Asia Proceedings of Social Sciences (APSS)
Journal Homepage: http://readersinsight.net/APSS

Examining Smart Meter Users' Experience on Continuance Intention in Adopting Smart Meter in Malaysia – Result from a Pilot Study

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Peer-review under responsibility of 6th Asia International Conference 2020 (Online) Scientific Committee
http://connectingasia.org/scientific-committee/

https://doi.org/10.31580/apss.v7i2.1785

ABSTRACT

A smart or advanced meter is an electronic appliance capable of recording actual electricity consumption over time intervals of one hour or less, and of sending the data back to the utility through a two-way communication feature, enabling providers to respond to the data. Hence, the Malaysian government is currently in the process of rollout installation of smart meter. To increase the acceptance and adoption of a smart meter, it is essential to identify the key factors that influenced the continuance use of a smart meter among residential users. A total of 37 respondents participated in this pilot study, and data were analyzed using exploratory factor analysis and reliability test. The results show that all items have good loading values and the alpha values for each variable are above 0.85. This indicates that all items and variables developed in this study can be tested in future research.

Keywords: *Smart Meter, Continuance Intention, Pilot Study*

RESEARCH HIGHLIGHTS

This current study used the data and results from pilot test. Before proceed to main scale study, pilot study is needed to confirm the process of collecting data running smoothly. This present study want to evaluate the reliability of the listed items, test the adequacy of the sample for factor analysis and identify the factor loading for each items.

Research Objectives

Nowadays, smart meter technology application and acceptance has been widely debated among research groups, local communities, industrial sector and decision makers (Chen et al., 2017; Kaufmann et al., 2013). There are developed countries that have been equipped with smart meters. Hence the installation of smart meter had been endorsed by the Malaysian government and currently being rolled out by the energy provider, Tenaga Nasional Berhad (TNB). Even though smart meter is a good technology and device, but it also faced with many weaknesses. These issues arose to show that users in Malacca are expecting more positive outcomes from smart meter installation and prone to accept new technology. Due to this aspiration, the key factors to ensure the continuance intention in adopt the smart meter must be identified. Despite the negative feedback, there are still positive reaction from the users after experiencing smart meter installation. Hence, the current study proposed to carried out a research on the users' continuance intention in adopt smart meter which is based on the literature review from previous studies. Before proceed to main scale study, pilot study is needed to confirm the process of collecting data running smoothly. Pilot test or also called as feasibility study, is a 'rehearsal' stage where the researcher tries the process from the data collection phase and run the analysis but in smaller sample compared to main study (SAGE Publications, 2016).

Methodology

Population for this study are those users in Malacca that been used smart meter in their homes and have experience with it. A set questionnaire with 36 items of Likert scale and 5

question for demographic has been distributed online to the users in Malacca. This pilot test used 5-likert-scale (Kim et al., 2003; Peng et al., 2019; Weng et al., 2017) which rating best described their view towards each statement reflected variables that influence users towards continuance intention in using smart meter. Data were collected through online and this survey was conducted two weeks in October 2020 focused on the residences in Malacca that used smart meters. Out of 41 respondents collected, 4 were omitted due to invalid answer and incomplete. Hence, the valid respondents for the analysis in this study is 37 responses.

Results

For descriptive analysis, the most respondents from male with 32 responses (86.5%) compared to female. Most respondents with 11 responses (29.7%) were in the 31-40 age groups and both groups for 21-30 years old and 41-50 years old have 8(21.6%) respondents respectively. Users from Malay culture have 30 responses(81.1%) while Chinese and Indian have 4 and 3 respondents respectively. The majority of the respondents with 14 responses (37.8%) held a diploma study. Respondents with bachelor's and master's degree are 11(28.7%) and 4(10.8%) respectively. One respondent held a PhD. Lastly, most of the the respondents have experience using a smart metre over thank 6 months with 26 responses (70.3%).

Findings

After run the analysis in SPSS version 26, all the items are acceptable since there are none items that less than 0.5. According to (Sekaran and Bougie, 2016), the most common measure for reliability analysis is Cronbach's alpha coefficient. In order to evaluate the reliability of the items, the minimum value for the specific Cronbach alpha coefficient should be greater than 0.7. In the present analysis, the alpha coefficients of Cronbach for all 36 items surpassed the minimum value, implying that the survey instrument was satisfactory to identify every single construct. To test the adequacy of the sample, Kaiser-Meyer-Olkin (KMO) test is been carried out. This test to measure the adequacy of the sample for this pilot study. As stated in previous study, the acceptable results for sampling adequacy must be higher than 0.5 (Kaiser, 1974). Hence, all items and variables developed in this study can be tested in main research.

Acknowledgement

This research work is funded by the project grant (U-TD-RD-19-12) supported by UNITEN R&D Sdn Bhd.

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