

A Qualitative Research Study:

The Solar Water Heating Managers Experiences of Eskom's Decision to Terminate
the Solar Water Heating Rebate Programme

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Research Methodology

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I hereby declare that the Research Report submitted for the Bachelor of Commerce Honours in Management degree to The Independent Institute of Education is my own work and has not previously been submitted to another University or Higher Education Institution for degree purposes.

Abstract

The current energy crisis in South Africa has created an increased focus on Solar Water Heating (Sessa, 2015). The Eskom Solar Water Heating Rebate Programme helped reduce the energy crisis and intended to develop a robust solar water heating industry in South Africa (Energy Efficient Demand Side Management, 2009). The aim of the study explored the solar water heating manager's experiences of Eskom's decision to terminate the Solar Water Heating Rebate Programme (SWH RP) in April 2015. The study employed a qualitative research design and the sample size consisted of 3 individual managers of SWH businesses in the Durban area (Du Plooy-Cilliers et al., 2014). The data collection method followed an in-depth interview (Du Plooy-Cilliers et al., 2014; Maree et al., 2016). Thematic analysis was used to execute the data analysis (Braun and Clarke, 2006). The research methods were suitable in obtaining an understanding of the SWH manager's experiences. The financial loss experienced on solar water heating businesses was identified as the most significant finding. This research study will contribute the existing body of knowledge of solar water heating and will be of beneficial importance to all plumbing and solar water heating businesses in the Durban area.

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Introduction

Research Background

Solar Water Heating has been in existence since the early 1970's in South Africa (Hertzog, 2012). During this period, the present energy crisis in South Africa was non-existent (Landie, 2016). Solar Water Heating (SWH) was still at an early experimental stage, and its importance was only realised in the last ten years, when the world and South Africa started experiencing higher electricity costs, and extensive environmental problems (Meyer, 2008).

The current energy crisis in South Africa has created an increased focus on Solar Water Heating (Sessa, 2015). Coupled with the crippling financial recession and the ever increasing cost of living, solar water heating has become a viable and beneficial solution for many consumers in South Africa and the world (Landie, 2016). Furthermore, radiation levels in South Africa are one of the highest in the world making solar energy an obvious choice as an alternative energy source (Sessa, 2015). Additionally, on average approximately 40% of a household's electricity bill is utilised for water heating (Sessa, 2015). Therefore, switching to solar water heating has obvious financial benefits, it not only assists the environment, but it also saves the consumer money and helps increase energy independence (Hertzog, 2012).

The creation and implementation of the Eskom SWH Rebate Programme, introduced by Eskom Holdings in 2008, helped reduce the selling price of a solar water heating system by an average of 33, 3 % of the total purchase price (Energy Efficient Demand Side Management, 2009). A standard 300 litre solar water heating system priced at an average of R30 000 qualified for an Eskom rebate of R10 000 (ibid). This meant, the consumer was only liable for a lump sum payment of R20 000 (ibid). This proved to be more affordable as more consumers started to purchase new SWH systems (ibid). With the termination of the solar water heating rebate programme in April 2015, the solar water heating sales suddenly dwindled (Energy Efficient Demand Side Management, 2009). Furthermore, this indicated that consumers found it difficult to afford the new increased purchase price (Department of Energy, 2016).

Rationale

The aim of the current study is to explore the solar water heating manager's experiences of Eskom's decision to terminate the Solar Water Heating Rebate Programme (SWH RP). The study aims to further explore, the implications this decision had on the solar water heating industry.

The purpose of this research, is to illustrate the significance of the Eskom SWH Rebate Programme in helping to overcome the energy crisis and to develop a robust solar water heating industry in South Africa (Hertzog, 2012).

Department of Energy (2016) and Energy Efficient Demand Side Management (2009) argue the introduction of the Solar Water Heating Rebate Programme implemented by Eskom was regarded as a progressive initiative with impressive growth potential for establishing new businesses and creating employment, besides the main aim of reducing electricity demand on Eskom's power stations (ibid).

Chang et al. (2017) indicates that achieving the heating of water via solar energy is one of many sustainable power generating practices. Additionally, the Department of Energy (2015) expands on the concept of solar water heating or solar water heating systems is an obvious alternative energy choice as it is a free, clean and inexhaustible energy source derived from the sun.

This problem is relevant and worth investigating because solar water heating is an important source of renewable energy that can assist and reduce the energy demand in South Africa.

The research study will add value to:

- Plumbing and Solar Water Heating businesses in South Africa
- Individual households
- Educational institutions

Thereby providing extensive understanding and decision-making regarding the termination of the SWH Rebate Programme and more importantly the impact experienced on the SWH industry.

Problem Statement

The impact of Eskom's terminated Solar Water Heating Rebate Programme on the Solar Water Heating Industry.

The fundamental research problem is to investigate and obtain an understanding of the experiences of various SWH managers exposed to the termination of the SWH Rebate Programme.

Purpose Statement

The purpose of this study is to investigate the impact of the termination of Eskom's Rebate Programme on 30th April 2015 on the SWH industry in Durban, South Africa.

The study will be exploratory in nature, thus the primary objective of exploratory research is to explore a problem to ultimately provide valuable insight and comprehension of prominent factors within the boundaries of the environment the problem exists (Van Wyk, 2012). This will enable the researcher to explore and gain an understanding of the explanations and opinions obtained from managers of SWH businesses, regarding the implications of the termination on the SWH industry.

