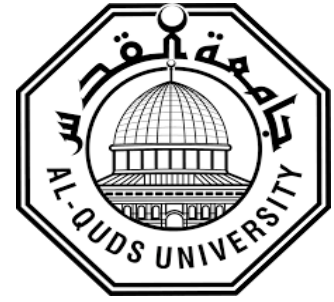


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**Evaluation of Water Tariff System at Bethany
Municipality: An Exploratory Study**

Afaf Ali Mohammed Faroun

M.A. Thesis

Jerusalem – Palestine

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**Evaluation of Water Tariff System at Bethany
Municipality: An Exploratory Study**

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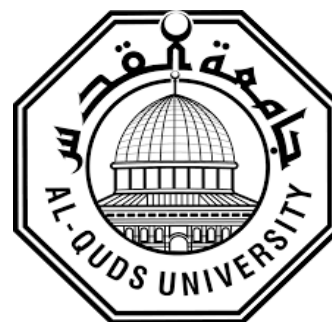
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Exploratory Study**

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2019-1440

Dedication

I would like to dedicate this research to every single soul that helped me through this journey, who supported me and lighten my eyes toward Success.

With all my love and respect

Afaf Ali Faroun

Declaration:

I certify that this thesis submitted for Master Degree, is the result of my own research, except where otherwise acknowledged, and that this study (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed: Afaf Faroun

Afaf Ali Mohammed Faroun

Date: 27 /8/ 2019

Acknowledgment

From the aspect of thankful, I firstly thank GOD who gives me the patience and power toward progressing this work.

Afterward, I solely extend piles of thanks to Dr. Ibrahim Awad my supervisor for his constant efforts which led to the success of this work.

Thanks are also extended to the external and the internal examiners. I would like to thank all those who helped me in carrying out this study.

I would like also to thank the Bethany municipality council, and all technical staff at the municipality for the indefinite efforts and support they provided toward this research.

Special thanks and gratitude are extended to my family who supported me and enhanced my faith in the job I'm doing.

Terms of the study:

1. *Water Tariff*: is a price assigned to water supplied by a public utility through a piped network to its customers. (Grafton, et al. 2015)
2. *Water loses*: water that has been produced and is "lost" before it reaches the consumer. (Grafton, et al. 2015)
3. *Technical efficiency*: a given utilized set of inputs that used to produce an output with lowest cost of operation. (Liu, 2013)
4. *Increasing block tariffs (IBTs)*: The Prices Expansion of the water tariff, It provides two or more prices for water used and widely used in the developing world, are claimed to produce desirable income transfers, discourages wasteful use, promotes economic efficiency, and assure access to sufficient water for basic sanitation. (Boland & Whittington, 1997)
5. *A water supply system*: is a system for the summation, conveyance, curing, storage and distribution of water from source to consumers, for example, homes, commercial establishments, industry, irrigation facilities, and public agencies for water-related activities (fire-fighting, street flushing and so forth). (Blank, 2008)
6. *Efficiency*: the concept of efficiency relates to the allocation of resources in the economy, within the water sector, efficiency is often tested in a "restricted" sense and relates to the technical and commercial efficiency of utility companies. (Kim, 2016)
7. *Cost recovery*: defined as the method to recovering an expenditure, which a business takes on, is both a specific and general term. (Kim, 2016)
8. *Expenses*: an expense is the cost of operations that a company incurs to generate revenue. As the popular saying goes, "it costs money to make money. (Beecher, et al. 1993)
9. *Water Bill*: the amount one must pay to use water and sewer services each month. Normally, a municipality provides water and sewage, but this is not always the case. Water bills usually are based upon one's usage, such that those who use more water are charged more. (Grafton, et al. 2015)

Abstract:

The overall objective of this study is to show if the water tariff, which is applied at the Bethany municipality, is proper and applicable by achieving these main objectives: showing the reality of the current water tariff and discovering if it reaches the full cost recovery. In addition, the study is intended to show if the Bethany community has awareness of the water tariff and other factors through using questionnaire for the households, which have effects on water tariff system, such as: technical efficiency and water losses.

In order to achieve the main objectives of the study, the researcher used the descriptive analytical approach. A mixed method of research, the qualitative as a main method and the quantitative as the supportive method of the study, was used. Two main data collection tools were used: the interview and the questionnaire. The interview was conducted with experts in the water service, whereas the questionnaire was distributed among community families in order to evaluate their awareness. In this regard, the sample of the interview was nine experts that were interviewed by the researcher, and the sample of the questionnaire was 87 households.

