in the amount of water supply and flow in each floor	
Yes	233 (80.1%)
No	58 (19.9%)
Did you get support from NGOs in relation to water supply	
Yes	14 (4.8%)
No	210 (72.2%)
Don't know	67 (23.0%)
There are problems in water supply service as compared with other villages in the city	
Yes	191 (65.6%)
No	51 (17.5%)
Don't know	49 (16.8%)
Budget is properly allocated to run the whole water program	
Yes	117 (40.2%)
No	174 (59.8%)

Water supply service delivery and customer handling practices

Water service satisfaction is the sum of different elements; the source of dissatisfaction may differ from areas to area and from one household to the other. The response on the level of satisfaction with the provision of water in all sites of the town shows that on average

53%, 38%, 8% and 1% of the households are strongly dissatisfied, dissatisfied, neutral and satisfied and none of the respondents have strongly agreed with water supply service delivery satisfaction (Tables 3 and 4).

Table 3. Customers service delivery satisfaction status at Debre Markos town selected condominium sites (n=291).

Items	S. Agree	Agree	Neutral	Disagree	S. Disagree
There is timely maintenance	0 (0%)	15 (5.2%)	49 (16.8%)	59 (20.3%)	168 (57.7%)
Offer all materials that are needed	0 (0%)	1 (.3%)	20 (6.9%)	123 (42.3%)	147 (50.5%)
No blackout of E. light for water	0 (0%)	37 (12.7%)	46 (15.8%)	78 (26.8%)	130 (44%)

There is no water interruption	0 (0%)	0 (0%)	20 (6.9%)	117 (40.2%)	154 (52.9%)
There is announcement for problems	0 (0%)	1 (0.3%)	28 (9.6%)	113 (38.8%)	149 (51.2%)
Branches to educate new customers	0 (0%)	2 (0.7%)	34 (11.7%)	130 (44.7%)	125 (43.0%)
Complaints always gets solution	0 (%)	6 (2.1%)	46 (15.8%)	110 (37.8%)	129 (44.3%)
Communication is very good with staffs	0 (0%)	1 (0.3%)	58 (19.9%)	117 (40.2%)	115 (39.5%)
Employees are ready to help customers	19 (6.5%)	24 (8.2%)	30 (10.3%)	116 (39.9%)	102 (35.1%)
Employees are fast in serving customers	13 (4.5%)	37 (12.7%)	60 (20.6%)	108 (37.1%)	73 (25.1%)
There is communication instruments	1 (0.3%)	0 (0%)	32 (11.0%)	116 (39.9%)	142 (48.8%)
The tap water is always pure and clean	53 (18.2%)	49 (16.8%)	74 (25.4%)	67 (23.0%)	48 (16.5%)
After interruption there is no change	52 (17.9%)	46 (15.8%)	23 (7.90%)	55 (18.90%)	115 (39.50%)
Bill paying services are good	10 (3.4%)	62 (21.3%)	104 (35.7%)	61 (21.0%)	54 (18.6%)
Meter readers monthly read	74 (25.4%)	95 (32.6%)	33 (11.3%)	47 (16.2%)	42 (14.5%)

Table 4. Water supply service delivery and customer satisfaction at Debre Markos (n=291).