Research Goal & Research Question

What are the solar water heating manager's experiences of Eskom's decision to terminate the Solar Water Heating Rebate Programme?

Subsidiary Goal

What implications did this decision have on the Solar Water Heating industry?

This will be explored under the following research question:

Research Question:

What have you experienced after the termination of the SWH Rebate programme?

Objectives:

To determine the various experiences of SWH managers caused by the termination of the SWH RP.

To determine the impact experienced on the Solar Water Heating industry.

Literature Review

Theoretical Foundation

Theory of Action and Reaction

Isaac Newton's Third Law of Action and Reaction states for every action (force), there is an equal but opposite reaction (force) (Dourmashkin, 2012).

The Third Law states that when objects interact with each other, force is exerted upon each other (Elert, 2017). The two forces, the objects exert on each other is identified as action and reaction forces (Elert, 2017).

The theory of Action and Reaction is relevant to this proposed research study because Eskom's decision to terminate the SWH Rebate Programme (action) has created a significant impact on the solar water heating industry (reaction).

The solar water heating manager's experiences is further identified as a reaction to Eskom's action to terminate the Solar Water Heating Rebate Programme (Gosling, 2015).

In the context of the research study, the action to terminate the SWH Rebate Programme has created a negative reaction on the SWH industry (Collins, 2017). The industry indicates Eskom's lack of communication severely affected the survival and operations of the industry, which resulted in reduced employment and manufacturing opportunities (Moodley, 2015).

The action imposed by Eskom to terminate the SWH Rebate Programme has forced the closure of many small and medium-sized enterprises (SMEs) (Steyn, 2015). The reaction of the industry indicated that potentially 50% of manufactures in the SWH sector were forced to shut down due to the termination of the programme (Moodlely, 2015). Furthermore, the action to terminate the programme have caused a reaction in lack of investor confidence and reduced future possibilities to initiate a rebate programme (Steyn, 2015).

Contextual Literature

The global context of sustainable living, as cited by COP 17 factsheet (2017) indicates, the need to implement sustainable development initiatives is imperative, due to the strain and excessive depletion of the world's natural resources mined to meet society's living requirements. Therefore, the efficient utilisation of solar water heating will enable the natural use of solar power energy, generated from sunlight (COP 17 factsheet, 2017).

The South African Energy Crisis

According to the Department of Energy (DoE) (2015), South Africa is currently experiencing a major energy crisis, which has an extensive impact on all South African citizens, present and future generations. Ultimately, the electricity crisis in South Africa has occurred as a result of two major problems i.e. government's failure to successfully implement its own policies and secondly the disruption of these policies by certain parties to the government (Department of Energy, 2015).

Bateman (2014) indicates, the additional reason for the energy crisis in South Africa is the current state of its infrastructure, overdue maintenance of the power grid and subsidiary power stations, as a result Eskom Holdings infrastructure has aged substantially and lacks service and repair (ibid).

The concept of load shedding is Eskom's decision to protect and control its power generating structures from overheating (Magdaleno, 2017), subsequently reducing total failure of the power plant (ibid). Khoaribe (2015) indicates, load shedding impacts major business industries, and most importantly the efficient operation of the South African economy, which total impact is suffered due to political instability and inadequate technological infrastructure. Department of Energy (2015) argues, Eskom's inability to meet the South African electricity consumption is due to its limited number of power generation stations.

Evidence suggested, the energy crisis requires different levels of operational leadership and solutions (Magdaleno, 2017). Moreover, to achieve a balance between central supply and localism, support and action is required by citizens (ibid). Sacsis (2015) argues that Eskom should focus on dealing with its internal challenges before building new energy generation plants.

The South African government revealed that an impending energy crisis existed and Eskom was instructed to build new power stations (Urbach, 2012). The parastatal was also informed to increase its electricity generation capacity to meet the population demand, however, a concise investigation conducted by Magdaleno (2017) clearly substantiated, that Eskom's fleet is under repair or unable to generate electricity. In addition, the coal silos at the Majuba power station collapsed, largely reducing electricity generation, further resulting in Eskom having insufficient working plants to provide valuable power to meet grid demand (Hogg, 2015).

According to Seymore, Akanbi and Abedian (2017), the increase in the price of conventional energy is a contributing factor to the promotion and implementation of alternative sources of energy in South Africa. Subsequently, the installation of solar water heating (SWH) systems enables the natural generation of hot water supply in a household, which is used for individual consumption (Sessa, 2015). This will therefore, support and stimulate the alternative energy sector in South Africa (ibid). As water heating accounts for a large part of energy in a household (40%), which is mainly derived from electricity (Sessa, 2015), reducing or removing this expenditure will lead to major improvements in the energy sector and an added increase in disposable income is available to the consumer (Hogg, 2015).

The emergence and development of alternative energy technologies are highly competitive with regard to an efficient cost structure (Energy Report, 2017). The effective utilisation of geothermal energy (earth produced heat), hydro and/or wind turbine technology have the ability and capacity to generate electricity at relatively low affordable costs, which is inexpensive and economical in an evolutionary sense, compared to the cost structures incurred in respect to fossil fuel power stations (Department Of Energy, 2015; Energy Report, 2017). Moreover, according to Sacsis (2015) the cost of solar generation is reasonable and budget-friendly, due to the benefit derived from the sun's energy.

