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Journal homepage: [www.publishing.globalcsrc.org/jbsee](http://www.publishing.globalcsrc.org/jbsee)**Purchase Experience of Prepaid Electricity Users in South Africa****Palesa Nyalela**, Tshwane University of Technology, South Africa**\*Elizma Wannenburg**, Tshwane University of Technology, South Africa\*Corresponding author's email address: [wannenburgem@tut.ac.za](mailto:wannenburgem@tut.ac.za)**ARTICLE DETAILS****History**

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**ABSTRACT**

**Purpose:** In South Africa residents and business owners are urged by government to manage the usage of electricity more effectively in order to curb consumption. Resistance from residents to convert to prepaid metering, led to the implementation of restrictions by electricity providers.

**Design/Methodology/Approach:** 389 low-income residents within the City of Tshwane were interviewed by means of a structured questionnaire. The purpose was to determine how prepaid users perceive the purchasing of credits, seeing that the fear of running out of electricity was one of the main reasons why post-paid users are reluctant to change.

**Findings:** In general, the results were positive, however, males and females of certain age groups and different levels of income had different opinion on some aspects. With regards to the reasons for running out of credits, and if and how this system encourage payment for usage were perceived by the users as convenient and easy.

**Implications/Originality/Value:** The results of this study could motivate post-paid users to convert to prepaid metering systems, if service providers adapt their current awareness campaigns by customising it to be reach specific target markets instead of following a generic approach that serve no purpose.



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**Introduction**

Prior to 1988, the Electricity Supply Commission of South Africa, (Eskom), supplied electricity to local municipalities as well as to industries such as the mining, metal and auto mobile industry (Fig, 2010). In turn, households and other commercial and industrial facilities, received electricity services, from their local municipalities (Van der Bijl, 2007). During the last century (1900-2000), electricity usage in South Africa, increased dramatically, despite a number of efforts to control it. With that said, Eskom attempted to manage the electricity usage through post-paid systems and prepaid metering systems that were introduced a few years later.

Post-paid metering, is an electricity service where users pay for electricity after consumption has taken

place. This system created various challenges, such as illegal electricity connections, followed by the non-payment of monthly accounts (O'Sullivan, Howden-Chapman, Fougere, Hales and Stanley, 2013:278; Mburu and Sathyamoorthi, 2014; Kambule, Yessoufou, Nwulu and Mbohwa, 2018:174). The illegal usage and connection of electricity, placed tremendous pressure on the transformers, leading to explosions that resulted in unplanned outages for days at a time. The non-payment of monthly bills, required municipalities to take drastic measures against those who fail to pay. The City of Tshwane, left many businesses and other stakeholders in the dark, by forcing them to pay up, before the connection would be re-established. This type of behaviour motivated Eskom to introduce the prepaid electricity meters, that control electricity usage and promote payment before usage.

The current body of studies that investigate prepaid electricity metering, are divided into: the cost-and-benefit analysis of prepaid meters, and the perceptions and acceptance of prepaid electricity meters amongst consumers. Acknowledging the need for the acceptance and adoption of prepaid meters, various international scholars examined customers' perceptions and usage of prepaid electricity metering (Nefale, 2004; Kaplan, Schoder & Haenlein, 2007; Pandey and Pandey, 2009; Quayson-Dadzie, 2012; Miyogo, Nyanamba & Nyangweso, 2013; Mburu & Sathyamoorthi, 2014; Samreen, 2017).

These studies were all conducted in developing countries, which means that limited research exists on how consumers in a third-world country, such as South Africa, experience the usage of prepaid electricity. With the exception of Miyogo, Nyanamba, and Nyangweso (2013) they investigated how electricity users in Kenya experienced the transition from post-paid to prepaid billing payment. The results showed that both businesses and household users of electricity, embraced the prepaid-billing system. The users indicated that by understanding the benefits of the prepaid-metering system, encouraged them to be more aware of their electricity consumption and spending patterns. Similarly, Jack and Smith (2015) conducted a study in South Africa on the electricity expenditure and purchasing patterns of low-income prepaid meter users. The purpose of the study was to find a possible way to encourage low-income households in Cape Town, which falls within the category of users that do not pay for electricity, to pay for the services rendered. Even though the findings indicated that the users felt that prepaid meters provide flexibility on how and when low-income households can purchase electricity, the non-payment still continues. Jack and Smith (2015) highlighted that limited literature on this topic is available; and more in-depth research is needed on how prepaid meters are perceived by other low-income households in South Africa (Jack and Smith, 2015).