Items	S. Agree (No, %)	Agree (No, %)	Neutral (No, %)	Disagree (No, %)	S. Disagree (No, %)
Your condominium water flows weekly	0 (0)	4 (1.40)	37 (12.70)	118 (40.50)	132 (45.40)
There are other sources of water around	9 (3.10)	21 (7.20)	39 (13.40)	108 (37.10)	114 (39.20)
You pay much for water bill per month	0 (0)	29 (10.00)	117 (40.20)	118 (40.50)	27 (9.30)
The water you are getting is sufficient to you	0 (0)	43 (14.80)	109 (37.50)	118 (40.50)	21 (7.20)
The average daily water flow is enough	6 (2.10)	28 (9.60)	36 (12.40)	115 (39.50)	106 (36.40)
You use the same source of water all year	111 (38.1)	110 (37.80)	32 (11.00)	18 (6.200)	20 (6.90)
During interruption, you pay more to buy wat	112 (38.5)	109 (37.5)	12 (4.10)	26 (8.90)	32 (11.00)
The water price per liter is affordable to you	2 (0.70)	6 (2.10)	46 (15.80)	55 (18.90)	182 (62.50)
There is no interruption/irregularity in water	0 (0)	15 (5.20)	39 (13.40)	116 (39.90)	121 (41.60)
There is sufficient water source for site	7 (2.40)	61 (21.00)	20 (6.90)	95 (32.60)	108 (37.10)
Frequently broken pipes are observed	0 (0)	39 (13.40)	43 (14.80)	112 (38.50)	97 (33.30)
The reason for interruption is few pipe lines cannot support fast township and	108 (37.1)	102 (35.10)	27 (9.30)	30 (10.30)	24 (8.20)

oor quality of scheme construction					
There is variation water supply in floor	111 (38.1)	110 (37.8)	12 (4.10)	21 (7.20)	37 (12.70)
good quality of water is supplied	39 (13.40)	49 (16.80)	36 (12.40)	94 (32.30)	73 (25.10)
The resident s association is helpful	25 (8.60)	15 (5.20)	7 (2.40)	119 (40.90)	125 (43.00)
ou are satisfied with the water supply	0 (0)	1 (0.30)	24 (8.20)	111 (38.10)	155 (53.30)

Socio-demographic characteristics and overall satisfaction of respondents

Table 5 illustrates the chi square test for the socio demographic characteristics of the respondents with the overall satisfaction level with water supply service delivery. n the chi square test result none of the respondents were very satisfied ever strongly agree with the water service delivery. There is no as such difference in satisfaction

level in any of the socio demographic characteristic of the respondents. s illustrated in the table male gender, those living at bayukono center, age above , rented house owner and degree and above education level were satisfied with the all over water service delivery despite respondent number is very few Tables 5 and .

Table 5. Chi-square test for socio-demographic characteristics with overall satisfaction at selected condominium sites at Debre Markos town (n=291).

Socio-demographic characteristics		Very unsatisfied (No, %)	Unsatisfied (No, %)	Neutral (No, %)	Satisfied (No, %)	Very satisfied (No, %)	P-value
Sex	Male	122	89	20	1	0	0.904
	Female	33	22	4	0	0	
Condominium site/ center	Hospital	48	22	7	0	0	0.001
	Geternenged	59	24	5	0	0	
	Abayukuno	48	68	12	1	0	
Age	18-29	21	14	3	0	0	0
	30-39	67	52	12	0	0	
	40-59	64	39	9	0	0	
	>=60	3	6	0	1	0	
House ownership	Rent	134	10	18	1	0	0.122
	Private	14	6	1	0	0	
	Government	6	3	3	0	0	
	Others	1	2	2	0	0	
Level of Education	Unable to W and R	1	2	0	0	0	0.535
	Write and Read	3	1	0	0	0	
	Primary	8	3	3	0	0	
	Secondary	30	20	21	0	0	
	Diploma	8	4	0	0	0	
	Degree and above	105	111	24	1	0	
Marital status	Single	48	30	9	0	0	0.704
	Married	91	74	11	1	0	
	Divorced	5	1	1	0	0	