The Solar Water Heating (SWH) industry in South Africa and the introduction of a Rebate Programme to consumers

The solar energy market within the South African economy demonstrates stable levels of growth and expansion (Donev et al., 2012). Evidence provided by Seymore, Akanbi and Abedian (2017) indicate the potential investment for SWH is predominantly located in residential areas, accounting for approximately 98% capacity of sales and installations (Donev et al., 2012).

Solar water heating was introduced into South Africa because it provided substantial benefits to the consumer and to South Africa (Water Heating, 2017), whilst considering the protection of land and the environment (ibid). The consumer benefits by paying a reduced electricity bill and the country profits as a result of less power being generated and consumed (Steyn, 2015). Therefore, the Department of Energy (2015) explains the implementation of SWH will provide the South African society with clean resourceful energy and will accumulate cost savings of approximately R231 billion within the next twenty years, if executed with an established researched plan (ibid). Consequently, SWH is an integral social aspect, contributing to an improvement in the living standard of society (Department of Energy, 2015).

The World Ranking claims South Africa is 18th out of 52 countries located on the African continent, as a prominent location for solar power generation (Uken, 2012), permitting South Africa as a respectable candidate for solar water heating (Donev et al., 2012).

The Department of Energy (2015) indicate, due to the popularity of the Solar Water Heating industry in South Africa, government have instated a SWH programme known as the Solar Water Heating Rebate Programme in 2008, which is managed by power utility Eskom Holdings (ibid). This programme is aimed to install one million solar water heating systems in households and commercial buildings from 2008- 2013 (Moodley, 2015; Steyn, 2015). The programme is aimed in pursuing an energy mix that will result in clean and renewable energy resources (Worthmann and TudorJones, 2009).

Noah (2017) and Seymore, Akanbi and Abedian (2017) admit the implementation of the solar water heating strategy, administered by Eskom South Africa, aimed to achieve a reduction in electricity of approximately 530 megawatts (530 000 KW), securing the national grid and largely reducing carbon emissions.

The ultimate objective of the proposed strategy was the accessible rebate to consumers, prompting the installation of SWH systems in households (Moodley, 2015). However, Needham (2014) and Pressly (2017) provide clear evidence that the rebate programme for solar water heating was financed by the Department of Energy (DoE) and the rebate programme for heat pumps was funded by the National Energy Regulator of South Africa (NERSA). Thus, both government officials were identified as the core providers of capital via Eskom Rebate Programme. Moreover, Eskom indicated its role as only administrating the rebate programme (Needham, 2014).

However, the rebate programme was not completely implemented with the purpose for advancing industry development but to also positively force domestic households to move forward in adopting solar water heating methods (Creamer, 2011). Evidence provided by Seymore, Akanbi and Abedian (2017) state, solar water heating is now a regulatory and policy requirement enforced by government authority to apply effective utilisation of efficient water heating for new building developments, both residential, commercial and industrial. Moreover, the insurance sector is required to advocate for the installation of SWH units as a replacement option to clientele, Santam exhibits this initiative (Standard Bank, 2014).

The Solar Water Heating Rebate Programme was initiated and implemented 2008, to help lessen the constraints of the energy system (Moodley, 2015). However, the rebate programme only managed to achieve 424 790 solar water heating system installations, achieving close to half of the intended objective (Department of Energy, 2015; Moodley, 2015).

The sudden termination of the Eskom Solar Water Heating Rebate Programme and the impact experienced in the Solar Water Heating industry

Moodley (2015) and Hogg (2015) report that Eskom Holdings South Africa recently made public that it will no longer be responsible for future implementation, funding and management of the solar and water heating rebate programme. As stated by Eskom, responsibility for the solar rebate programme now belongs to the Department of Energy (DoE) (Hogg, 2015). The DoE informed government, the programme has been halted due to the poor quality of installation and unreliable verification regarding the number and location of installed solar water heating systems in South Africa (Department of Energy, 2015). As a result, the parastatal made clear the DoE will fund, manage and implement the SWH rebate programme as 1st February 2015 (Sessa, 2015).

Pressly (2017) declared, Eskom's sudden announcement caused major disorder within the solar water heating industry, forcing customers to rapidly submit rebate claim forms and accredited solar water heating companies to supply and install solar water heating systems. As a subsequent reaction of the termination of the SWH Rebate programme, the financial state of the SWH industry is deteriorating and is highly volatile due to government's ever changing policy and regulation (Gosling, 2015).

It is acknowledged, the purchase price of a SWH system was identified as a limiting factor in consumers purchase decision (Moodley, 2015). Therefore, to increase market approval regarding the implementation of SHW systems in South Africa and to induce consumer purchase, the rebate amount increased by 120% on varying sizes of SWH systems, during the period of January 2010 (Seymore, Akanbi and Abedian, 2017). This however, exhausted the proposed budget for the rebate programme of SWH systems in South Africa (Hogg, 2015).

Tripod (2015) describes that an increase in profit is obtained when government initiate or increase the amount of subsidy paid to businesses. However, an impeding situation also exists in a decrease in profit, when government decrease or discontinue subsidies supplied to businesses (ibid). Therefore as subsequent result of Eskom's action, the removal the SWH programme to registered solar water heating businesses, caused major disturbance and disorder in the industry which further translated into a sudden decrease in consumer demand and sales (Sessa, 2015).