Another fundamental and most recent study, conducted by Kambule, Yessoufou and Nwulu (2018), provided additional input for this study; as it tracked emerging and persistent trends in the prepaid electricity market for households. Kambule *et al.* (2018) indicated that in countries, such as South Africa, future research in low-income developing regions is needed, in order to assess the feasibility of prepaid meters. To address the identified need, 400 low-income households in the City of Tshwane were interviewed to establish how they perceived the buying and usage of prepaid meters. From an academic perspective, this study will contribute to the body of knowledge by evaluating the constructs that support the validity of the theoretical and statistical findings of this study. From a management perspective, service providers, such as electricity suppliers, municipalities and outlets from which prepaid credits can be purchased, will gain insight on how residents experience the purchasing process, and what reasons might lead to the low adoption of this system.

Based on the background provided and the literature review that will follow, this study aims to meet the following objectives:

**Research Objective 1:** To determine if households frequently run out of prepaid electricity credits due to the lack of money.

**Research Objective 2:** To determine if users perceive prepaid electricity meters as a motivational tool to pay for electricity.

**Research Objective 3:** To determine whether prepaid users found the buying of prepaid electricity credit convenient.

This article provides a theoretical framework that was used in guiding the research of the proposed study. The methods used as well as the results, the practical managerial implications and the recommendations for future research are discussed.

## The Literature

### The Background and Usage of Prepaid Meters

Great inventors such as Benjamin Franklin and Thomas Edison, among others, all moved the discovery, process and implementation of electricity forward into modern life (Eberbach, 2013:9; Kittner, Dimco, Azemi, Tairyan and Kammen, 2016:2). In the year 1881, South Africa, first introduced electricity in the mother city, Cape Town. The Electricity Supply Commission (Escom) was established in In 1923, to govern electricity usage and supply as per the Electricity Act of 1922. As time passed, the Electricity Supply Commission replaced the name Escom with Eskom. McDonald (2009:1) and Inglesi-Lotz and Pouris (2016:628), found that in Africa, South Africa is leading when it comes to the regulation and implementation of this energy providing service. Seeing that by the late 1980's most households in South African were equipped with electricity, while other African countries were still left in the dark. The role of Eskom is to provide sustainable electricity to all residents as well as to contribute to the economy at large (Makwarela, 2002:4; Tsekoa, 2017:2). According to Wazimap (2022), 74% of households in South Africa, have in-house prepaid meters, followed by 16% who have conventional meters; while 7,3% still have no access yet to electricity.

Nargotra, Thakur, Chatterji and Mahajan (2013:1) point out that the improvement in technology, along with the availability of new electronic devices and appliances, have led to an increase in the consumption of electricity. Additionally, illegal connectivity and the misuse by consumers, led to the development of prepaid-electricity meters. The purpose of these meters is to assist consumers to manage their electricity consumption and to encourage payment. Prepaid electricity meters, allows consumption of electricity after the customer has purchased and uploaded credits on the system (Aziz, Mustafa, Shareef and Aliyu, 2013:191; Jack and Smith, 2017:6). The prepaid metering system works similar to that of prepaid cellular services, where consumers need to purchase airtime before usage of the service can commence. A prepaid meter is installed by the service provider at the home or business of the consumer. The user must then upload the credits purchased, before electricity consumption can occur. Once the uploaded units are consumed and depleted, the prepaid meter, interrupts the electricity supply to the household or business, until new credits have been uploaded (Subramoney, 2009:7; Kambule *et al.* 2018:175).

Baptista (2013:4) and Ngcobo and Crous (2017:22) found that prepaid electricity meters are becoming more popular for every-day urban electricity usage. However, the perceptions regarding these meters across Sub-Saharan Africa, vary. South Africans, for instance, prefer water and electricity to be added to one metering system, whereas in a country, such as Mozambique, consumers prefer to use this system for electricity purchases only.