	Separated	11	6	3	0	0	
Family size	1-3	101	81	17	0	0	0.645
	4-6	47	26	7	1	0	
	7-9	6	5	0	0	0	
Occupation	Merchant	46	30	7	0	0	0.949
	Employee	94	71	17	1	0	
	Private	5	3	0	0	0	
	Retired	4	5	0	0	0	
	Others	6	2	0	0	0	
Previous Residence	Sub city	122	89	15	1	0	0.676
	Woreda	20	12	6	0	0	
	Kebele	4	3	2	0	0	
	No house	9	7	1	0	0	
Monthly income	<2000	5	4	0	0	0	
	2-5000	67	60	9	1	0	
	5-10000	69	43	12	0	0	
	>=10000	14	4	3	0	0	
Duration lived	<1 Year	26	11	3	0	0	0.716
	1-3	54	43	9	1	0	
	4-5	59	50	10	0	0	
	>=6	16	7	2	0	0	

Table 6. Multivariable logistic regression showing factors associated with level of customer satisfaction at Debre Markos town selected condominium sites, (n=291).

Variables entered in to the model	Satisfaction (N, %)		Odds ratio with 95% CI	
	Satisfied	Dissatisfied	COR (95% CI)	AOR (95% CI)
Site/center				
Hospital	34 (44.2%)	43 (55.8%)	1	1
Getereenged	39 (44.3%)	49 (55.7%)	.993 (0.537 1.839)	1.149 (0.538-2.456)
Abayukuno	59 (46.8%)	67 (53.2%)	.898 (0.508 1.588)	1.046 (0.496 2.208)
Household head sex				
Female	30 (50.8%)	29 (49.2%)	1	1
Male	102 (44%)	130 (56.0%)	1.318 (0.744 2.337)	1.289 (0.643-2.581)
House hold head age				
18-29	17 (44.7%)	21 (55.3%)	1	1
30-39	64 (48.9%)	67 (51.1%)	0.847 (0.410 1.751)	.718 (.295-1.750)
40-59	47 (42%)	65 (58%)	1.120 (0.533 2.350)	.709 (0.282-1.784)
>=60	4 (40%)	6 (60%)	1.214 (0.294 5.011)	.831 (0.112-6.170)
House ownership				

Rent	116 (45.8%)	137 (54.2%)	1	1
Private	7 (33.3%)	14 (66.7%)	1.693 (0.661-4.337)	2.013 (0.628-6.454)
Government	6 (50%)	6 (50%)	.847 (0.266-2.696)	.740 (0.184-2.975)
Others	3 (60)	2 (40)	.564 (0.093-3.436)	.713 (0.092-5.540)
House hold education level				
Unable to write and read	2 (66.7%)	1 (33.3%)	1	1
Write and read only	1 (33.3%)	3 (66.7%)	6.00 (0.221-162.531)	2.637 (0.061-114.674)*
Primary	10 (71.4%)	4 (28.6%)	.800 (0.56-11.504)	.245 (0.012-5.061)
Secondary	19 (35.8%)	34 (64.2%)	3.579 (0.304-42.111)	3.521 (0.221-56.040)
Diploma	8 (66.7%)	4 (33.3%)	1.00 (0.068-14.640)	0.409 (0.221-56.040)
Degree and above	92 (44.9%)	113 (55.1%)	2.457 (0.219-27.520)	1.228 (0.083-18.110)
Household marital status				
Single	45 (51.7%)	42 (48.3%)	1	1
Married	76 (42.9%)	101 (57.1%)	1.424 (0.851-2.383)	2.280 (1.152-4.513)*
Divorced	3 (42.8%)	4 (57.2%)	1.429 (0.302-6.764)	3.512 (0.442-27.905)
Separated	8 (40%)	12 (60%)	1.607 (0.598-4.319)	2.244 (0.672-7.489)
Family member/size				
1-3	91 (45.7%)	108 (54.3%)	1	1
4-6	36 (44.4%)	45 (55.6%)	1.053 (0.627-1.771)	.736 (0.366-1.479)
7-9	4 (44.4%)	5 (55.6%)	1.053 (0.275-4.039)	.927 (0.195-4.401)
>9	1 (50%)	1 (50%)	.843 (0.052-13.661)	.790 (0.033-18.971)
House hold head occupation				
Merchant	36 (43.4%)	47 (56.6%)	1	1
Government employee	84 (45.9%)	99 (54.1%)	.903 (0.535-1.522)	1.243 (0.622-2.486)
Private employee	3 (37.5%)	5 (62.5%)	1.277 (0.286-5.697)	2.448 (0.436-13.733)
Retired	4 (44.4%)	5 (55.6%)	.957 (0.240-3.823)	1.215 (0.138-10.696)
Others	5 (62.5%)	3 (37.5%)	.460 (0.103-2.051)	.353 (0.056-2.208)
Previous residence				
Subcity	103 (45.4%)	124 (54.6%)	1	1
Woreda	15 (39.5%)	23 (60.5%)	1.274 (0.632-2.567)	1.344 (0.556-3.247)*
Kebele	5 (55.6%)	4 (44.4%)	.665 (0.174-2.539)	.590 (0.115-3.036)
No House	9 (53%)	8 (47%)	.738 (0.275-1.982)	.287 (0.081-1.009)
Average monthly income				
<2000 Birr	4 (44.4%)	5 (55.6%)	1	1
2000-50000 Birr	66 (48.2%)	71 (51.8%)	.861 (0.222-3.342)	.949 (0.144-6.239)
5000-10000 Birr	50 (40.3%)	74 (59.7%)	1.184 (0.303-4.626)	1.675 (0.259-10.850)
>=10000 Birr	12 (57.1%)	9 (42.9%)	.600 (0.124-2.894)	.689 (0.083-5.701)
Duration lived in the site				
<1 Year	19 (47.5%)	21 (52.5%)	1	1