Moreover, the disruption caused by Eskom's decision resulted in a contribution towards an increase in unemployment levels in South Africa (Collins, 2017). The suppliers of SWH units witnessed an exponential growth of 400 participants from an initial 20 providers, within the industry for solar water heating (Collins, 2017). Thus, the introduction of the rebate programme provided a stable status of employment, however, due to the termination of the programme many individual jobs are at risk, contributing to the high unemployment levels in South Africa (Gosling, 2015).

Solar water heating manufactures such as SunTank, indicate the suspension of the rebate programme have impacted negatively in regard to the production for solar energy systems (Energy Efficiency Management, 2017). Furthermore, the rebate model developed by Eskom South Africa was inadequate to support the SWH programme (Hurwitz, 2015).

As indicated by Steyn (2015) the energy efficient programme was a complete failure in achieving the energy efficient aims of the programme. Hence, failure is a result of bad management practices and lack of accountability and transparency (Hogg, 2015). However, COP 17 factsheet (2017) illustrates that Eskom South Africa did not determine the retail price of the SWH systems but initiated the programme to institute a quality standard to safeguard the consumer and the SWH industry. Ultimately, Eskom firmly stated that as a parastatal to the government, it wishes to withdraw its role and only focus its resources and capabilities on supply and generation of electricity to South Africa (Department of Energy, 2015).

To mitigate the impact of the shortage of electricity supply in South Africa, South African Press Association (SAPA) (2015) reported that innovative technology systems are being retailed. The implementation of smart meters, effectively manages the consumption of electricity, saving individual money and reducing the output of electrical consumption (ibid). The smart meter is an attempt to assist Eskom Holdings problem of excessive electricity demand (Department of Energy, 2015).

Additionally, government's strategies directed at increasing the implementation of solar water heating within the domestic market is a crucial limitation because South Africa, as a developing country, does not have the financial resources to accept solar technology. Moreover, from a consumer's perspective, affordability acts as a short term key driver, however, within the long term context financial savings, grid constraints and environmental protection and longevity is extensively improved and enhanced (Sessa, 2015).

In conclusion, the research provides reliable information and understanding regarding the severe energy crisis in South Africa, which sheds clear perspective of the large energy demand required from the grid (Steyn, 2015). The negligence and level of business activity performed by Eskom and its role in energy generation and supply is emphasised (Khoaripe, 2015). The cause of the termination and the direct impact experienced on the solar water heating industry, resulted in an increase in unemployment, business restructuring and an outcome of business morale in the SWH industry (Collins, 2017). Finally, the termination of the Eskom Rebate Programme firmly substantiates a depletion of the proposed SWH budget and funding of the SWH RP was originally funded by the DoE and not power utility Eskom (Hogg, 2015). Thus Eskom Holdings declares to focus on its core business activity of electricity generation and supply in South Africa (Department of Energy, 2015).

Conceptualisation

The following paragraphs will aim to explore the conceptualisation of this research study:

- **Solar Water Heating**

Solar water heating (SWH) is the conversion of sunlight into renewable energy for water heating using a solar thermal collector. SWH systems are designed to deliver hot water. However, in winter there is a decrease in sunlight exposure thus insufficient solar heat gain to deliver sufficient hot water. In this case a gas or electric booster is used to heat the water (Energystar, 2017).

Solar water heating systems now cost the consumer an average of 30% higher than it would have when the Eskom subsidy was available. Therefore it is necessary to implement SWH systems because the units are becoming increasingly costly and unaffordable thus creating a detrimental effect on sales in the industry.

- **Subsidy**

A sum of money granted by the state or a public body to help an industry or business keep the price of a commodity or service low (Oxford Dictionaries, 2016: 1).

The Eskom subsidy for solar water heating was an incentive created by government to encourage the installation of solar water heating systems. The reason for the subsidy was to mainly reduce overload on the power supply grid and foster sustainable living standards.

- **Rebate**

Payment made to a consumer after a purchase is completed, to induce purchase of a product. Hence a refund resulting from a purchase or tax (Cambridge Dictionary, 2017: 1).

In the context of the proposed research study, the Eskom rebate is a portion or percentage of the purchase price that was reimbursed to the purchaser. Hence the portion of the purchase price that was repaid varied due to the multiple sizes (100, 150,200, 300 litres) of solar water heating systems.

- Sustainability

The ability to safeguard the environment or preserve depleting natural resources from the production of goods and services, thereby supporting long-term ecological balance (Cambridge Dictionary, 2017: 1).

It is imperative for society to enforce sustainable development practices such as the implementation of SWH units, which support the presently strained environment in the generation and supply of electricity.

Research Design & Methodology

Research Paradigm

The research paradigm of this particular study is defined as the science of historical-hermeneutic, purely identified as interpretivism (Maree et al., 2016). Interpretivism is the relevant paradigm because the research is a study of the contributing factors to a particular phenomenon (ibid). Thus, it is a research strategy that emphasises words in the collection and analysis of data (Maree et al., 2016). Du Plooy-Cilliers et al. (2014) and Maree et al. (2016) clearly establish the aim of interpretivism is to gain an in-depth understanding of a certain subject.