Prepaid electricity systems were welcomed across the globe, and were experienced as a favourable transformation system thus, doing away with the traditional post-paid metering system (Alom & Shahriar 2012:75; Esteves, Oliveria & Antunes, 2016:706). However, back at home, South Africans were not eagerly in favour of this new system (Tewari and Tushaar, 2003). The monthly billing system created a sense of relief for some households, seeing that the usage of electricity could then continue until a given date; while many prepaid consumers feared being left in the dark, once they had run out of credits.

### Consumer Attitudes towards the Purchasing of Prepaid Electricity Credits

Consumer attitudes towards prepaid electricity can be tracked, once the prepaid meter is installed, and electricity credits are being purchased. According to Mpinganjira *et al.* (2013:128) an attitude is learned

behaviour, that a consumer portrays (positive or negative), when faced with a given object Furthermore, an individual's non-stopping assessment, approach and leaning towards a specific idea or object are also viewed as an attitude (Joubert, 2010:80). By understanding and educating consumers about the advantages of prepaid electricity meters could influence consumers' attitudes towards this system. Tewaria *et al.* (2003) highlight the advantages of prepaid electricity meters to consumers as follows:

**Table 1: The Advantages of Prepaid-Electricity Meters for consumers**

<b>The advantages of prepaid electricity meters for consumers</b>
The consumer is aware of exactly how much energy is consumed. This allows the consumer to switch off any unnecessary energy-consuming appliances.
There are no fixed charges; so, the consumer does not pay when no consumption takes place.
The consumer does not pay any fee for fuel and labour for the personnel doing the reconnections; because there are no reconnection fees.
Being able to manage energy consumption enables the consumers to manage their budget.
There are no bills to be delivered and no readings are needed, which eliminates monthly visits by Meter Readers.
The consumer can recharge or buy tokens at any time that is convenient for them.
Prepaid meters do not require the consumer to make a deposit before consumption.

**Source: Tewaria et al. (2003)**

Wagner and Wiegand (2018) state that the introduction of prepaid metering in low-income areas in Germany was well received, seeing that it assisted households in the planning and development of their monthly budgets. Around Johannesburg, various residents showed great resistance towards City Power, who announced the roll-out of post-paid meters to make way for the prepaid metering systems (Newsroom, 2018). The resistance to change might be caused by uncertainty of unforeseen circumstances that can occur once the credits on the meter are exhausted; whereas post-paid systems continue to provide electricity until the end of the month (Makonese *et.al*, 2012:1; Von Schnitzler, 2013:670; Kambule *et al.* 2018:176). Statistics on the number of prepaid meters in Johannesburg are not available; however, Wazimap (2022) found that 65% of households within the Capital City of South Africa, Pretoria, have prepaid meters installed in their homes. Originally residents, were apprehensive about the installation of prepaid electricity meters, since these systems were predominately used by low-income households (Kambule *et al.*, 2018). Okonga (2012:41) and Du, Guo and Wei (2017:325) are of the opinion that a lack of education and information regarding the benefits of prepaid electricity meters might be the cause for the reluctance. As time passed, the attitudes of consumers have shifted more favourably towards prepaid meters; and this is all due to the incorrect meter readings of post-paid systems, theft and social changes (Quayson-Dadzie, 2012:29). Today, more than 65 percent (seven million) of South African households have prepaid electricity meters installed; and this number could grow to approximately eight million by 2024 (ESI Africa, 2018; Kumbule *et al.*, 2018).

### **The Research Methodology**

This study applied a quantitative descriptive research approach, where residents within the City of Tshwane were approach to take part in personal interviews. The researchers applied for ethical clearance from the Tshwane University of Technology's, Research and Ethics committee before the commencement of the research. The population of interest was low-income household representatives, who live in houses where prepaid electricity meters were installed by the municipality. The low-income groups were identified as households that earn an average of R29 400 or less per year (Melzer, 2005; Wazimap, 2022). Through cluster sampling, the Tshwane region (population) was divided into smaller clusters, namely Garankuwa, Soshanguve and Atteridgeville. Even though the sample size for this study was calculated to be 384, a total number of 400 household representatives were randomly selected and interviewed. Two hundred

respondents from the Soshanguve area (the largest low-income area in Tshwane, hence the higher number of respondents), followed by 100 in Garankuwa and 100 in Atteridgeville were interviewed. Eleven questionnaires were rejected during the editing process, due to incompleteness, bringing the total for data analysis to 389 questionnaires.