1-3 Years	46 (43%)	61 (57%)	1.200 (0.579-2.487)	1.190 (0.489-2.894)
4-5 Years	54 (45.4%)	65 (54.6%)	1.089 (0.531-2.233)	1.137 (0.475-2.724)
>=6 Years	13 (52%)	12 (48%)	.835 (0.307-2.271)	.925 (0.257-3.328)
Weekly water flow				
1-2 Days	18 (40%)	27 (60%)	1	1
3-4 Days	6 (50%)	6 (50%)	.667 (0.186-2.396)	.750 (0.151-3.734)
Once/15 Days	66 (43.1%)	87 (56.9%)	.879 (0.447-1.729)	.662 (0.280-1.566)
Irregular	42 (51.9%)	39 (48.1%)	.619 (0.296-1.296)	.432 (0.175-1.068)
Average daily water consumption				
1-2 Jerikas	24 (49%)	25 (51%)	1	1
3-4 Jerikas	59 (49.6%)	60 (50.4%)	.976 (0.502-1.899)	.718 (0.320-1.611)
5-6 Jerikas	39 (39.8%)	59 (60.2%)	1.452 (0.728-2.898)	1.579 (0.677-3.681)*
5-8 Jerikas	10 (40%)	15 (60%)	1.440 (0.542-3.824)	1.573 (0.489-5.058)
Monthly water bill payment				
<50 Birr	15 (41.7%)	21 (58.3%)	1	1
50-100 Birr	51 (44.3%)	64 (55.6%)	.896 (0.420-1.913)	1.137 (0.452-2.861)
101-150 Birr	57 (51.3%)	54 (48.7%)	.677 (0.316-1.447)	.951 (0.390- 2.317)
151-200 Birr	2 (15.4%)	11 (84.7%)	3.929 (0.758-20.372)	9.290 (1.356-63.646)*
201-250 Birr	4 (44.4%)	5 (55.6%)	.893 (0.205-3.892)	1.160 (0.214 -6.284)
>= 250 Birr	3 (42.9%)	4 (57.1%)	.952 (0.185-4.895)	2.066 (0.274 -15.557)
For what purpose the water is used				
Bathing and washing	1 (33.3%)	2 (66.7%)	1	1
Toilet flushing	1 (20%)	4 (80%)	2.000 (0.078-51.593)	1.784 (0.039-82.350)
Cooking/bathing/washing/toilet	34 (42%)	47 (58%)	.691 (0.060-7.935)	.284 (0.013-6.197)
All the above	96 (47.5%)	106 (52.5%)	.552 (0.049-6.186)	.187 (0.009-3.908)
Floor of your house location				
Ground	26 (54.2%)	22 (45.8%)	1	1
First floor	36 (44.4%)	45 (55.6%)	1.477 (0.721-3.027)	1.010 (0.416-2.452)
Second floor	35 (43.2%)	46 (56.8%)	1.553 (0.758-3.185)	1.255 (0.522-3.020)
Third floor	35 (43.2%)	46 (56.8%)	1.553 (0.758-3.185)	1.524 (0.634-3.660)
Note: CI: Confidence Interval, AOR: Adjusted Odds Ration, COR: Crud Odds Ratio, *: Significantly Associated, 1 Jerika=20 Liters of water				