Interpretivism is the relevant paradigm to the research because the study aims to build an understanding of the factors contributing to the SWH manager's experiences as a result of Eskom's decision to terminate the SWH Rebate Programme.

This proposed research study followed a phenomenology research tradition. According to Lester (1999) a phenomenological research study attempts to understand an individual's perception and perspective of a particular situation or phenomena and intends to interpret such knowledge to create a comprehensive understanding of the context. This research study aimed to understand the SWH manager's experiences as these experiences will clearly highlight the phenomena created by Eskom's decision to terminate the SWH Rebate Programme.

Hence, this type of paradigm included as its epistemology an empathic understanding of the SWH manager's experiences and other phenomena in this study (Du Plooy-Cilliers, et al., 2014). Therefore this paradigm effectively supported the researcher in achieving the goals of this proposed research study.

Research Design

The research employed was a qualitative research design, this design was used to acquire rich and comprehensive data (Hancock, Ockleford and Windridge, 2009). The execution of qualitative research is primarily exploratory research in nature (Du Plooy-Cilliers et al., 2014). It is used to gain an understanding of underlying explanations, opinions and motivations (Hancock, Ockleford and Windridge, 2009).

Qualitative research design is the appropriate research design because the aim of the study is to understand the SWH manager's experiences as a result of Eskom's decision to terminate the SWH Rebate Programme in April 2015 (Sessa, 2015).

Qualitative research offers subjects to be evaluated in depth and in detail (Van Wyk, 2012). However, qualitative research cannot be generalised to the broader population with the degree of certainty that of quantitative research because, the findings of the research are not tested to discover statistical significance (Atieno, 2009). Moreover, qualitative research is low cost and consists of a relatively smaller sample size (Van Wyk, 2012).

A cross-sectional design was appropriate and beneficial for this proposed research study due to the nature of this particular research project being conducted at an Honours graduate level. A cross-sectional design is used to create an overall picture of a phenomenon at one point in time, thus, cross-sectional design is non-repetitive and occurs only once (Du Plooy-Cilliers et al., 2014). Therefore, the research was performed at one point in time, a clear understanding of the experiences of SWH managers was obtained and explained in regard to the impact witnessed on the industry as a result of the terminated rebate programme, the research study can thus be identified as having a cross-sectional time dimension.

Deductive Theorising

The research followed a deductive theorising approach, which involves reasoning from general assumptions to more accurate assumptions, exploring broad aspects to a specific topic under investigation (Du Plooy-Cilliers et al., 2014; Van Wyk, 2012).

The research moved from a general aspect, the termination of the SWH rebate programme and the impact on the SWH industry, to a specific focus on the experiences of SWH manager's. Therefore the research implemented a deductive approach of moving from a general aspect to a specific focus.

Population

The units of analysis acknowledged in this particular research study are individual managers of solar water heating businesses in the Durban area. These participants provided unique insight and shed clear perspective regarding the decision by Eskom to terminate Solar Water Heating Rebate Programme. In addition the participants further indicated the state of the Solar Water Heating Industry.

Target and Accessible Population

The target population is identified as solar water heating managers in the central Durban area of Kwa-Zulu Natal.

The accessible population is recognised as the portion of the population that is actually included in the study (Du Plooy-Cilliers et al., 2014).

Hence the accessible population is the individual solar water heating managers positioned on North Coast Road and Umgeni Road.

Sampling

The sampling method utilised in this research study followed a purposive sampling method and action (Maree et al., 2016). Purposive sampling relies on the judgement of the researcher when selecting the units (people, organisations or events) that are to be studied (Du Plooy-Cilliers et al., 2014). The aim of purposive sampling is to purposefully select and include elements based on a predetermined list of characteristics (Research Methods, 2006).

In the context of the research study, characteristics included:

- Solar Water Heating Businesses that are Eskom registered and accredited suppliers and installers of solar water heating systems.
- Individual solar water heating managers positioned on North Coast Road and Umgeni Road.

The advantage of this method ensured that each element of the sample assisted and contributed meaningful data to the proposed research study, seeing as each element fitted with the population parameters. According to Du Plooy-Cilliers et al. (2014) purposive sampling serves as useful method saving time, money and resources.

Sample Size

For this particular study, the sample size consisted of 3 Small Medium Micro Enterprises (SMMEs). The description of small businesses with regards to this research is companies with 5–20 employees and caters primarily to Durban customers.

Therefore three (3) individual managers from each business were included and interviewed, the managers were all male adults and consisted of two Indian participants and one White participant. The use of three SWH managers was appropriate for qualitative research as the research followed an in-depth interview to obtain substantial information. Moreover, the research study was small scale in nature and therefore three participants were suitable to meet the requirements. The study was restricted to North Coast Road and Umgeni Road, and not restricted in terms of gender, race and culture. In addition the sample population saved time, however, a disadvantage of the sample size was that it did not contribute to generalisation and a small sample size is not objective (Du Plooy-Cilliers et al., 2014).

Data Collection Method

The data collection method administered in the research study followed an in-depth interview. An in-depth-interview obtained actual experiences of the SWH managers, enabling individual manager's views, opinions and beliefs to be professionally established (Du Plooy-Cilliers et al., 2014).