### **The Measuring Instrument**

To explain the purpose of the study, as well as ethical considerations such as confidentiality and voluntary participation, a cover letter stating the process, accompanied the structured questionnaire. A screening question, asking respondents if they use a prepaid meter at their home were used to ensure that the respondents qualifies to take part in the research. Furthermore, to determine the purchase behaviour and the attitudes of the household representatives a structured questionnaire that consisted out of multiple-choice and closed-ended questions, as well as Likert-scale statements was used. The pre-testing of the questionnaire was conducted amongst, twenty household representatives.

### **The Data Analysis**

The statistical package for social sciences (SPSS) Version 25 was used to conduct various statistical tests. The descriptive statistics were linked to the research objectives and to the hypothesis that was set for this study. A frequency table was used in the analysis of the demographic data and an independent sample test as well as a t-test was used in the analysis of the scaled data. Additionally, the variables related to the attitudes and the perceptions were analysed by means of a two-tailed t-test, a Kruskal-Wallis test, cross-tabulation, two-sample Wilcoxon rank-sum (Mann-Whitney) test, an independent sample t-test and a Chi-square test. A 95% level of confidence was used along with a significance level of 5% ( $p\text{-value} \leq 0.05$ ), to establish the principles for rejecting the null hypotheses.

### **The Results**

Sixty-two percent of the respondents interviewed were females older than forty years, of which 43.5% were employed, while 34% were unemployed. These findings correlate with the findings of Wazimap (2022), census data, which indicated that 51% of the residents were employed and 29% were not economically active; and 16% were unemployed. Thirty percent of the respondents had an income of more than R5000 per month, which correlates with the census findings of R29600. Additionally, 29.6% of the respondents, have been using the prepaid system for less than nine years while over 70.4% used it for more than 10 years.

The agreement and disagreement levels regarding the statements (purchasing behaviour) asked in the questionnaire were statistically analysed. For the purpose of this paper only those statements where significant differences exist, are discussed; however, the findings with relation to males and females were also added, for the completeness of the study.

**Table 2** reflects the percentage distribution of the variables related to the statement: "I often run out of credits due to no money".

The following hypothesis were used to tests the results (**Hypothesis 1**).

**Ho<sub>1</sub>**: No statistically significant differences exist with regards to the statement "I often run out of prepaid metering credits due to no money".

**Ha<sub>1</sub>**: Statistically significant differences exist with regards to the statement "I often run out of prepaid metering credits due to no money".

**Table 2: Analysis of the statement that “I often run out of prepaid metering credits due to no money”**

Demographic profile	I many times run out of credits because of a lack of money						Total	Mean	SD
	Never (%)	Rarely (%)	Sometimes (%)	Very often (%)	Always (%)				
<b>Age</b>									
Up to 30	31.7	11.1	54.0	0.0	3.2	100.0	2.32	1.029	
31-40	38.5	7.7	46.2	2.6	5.1	100.0	2.28	1.161	
41-50	53.8	6.2	35.4	3.1	1.5	100.0	1.92	1.076	
51-60	49.0	6.1	42.9	0.0	2.0	100.0	2.00	1.061	
61+	33.8	6.3	51.3	6.3	2.5	100.0	2.38	1.095	
<b>Total</b>	<b>42.7</b>	<b>7.2</b>	<b>44.5</b>	<b>2.7</b>	<b>2.7</b>	<b>100.0</b>	<b>2.16</b>	<b>1.100</b>	
Kruskal Wallis Test Chi-Square = 12.717 df = 4 Asymp. Sig (p) = 0.012 [Ha supported]									
<b>Employment</b>									
Employed	48.3	7.5	42.5	1.1	0.6	100.0	1.98	1.006	
Unemployed	41.2	6.6	41.9	4.4	5.9	100.0	2.27	1.214	
Pensioner	34.4	7.8	52.2	3.3	2.2	100.0	2.31	1.056	
<b>Total</b>	<b>42.7</b>	<b>7.2</b>	<b>44.5</b>	<b>2.7</b>	<b>2.7</b>	<b>100.0</b>	<b>2.16</b>	<b>1.100</b>	
Kruskal Wallis Test Chi-Square = 6.739 df = 2 Asymp. Sig (p) = 0.034 [Ha supported]									
<b>Monthly income</b>									
Below R800	43.4	2.0	46.5	3.0	5.1	100.0	2.24	1.196	
R801-R2000	33.3	10.8	47.5	4.2	4.2	100.0	2.35	1.113	
R2001-R5000	44.8	8.6	44.8	0.0	1.7	100.0	2.05	1.033	
R5001+	50.4	7.3	39.8	2.4	0.0	100.0	1.94	1.002	
<b>Total</b>	<b>42.7</b>	<b>7.2</b>	<b>44.5</b>	<b>2.7</b>	<b>2.7</b>	<b>100.0</b>	<b>2.16</b>	<b>1.100</b>	
Kruskal Wallis Test Chi-Square = 8.378 df = 3 Asymp. Sig (p) = 0.038 [Ha supported]									