Discussion

The current study had revealed that the allover customer satisfaction with water service delivery was found to be 45.4%. In the present study households level of education, marital status of the household, Previous residence of the household, average daily water consumption of the family and average monthly water bill payment were significantly associated household characteristics as the multivariable logistic regression revealed in the analysis.

From multivariable logistic regression results we can interpret significantly associated variables using either the Beta (β) value as logs odds ration or bets exponent or exponent of Beta (β) as the odds ratio. It can also be explained as using terms like likely and times as logistic regression it assumes maximum likelihood ratio. Regarding education level of the households those who have degree and above, who have completed secondary education and who can read and write have odds of dissatisfaction 1.228, 3.521 and 2.637 times that of who are unable to read and write respectively. The odds ratio of

being dissatisfied towards water supply service delivery increase by 2.244, 3.512 and 2.280 if the household is separated, divorced and married compared with those whose single respectively.

Previous residence of households was significantly associated with satisfaction/Dissatisfaction in our study as it was revealed from multiple logistic regression results. Those who come from woreda and start living in the condominium were 1.344 times high likely to be dissatisfied by the water supply service delivery compared with those who were living in cities. The odds ratio of Household dissatisfaction increases by 0.287 and 0.590 if an individual does not have his/her own house before and he/she comes from kebeles respectively.

Daily water consumption and average monthly water bill payment were also significantly associated with customer satisfaction/Dissatisfaction towards water supply service delivery in condominium sites at Debre Markos town as evidenced by the results of the multivariable logistic regression.

Regarding daily water need customers who were using >5 jerrikas of water per day on average have odds ratio of 1.6 as compared with those who are using only 1-2 jerrikas in a daily base meaning those who consume above 5 jerrikas per day are 1.6 times high likely to be dissatisfied as compared with those who use only 1-2 jerrikas towards water supply service delivery.

Household heads in the condominium who are paying an average monthly water bill of 50 birr and above have odds ratio of dissatisfaction 0.9-9 compared with those who have paid less than 50 birr per month. It means that household heads who have paid an average monthly water bill of 50 birr and above were 1-9 times high likely to be dissatisfied as compared with those who have paid an average monthly water bill of less than 50 birr on water supply service delivery at selected condominium sites in Debre Markos town.

In the present survey respondents' result revealed that there were variations in the amount of water flow across the different floors of their condominium house; hence, those at the upper floors did not get adequate water flow to their daily consumption needs. This finding was found to be in agreement with the finding of a research conducted at condominium sites in Addis Ababa.

Regarding customer satisfaction, the chi-squared test of this study had revealed that none of the respondents were strongly satisfied with the water supply service delivery provided at their condominium sites. This result is in agreement with a study done at Addis Ababa in which total respondents did not agree for the question asked if they were satisfied by the general water supply service delivery.