The in-depth interview was of a semi structured format due to the expansion of open-ended questions (Maree et al., 2016). The use of open-ended questions defined the topic under investigation i.e. SWH manager's experiences of Eskom's decision to terminate the SWH Rebate Programme. This provided an opportunity to discuss the topic in detail with specific reference to the experiences of SWH managers. This enabled the research to follow a detailed explanation of the impact experienced on the SWH industry as the manager's experiences created an overall picture of the impact experienced.

Open-ended questions were designed to encourage a full, meaningful answer using the participants own knowledge, experiences and/or feelings (Maree et al., 2016). Moreover, opinions and responses were not be influenced by predetermined prompts (Changing Minds, 2016). Questions were worded simply and briefly for immediate understanding which saved time (ibid). Furthermore, open-ended questions were formulated in a neutral manner and lastly, open-ended questioning was in line with qualitative research, eliciting responses (University of Surrey, 2017).

A limit of 5 questions were asked during the in-depth interview, in order to achieve precise information and to manage the amount of collected data. This assisted in avoiding errors, repetition and superficial answers during the interview process. Furthermore, the interview was conducted during business operating hours owing to the convenience of managers. The interviews were recorded via audio and transcribed upon completion for further analysis and expansion of the phenomenon under study.

The interview method enabled the researcher to completely understand and interpret the answers of the SWH manager's experiences, as the interviewer asked the participants to clarify and explain answers further. Moreover, the interviewer asked additional questions based on the conversation, which were not originally formulated. These factors provided valuable assistance to the research, due to the efficiency of access to information and flexibility of the research conducted (Du Plooy-Cilliers et al., 2014).

Data Analysis Method

The research study identified thematic analysis as the method of executing the data analysis (Braun and Clarke, 2006). Thematic analysis was administered on the results of the semi structured, in-depth interview completed by the managers of solar water heating businesses (Du Plooy-Cilliers et al., 2014; Maree et al., 2016).

Braun and Clarke (2006) utilise thematic analysis (TA) to describe broad themes/patterns in the data. A theme is a coherent and meaningful pattern in the data relevant to the research question (Maree et al., 2016). Additionally, TA is a common method of analysis for analysing open-ended or semi-structured interview transcripts (Braun and Clarke, 2006). Thematic analysis is identified as a deep interpretation of data, which permits the researcher to delve into a participants experiences (Braun and Clarke, 2006).

The answers extracted from the solar water heating managers had various themes embedded in each different answer, due to the industry impact experienced. Thus, themes were extracted in order to effectively reflect the solar water heating manager's perspective regarding the impact of the terminated rebate programme on the solar water heating industry. Thematic analysis was therefore identified as the most appropriate data analysis method employed.

Braun and Clarke (2006) six-step method to conduct thematic analysis.

1. The researcher is required to familiarise themselves with the data:

This required the researcher to be fully immersed and actively engage in the data by transcribing the interactions and reading the transcripts. This provided the researcher with a valuable understanding of the data (Braun and Clarke, 2006).

2. Generate initial codes:

The researcher generated initial codes from data, however repetitive codes were eliminated and final codes were consolidated (Braun and Clarke, 2006).

3. Searching for themes:

The researcher extracted relevant data to formulate themes, this enabled the researcher to sort data according to codes, subthemes and themes (Braun and Clarke, 2006).

4. Reviewing themes:

The researcher developed and defined themes and subthemes within the data. At this stage, data within the themes were clear and identifiable (Braun and Clarke, 2006).

5. Defining and naming themes:

This step required the researcher to expand on the identified themes, to capture the essence of each theme, quotes were used as evidence to substantiate each relevant theme (Braun and Clarke, 2006).

6. Producing the Report:

The final step required the researcher to transform the analysis into an interpretable piece of writing by using vivid and captivating examples that related to the themes and research questions (Braun and Clarke, 2006). Therefore, the discussion of findings provided results and evidence that addressed the research question and objectives.

The method of thematic analysis enabled the researcher to provide answers extracted from the semi-structured, in-depth interview. This ultimately formulated themes and concepts regarding the experiences of SWH managers and the impact experienced on the solar water heating industry.

Findings & Interpretation of Findings

The findings of the research were analysed based on Braun and Clarke's (2006) six-phase approach to thematic analysis. The three primary themes that emerged from the SWH manager's experiences of Eskom's decision to terminate the SWH Rebate Programme were Reduced Operations, Financial Cost and Emotional Reaction.

The findings were obtained from three participants, who are referred to as Alex, Brian and Craig. The names of the participants have been changed to ensure the protection of their identities.

- Alex has been involved in the SWH industry for the past 38 years, and currently manages and owns his own SWH business.
- Brian is the general manager of a SWH company, which has been in existence for more than 40 years.
- Craig has been involved in the plumbing industry for the past 19 years, and is the general manager of a SWH company.

See Annexure A: Results of Findings

Discussion and Analysis of Themes

1. Reduced Operations

A prominent factor evident in the research was reduced operations, which accompanied the termination of the solar water heating rebate programme, instituted by Eskom Holdings. Reduced operations acted as a factor that forced participants of solar water heating businesses to make major changes to their businesses to ensure business continuity and existence. Moodley (2015) indicates Eskom's lack of communication severely affected the survival and operations of the industry, which resulted in reduced employment and manufacturing opportunities. The participants identified that reduced operations translated into retrenchment, downsize in business and excess equipment accompanied the termination of the SWH Rebate Programme. Therefore retrenchment, downsize in business and excess equipment have been identified as sub-themes of the first evident theme of the research, reduced operations.