50% of the household representatives (males and females) indicated that they **rarely to never** (42.7+7.3) run out of repaid credits due to no money; while 5% indicated that they **very often to always** run out of prepaid credits while the remaining 44.6% of respondents showed that **at times** they run out of prepaid credits, due to no funds being available. With regards to the variables *age*, *employment* and *monthly income* Significant differences were visible. For these variables the null hypothesis is *accepted*. With regards to the other variables, the alternative hypothesis is *not* supported seeing that no significant differences ( $p > 0.05$ ) exist.

**Table 3** reflects the findings of how prepaid electricity meters motivates households to pay for electricity usage. The following hypothesis were tested (**Hypothesis 2**).

**Ho<sub>2</sub>**: No statistically differences exist between the respondents with regards to how prepaid electricity meters motivates them to pay for electricity services.

**Ha<sub>2</sub>**: Statistically differences exist between the respondents with regards to how prepaid electricity meters motivates them to pay for electricity services.

**Table 3: Analysis of how prepaid electricity meters motivates households to pay for electricity usage**

Demographic profile	Strongly disagree (%)	Disagree moderately (%)	Not sure (%)	Agree moderately (%)	Strongly agree (%)	Total	Mean	SD
<b>Gender</b>								
Male	6.6	7.2	9.2	29.6	47.4	100.0	4.04	1.206
Female	3.6	7.7	8.9	25.4	54.4	100.0	4.14	1.111
<b>Total</b>	<b>4.7</b>	<b>7.5</b>	<b>9.1</b>	<b>27.0</b>	<b>51.7</b>	<b>100.0</b>	<b>4.14</b>	<b>1.149</b>
Two-sample Wilcoxon rank-sum (Mann-Whitney) test Z = - 1.351 Asymp. Sig (2-tailed) (p) = 0.176 [Ha is not supported]								
<b>Want/Need for the prepaid electricity meter</b>								
Yes	3.1	7.3	8.7	28.7	52.1	100.0	4.19	1.073
No	10.3	0.0	10.3	27.6	51.7	100.0	4.10	1.263
Not sure	8.2	10.6	9.4	21.2	50.6	100.0	3.95	1.335
<b>Total</b>	<b>4.7</b>	<b>7.5</b>	<b>9.1</b>	<b>27.0</b>	<b>51.7</b>	<b>100.0</b>	<b>4.14</b>	<b>1.149</b>
Kruskal Wallis Test Chi-Square = 12.317 df = 2 Asymp. Sig (p) = 0.002 [Ha supported]								

78.7% of the respondents (male and female) **agreed to strongly agreed** that prepaid electricity meters motivate them to pay for electricity; while 12.2% **disagreed to strongly disagreed**, and 9.1% were **not sure**. With regards to the want/need for a prepaid electricity meter, differences did exist. The alternative hypothesis for this variable were therefore *accepted*.

**Table 4** reflects the statement, that the buying of prepaid electricity credits is convenient. These results were verified as follows (**Hypothesis 3**):

**H<sub>03</sub>**: No differences exist between the respondents with regards to how they view the buying of prepaid credits.