In the *Chi-square* test result none of the respondents were very satisfied (Never strongly agree) with the water service delivery. There is no such difference in satisfaction level in any of the socio-demographic characteristic of the respondents. As illustrated in the table male gender, those living at Abayukono center, age above 60, rented house owner and degree and above education level were satisfied with the all over water service delivery despite respondent number is very few.

The response on the level of satisfaction with the provision of water in all sites of the town shows that on average 53%, 38%, 8% and 1% of the households are strongly dissatisfied, dissatisfied, neutral and satisfied and none of the respondents have strongly agreed with water supply service delivery satisfaction.

This was performed to examine the effect of service delivery quality on customer satisfaction at Debre Markos town selected condominium sites named as Hospital, Getemenged and Abayukuno sites. Primary source of data was used for the study. In this study 304 questionnaires were distributed to respondents in random sampling method and out of 304 questionnaires distributed 291 questionnaires were found to have a complete data and finally used for analysis by the researcher and 13 of them were not usable due to incomplete data.

The present study revealed that the household heads had diverse socio demographic characteristics such as different age groups, sex, educational background, marital status, family size and different average monthly income. Among the different residents' characteristics, average monthly income and family size were found to be the major determinant factors to influence their water consumption level.

Conclusion

In this chapter, the main findings presented in the result section will be presented. Particularly, the researcher presented the responses of the residents' responses at Hospital, Getemenged and Abayukuno condominium site concerning the household heads socio demographic characteristics, water supply conditions, level of satisfaction of customers on the water supply system in their condominium unit and the major challenges that hinder the water supply and delivery system. Furthermore, the available good opportunities to improve water access and reduce frequent interruption of water were presented.

Limitations of the Study

The primary limitation for this study is it has been focused on a condominium sites at Debre Markos. The secondary limitations were finding measurement instruments to measure satisfaction. So that the researcher was forced to adopt foreign studies and related researches to use semi structured questionnaires. Almost all researches are subject to critics that means there is no research free of limitations. The third and most limitation was, there was no previous exact research work on this regard, measuring satisfaction/dissatisfaction levels of customers by using basic variables. The last but not the least limitation of this study was, the dependent variable under study (Satisfaction/Dissatisfaction) is a function of multitude independent factors. In this study, only some variables, which were assumed to affect customers' satisfaction or dissatisfaction levels.

Recommendations

The findings of the present study had revealed that there were many major challenges which hinder the water supply system in the study area. Hence, we have suggested below what things should be addressed and how to be implement them.

- Higher officials need to make additional effort in developing new water sources such as digging new water holes and increase water volume for the customers which can be done by creating mutual consents and active participation of the residents themselves so as to balance fast growing township water demand.
- Debre Markos city water management officials should develop its own electrical power system or use pressure pumping system to deliver water equally to each floor of the condominium buildings, particularly, to the 3rd and 4th floors.
- The authority should improve water supply services by introducing and implementing use of new technologies and modern communication lines with staffs.
- For an effective water supply service delivery, the officials should implement an integrated approach with other supportive organizations such as telecommunication and electricity authorities
- One who is not single and who uses more the 5 jerkas of water per day shall better live in villa house than in condominium cites.

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Declaration

I the undersigned authors declare that this research work entitled "Assesment of Customer's Level of Satisfaction on Water Supply Service Delivery At Debre Markos Town", is submitted to Department of Economics, College of Business and Economics, Debre Markos University, as part of partial fulfillment for the requirements of MSc degree in Project Planning and Management program and has not been printed, published and submitted as a research work in the same setting so far as far as my exhaustive search is concerned or there is no publication in any form of this exact work by any University in Ethiopia or abroad. Furthermore, I the researcher can confirm that all the sources of materials I have used for this study have been appropriately cited and acknowledged accordingly.

Ethical Consideration

Individual and group information's and the working habit of the households had been kept confidential to the best possible security. The data and the results of the study had been secured and kept confidential according to the recommended guidelines of the research and community services of DMU.

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