The main findings of the study came as the water tariff system implemented by the Bethany municipality took into consideration the cost of technical water losses, multiple water resources, and energy used; as well as administrative and technical expenses. The study showed a lack of household awareness; whereas there are thefts of water by citizens (commercial losses) and lack of cooperation by the households towards the municipality to report such thefts. This is a big burden on the Bethany municipality where it pays the price of stolen water. In addition, the lack of multiple households' awareness regarding shared meters for several houses causes an increase of the value of the domestic water bills because the municipality use of the volumetric tariff system therefore causes an accumulation of debts due to the accumulation of bills and the households' failure to pay.

According to these results, the study recommends that the municipality of Bethany should work on reconsidering the current water tariff system. The municipality needs to raise funds toward renovation and maintenance of the water networks in Bethany. In addition, it must show all required solutions: such as, monitoring shared water parameters, controlling water theft, and detecting networks of water. Finally, the study also

recommends communication with the local community to raise awareness of the water tariff and the factors that affect it and to urge the households to use an independent meter and report theft in case of occurrence.

تقييم نظام التعرف المائية في بلدية العيزرية (دراسة استكشافية)

المشرف : د . ابراهيم عوض

الطالب . عفاف علي محمد فرعون

الملخص

الهدف العام من هذه الدراسة هو استكشاف إذا ما كانت تعرفه المياه المطبقة من قبل بلدية العيزرية مناسبة وقابلة للتطبيق في بلدة العيزرية أم غير مناسبة ، وذلك من خلال تحقيق الأهداف الرئيسية التالية: تقييم التعرف المائية المطبقة حاليا من قبل البلدية ومدى تحقيقها لمبدأ التغطية الكاملة للتكاليف. بالإضافة إلى إظهار مدى وعي المواطنين في بلدة العيزرية تجاه التعرف المائية و العوامل المؤثرة فيها مثل نسبة الفاقد والكفاءة التقنية لشبكة المياه في البلدة. من أجل تحقيق الأهداف الرئيسية للدراسة، استخدم الباحث المنهج التحليلي الوصفي. حيث استخدم الباحث طريقة مختلطة للبحث، النوعية كطريقة رئيسية والكمية كوسيلة داعمة للدراسة لذلك، تم استخدام أداتين رئيسيتين لجمع البيانات: المقابلة والاستبيان، حيث أجريت المقابلات مع خبراء ومسؤولين عن توفير خدمة المياه في سلطة المياه و بلدية العيزرية ، و تم توزيع الاستبيان على أرباب أسر مجتمع بلدة العيزرية من أجل تقييم وعيهم. وقد أجريت مقابلات فردية مع 9 خبراء قابلتهم الباحثة، كما تكونت عينة الدراسة من 87 أسرة من مجموع عدد الأسر في مدينة العيزرية.

وقد جاءت أهم النتائج التي توصلت إليها الدراسة بأن نظام تعرفه المياه المطبق من قبل البلدية يأخذ في عين الاعتبار تكلفة فاقد المياه التقني، وموارد المياه المتعددة، والطاقة المستخدمة بالإضافة إلى المصاريف الإدارية والتقنية. بالإضافة إلى ذلك أظهرت الدراسة ضعف الوعي العام لدى المواطنين حيث ان هنالك عمليات سرقة للمياه من قبل المواطنين (الفاقد التجاري)، وعدم تعاون من قبل المواطن مع البلدية في التبليغ عن هذه السرقات وهذ يشكل عبء كبير على البلدية حيث تتحمل البلدية دفع ثمن المياه المسروقة بالإضافة إلى عدم وعي المواطن بأن العدادات المشتركة لعدة مساكن تتسبب بزيادة قيمة فاتورة المياه المنزلية بسبب تطبيق البلدية لنظام التعرف المتصاعد مما يسبب تراكم في الديون بسبب تراكم الفواتير وتقاعس المواطن عن الالتزام بالدفع.

توصي الدراسة بأن تعمل بلدية العيزرية على إعادة النظر في نظام التعرف المطبق حاليا في البلدية بالإضافة لرصد ميزانيات من أجل تجديد وصيانة شبكات المياه في العيزرية. هذا بالإضافة للبحث عن حلول للتقليل من نسبة الفاقد التقني والتجاري ومشكلة العدادات المشتركة، كما توصي الدراسة بالعمل على التواصل مع المجتمع المحلي لنشر الوعي تجاه التعرف المائية والعوامل التي تؤثر بها ومحاولة حث المواطن على الالتزام باستخدام عداد مستقل والتبليغ عن السرقات في حال حدوثها.

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