**H<sub>a3</sub>**: Differences exist between the respondents with regards to how they view the buying of prepaid credits.

**Table 4: Analysis of how the respondents viewed the buying of prepaid electricity credits**

Demographic profile	Buying electricity for the prepaid electricity meter is convenient							
	Strongly disagree (%)	Disagree moderately (%)	Not sure (%)	Agree moderately (%)	Strongly agree (%)	Total	Mean	SD
<b>Age</b>								
Up to 30	6.3	1.6	20.6	17.5	54.0	100.0	4.11	1.179
31-40	6.4	3.8	10.3	20.5	59.0	100.0	4.22	1.180
41-50	2.3	2.3	5.4	13.1	76.9	100.0	4.60	0.877
51-60	2.0	0.0	2.0	28.6	67.3	100.0	4.59	0.734
61+	2.5	1.3	5.0	16.3	75.0	100.0	4.60	0.851
<b>Total</b>	<b>3.7</b>	<b>2.0</b>	<b>8.2</b>	<b>17.7</b>	<b>68.2</b>	<b>100.0</b>	<b>4.45</b>	<b>0.992</b>
Kruskal Wallis Test Chi-Square = 17.628 df = 4      Asymp. Sig (p) = 0.001 [Ha supported]								
<b>Employment</b>								
Employed	4.6	2.9	8.0	10.3	74.1	100.0	4.47	1.068
Unemployed	4.4	1.5	9.6	25.0	59.6	100.0	4.34	1.020
Pensioner	1.1	1.1	6.7	21.1	70.0	100.0	4.58	0.764
<b>Total</b>	<b>3.7</b>	<b>2.0</b>	<b>8.2</b>	<b>17.7</b>	<b>68.2</b>	<b>100.0</b>	<b>4.45</b>	<b>0.992</b>
Kruskal Wallis Test Chi-Square = 5.727 df = 2 Asymp. Sig (p) = 0.057 [Ha supported]								
<b>Level of education</b>								
No education	3.3	0.0	13.3	26.7	56.7	100.0	4.33	0.959
Primary school	3.1	0.0	9.4	15.6	71.9	100.0	4.53	0.915
High school	4.9	2.7	7.1	23.4	62.0	100.0	4.35	1.060
College	0.0	2.1	10.4	8.3	79.2	100.0	3.65	0.754
University qualification	6.9	1.7	5.2	12.1	74.1	100.0	4.45	1.142
<b>Total</b>	<b>3.7</b>	<b>2.0</b>	<b>8.2</b>	<b>17.7</b>	<b>68.2</b>	<b>100.0</b>	<b>4.45</b>	<b>0.992</b>
Kruskal Wallis Test Chi-Square = 9.544 df = 4      Asymp. Sig (p) = 0.048 [Ha supported]								
<b>Monthly income</b>								
Below R800	3.0	2.0	10.1	19.2	65.7	100.0	4.42	0.970
R801-R2000	3.3	0.8	6.7	22.5	66.7	100.0	4.48	0.917
R2001-R5000	6.9	1.7	10.3	25.9	55.2	100.0	4.21	1.151
R5001+	3.3	3.3	7.3	8.1	78.0	100.0	4.54	0.994
<b>Total</b>	<b>3.7</b>	<b>2.0</b>	<b>8.2</b>	<b>17.7</b>	<b>68.2</b>	<b>100.0</b>	<b>4.45</b>	<b>0.992</b>
Kruskal Wallis Test Chi-Square = 8.477 df = 3      Asymp. Sig (p) = 0.037 [Ha supported]								

**Table 4** indicate that 85% of the respondents (males and female) **agreed to strongly agreed**, while 5% **disagreed to strongly disagreed** with the statement “the buying of prepaid electricity credits is convenient”. The remaining 8.3% were **not sure** about this statement. With regards to *employment*, *age*, *the level of education* and the *monthly income* of the respondents, statistically differences were identified. Thus, the alternative hypotheses are accepted for these variables. Respondents aged between 41 to 50 years, were more in an agreement with this statement than the rest of the respondents.



## Discussion

Through this study, the researchers determined how low-income households in Tshwane perceive the purchasing of prepaid electricity credits.