1.1 Retrenchment

This was illustrated in the reasons why the participants chose to reduce their operations.

Brian: *We only kept the staff that have been here for a long time. All the people that came in recently were asked to leave and um...sadly enough it wasn't a nice thing to do but that is the law of averages. The lesser the business. The lesser the staff.*

Brian: *...as a result we had to let a lot of staff go.*

Brian's reasons of why he chose to retrench employees reflects the importance of reduced operations. This is also reflected by Alex.

Alex: *We had to place staff on short time. And I think it has contributed greatly or added to our problems of unemployment.*

Alex's view is further linked to Collins (2017) and Gosling (2015), who explain due to the termination of the SWH rebate programme many individual jobs are at risk, contributing to the high unemployment levels in South Africa. Craig further indicated that one of the first decisions he implemented was to retrench employees.

Craig: *We had to reduce stuff.*

It is evident from these quotes, that retrenchment of employees accompanied the decision to reduce operations, however, downsize in business and excess equipment was also identified as an element of reduced operations.

1.2 Downsize Business

Alex: *So the termination of the Eskom programme, to put it in perspective saw the closure of many businesses...so to stay alive we reduce the size of our operations which meant reductions and cost cutting.*

Brian: *The decision we took was to downsize. Naturally we got to downsize because if we don't we got to close down.*

It is clear that both Alex and Brian had to downsize the operations of their solar water heating business to ensure the existence and business continuity. Further indicated by Moodley (2015) potentially 50% of manufactures in the SWH sector were forced to shut down due to the termination of the programme.

1.3 Excess Equipment

Craig: *...extra equipment that we were not even using...it's going to waste.*

Brian: *We bought extra machinery and important tools to create for the new move. The swing in the market. Then left with it all.*

Furthermore, Brian and Craig's view clearly reinforce Energy Efficiency Management's (2017) finding, that solar water heating producers have idle surplus manufacturing equipment, post termination of the SWH Rebate Programme.

It is clear from the information provided from the participants that the decision to reduce business operations resulted in retrenchment, downsize in business and excess equipment. These factors forced the participants of SWH businesses to excessively reduce its operations to ensure business existence. Therefore reduced operations is directly linked to the theory of Action and Reaction (Dourmashkin, 2012). Eskom's decision to terminate the SWH Rebate Programme (action) has forced SWH businesses to reduce its operations accompanied retrenchment, downsize in business and excess equipment (reaction). This clearly explains the participant's decision to retrench and downsize business activity to avoid total closure of business.

It is evident the primary reasons which forced the participants of solar water heating businesses to retrench, downsize business and excess in equipment link directly to the theory of Action and Reaction (Dourmashkin, 2012) and firmly support the views expanded upon by Collins (2017), Energy Efficiency Management (2017), Gosling (2015) and Moodley (2015).

2. Financial Cost

A factor that emerged in the research was the financial cost that accompanied the termination of the SWH Rebate Programme. The financial cost to business clearly describes the factor that significantly impacted the existence, success and growth of the SWH industry in South Africa. Tripod (2015) identified that an impeding situation exists in a decrease in profit, when government decrease or discontinue subsidies supplied to businesses and consumers.

The participants of SWH businesses identified that as a result of Eskom's decision to terminate the SWH Rebate Programme, a decrease in sales and loss on investment emerged. Decrease in sales and loss on investment have been identified as sub-themes of the secondary theme of the research, financial cost.

2.1 Decrease in Sales

This was illustrated in the reasons why the participant's experienced financial costs.

Brain: Okay, prior to the rebate company period, we um...our normal business was increased 100% when the rebate kicked in. Okay...so our business doubled when the solar water rebates kicked in. But since the rebate has been discontinued we have dropped at least 80% of our business in terms of sales.

Brains explanation of sales figures clearly depict the radical decrease in revenue, further reinforced, Gosling (2015) indicates the financial state of the industry is deteriorating and is highly volatile.

Alex:...it was very sudden the actual demand in sales drop drastically, to give you an indication towards the end and peak of the actual Eskom rebate programme sales were running from anywhere between 20 and 30 units per month and that's suddenly dropped to 1 and 2 units.

Craig:...sales dropped from anywhere of 20 to 30 units to an average of about 3 units per month.

Both Alex and Craig share similar results to the decrease in sales. The impact, further stated by Hogg (2015), is a result of bad management practices and lack of accountability and transparency. Alex and Craig indicate that installations averaged at almost three solar water heating units per month, this shows an unexpected effect on the decrease in sales experienced by both participants, when the termination of the programme occurred.

Alex: Hoping that something would happen to revive this drop in sales in the industry.

The termination of the SWH programme clearly reflects Brain's decrease in revenue to a staggering 80% drop in sales as compared to doubled business when the programme was in operation.

Brain:...everything else decreased with the sales. Like your workforce.

Alex: It definitely did create a problem for our sales so much so that I think some of the players in terms of competitors and the other solar water heating companies have to diversify in order to stay alive.

The decrease in sales experienced by Alex, illustrates that a decrease in sales have forced existing SWH businesses to diversify their operations into alternative methods to ensure business continuity.