Research objective 1 aimed to determine whether the prepaid electricity meters installed in the households often run out of credits, because of a lack of money. The findings of the study highlighted that budgeting became the norm amongst household representatives in Tshwane, seeing that they do not necessarily run out of credits because of a lack of funds, but rather because of poor planning, or the overuse of electricity. Wagner and Wiegand (2018) and Tewaria *et al.* (2003) both indicated that prepaid metering systems assist households in managing their energy consumption, as well as their budget. With regards to Research objective 2 the researchers wanted to determine, if households are more motivated to pay for prepaid electricity usage now that they have installed prepaid meters. The majority of the respondents did indicate that they did become more aware and motivated to pay for electricity, comparing to the past when they used post-paid metering systems. Consumers in low-income areas are now more motivated to pay for the services received, thanks to this added convenience (Miyogo *et al.*, 2013:91; Gupta and Shukla, 2016:3).

Research objective 3 determined whether prepaid users found the buying of prepaid electricity convenient. The findings indicated that the majority of respondents experienced the purchase of prepaid electricity as convenient, seeing that alternative options for where and when to purchase are available. Today, prepaid credits can be purchased at leading supermarkets, banks, online, or via a cellular phone (Van Heusden, 2012).

## Managerial Implications, Limitations and Recommendations

The findings of this study, highlighted several implications for electricity suppliers, municipalities and the businesses where these credits can be purchased. Firstly, electricity providers, municipalities, and retail outlets need to understand how residents experience the purchasing of prepaid electricity units, in order to establish a well-developed purchasing process that can encourage frequent purchase behaviour amongst users of prepaid meters. The users of post-paid meters might decide to replace their traditional metering system with a prepaid system if they are confident that the process of obtaining credits is easy and accessible. Secondly, ensuring that service delivery at all touch points is up-to-standard can lead to an increase of sales of units, which in turn, would contribute to the sustainability of these service providers. The immense pressure on the electricity supply of South Africa can also be regulated, if more households convert from traditional post-paid to prepaid metering systems. The fact that consumers have to budget monthly for the purchase of electricity has led to consumers being more conscious about their consumption of electricity. Furthermore, understanding the buying intentions of low-income consumers could assist service-providers in planning the overall energy consumption needed for a nation, as well as in developing marketing strategies to create awareness amongst non-users. By taking income, age, employment status and education into consideration when developing marketing strategies could assist in reaching the target market more effectively than a generic approach.

Due to the limited literature that is available on how South African consumers perceive the purchasing of prepaid credits as well as their knowledge and awareness of prepaid electricity meters, made it difficult for the researchers to verify the findings. The researchers, therefore relied on research conducted in other African and developed countries. Furthermore, the inputs and opinions of residents in surrounding areas were not obtained, seeing that this study only included households in the City of Tshwane. Additionally, the data collection took place during working hours, leading to the exclusion of certain age groups that could have had different opinions. Some of the respondents did not understand English, which led to the need for translation by the fieldworkers which in turn increased the duration of some interviews.

## Conclusion

In the past, prepaid electricity meters were generally viewed by post-paid meter customers as being used by low-income households. However, a lot has changed since then seeing that this milestone and the

positive transformation in electricity, proofed to be more beneficial on the long run for both households and the municipalities that provide these services. The way households in Tshwane perceive the purchasing of prepaid electricity units were the main objective of this study and the results proofed to be favourable towards this innovation. The findings indicated that household representatives became more aware of budgeting and planning, seeing that they do not necessarily run out of credits, because of a lack of funds, but rather because of a lack of planning. Furthermore, the respondents indicated that they are more motivated to pay for the electricity services than they did in the past. However, even though the purchasing process were experienced as flexible and acceptable, differences did exit between certain age, income and education groups. Hence, awareness campaigns that are understandable and applicable to certain groups needs to be considered instead of a generic approach. With that said, future research could include how the perceptions of high-income and low-income households differ, when it comes to prepaid electricity and its usage. The type of awareness campaigns that electricity providers can use to reach a specific target audience can also be investigated. In conclusion, by creating awareness of this energy-saving system, could assist consumers in making more informed decisions, which in turn, would benefit both the economy and the planet at large.

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