Alex: We have learnt the art of diversifying a long time ago. As I said we have been in the solar water heating industry since the 1980's when the industry died we did other things, other things meaning aligned to the plumbing industry, we got involved in doing plumbing installations, general plumbing problems like burst pipes, supply and installation of electric geysers and involved in general plumbing.

The method of diversifying into “*plumbing installations and general plumbing problems*” was identified as survival tool to recover from the impact experienced regarding Eskom’s decision to terminate the SWH Programme. Alex, however, indicates before the official termination of the SWH Rebate Programme in April 2015, sales peaked higher than expected.

Alex: ...rush of clients during the month of April, in fact the month of April was one of our best month, in terms of turnover and sales.

Eskom’s sudden announcement forced customers to rapidly submit rebate claim forms and accredited solar water heating companies to supply and install solar water heating systems (Pressly 2017), “*for consumers to try take advantage of the rebate programme before it ended.*” Thus, sales for SWH systems increased as a result of consumers qualifying for the Eskom Rebate. This is clearly identified as an affordable incentive to purchase a SWH system. However, Brain indicates with the removal of the programme, sales and all other aspects of business such as labour also decreased in comparison.

2.2 Loss on Investment

Brain identified a loss on investment to business.

Brain: As a businessman that has this investment into your business with all this extra equipment that you didn't need prior to the subsidy coming in um...it was a disadvantage to business owners. Because they catered for the demand and suddenly the demand was taken away. So we in debt ourselves in a situation where we over catered.

Alex and Craig further reflect a loss on investment.

Alex:...to date...we haven't totally been able to fill the gap of investing our money and resources into the programme.

Craig: It has a huge impact on the South African economy as well.

It is evident the information gained from the participants that the financial cost experienced on solar water heating businesses reflected a serve decrease in sales and a loss on investment. The financial cost experienced by SWH businesses is directly linked to Sustainable Energy Society of Southern Africa, Sessa (2015) indicated the removal the SWH programme to registered solar water heating businesses caused major disturbance and disorder in the industry which further translated into a sudden decrease in consumer demand. The decrease in consumer demand is firmly reflected as a decrease in sales (Sessa, 2015), which the SWH participants clearly articulated. In addition, the theory of Action and Reaction (Dourmashkin, 2012) demonstrates Eskom's action to terminate the SWH Rebate Programme has fostered an opposite and equal reaction, resulting in a decrease in sales and loss on investment, experienced by the SWH participants.

The primary reasons for a decrease in sales and loss on investment is linked directly to the theory of Action and Reaction (Dourmashkin, 2012) and analysis provided by Gosling (2015), Hogg (2015) and Sessa (2015).

3. Emotional Reaction

The third prominent factor that emerged from the research was emotional reaction that reflected the participant's experiences following Eskom's termination of the SWH Rebate Programme. The theory of Action and Reaction states for every action (force), there is an equal but opposite reaction (force) (Dourmashkin, 2012). The participants identified the termination of the programme caused an emotional reaction as a result of Eskom's sudden decision. An emotional reaction accompanied levels of stress and anger. Stress and anger have been identified as sub-themes of the third theme of the research, emotional reaction.

3.1 Level of Stress

This was illustrated in the reasons why the participants experienced an emotional reaction.

Alex: Very high levels of stress, we fought the closure, we intervened, interacted with the Energy Society of South Africa who our spokesperson between the industry and Eskom. We wrote letters to Eskom and SEESA but we had little or no reaction, so then we knew we could not rely on this program or to get any assistance.

Alex's consistent battle with the relevant power generating authorities clearly demonstrates the lack of accountability and transparency of organisations parastatal to the government. The lack of response and assistance created excessive stress levels for Alex.

Alex explains "it was like we were clutching at straws not knowing what to do"

Brain further provided higher levels of stress.

Brian: It was a stress for us, because we got new machines that we have to pay for. You've got more staff that you have to pay, you've got added meterage in you premise.

The contributing factors of machinery, staff and added meterage indicate that these resources need to be paid for, over and above the termination of the programme. This significantly contributed to Brian's stress levels.

3.2 Level of Anger

Craig expressed high levels of anger regarding the decision to terminate.

Craig:..as I said it impacted negatively on everything.

Brian: To understand the mechanics. How important it is to have water. To have alternative energy. When they just started, they stopped the whole thing.

Brain's anguish is clearly depicted through the sudden decision implemented by Eskom. He indicates the SWH Rebate Programme was a valuable initiative which provided crucial knowledge about the importance of water heating, regardless of the SWH rebate programme being present. Moreover, within the long term context financial savings, grid constraints and environmental protection and longevity is extensively improved and enhanced (Sessa, 2015).

Alex: It upset and caused me anger as we prepared for this boom in the market.

Creamer (2011) clearly stipulates the purpose of the rebate programme was to positively force domestic households to move forward in adopting solar water heating methods. The preparation of increased SWH business activity was abruptly halted as a result of the announcement made by Eskom to terminate its SWH Rebate Programme, this caused Alex vast amounts of anger as his preparation become futile.

It is evident from the information collected from the participants that emotional reaction accompanied high levels of stress and anger. Both stress and anger are directly related to the theory of Action and Reaction (Dourmashkin, 2012), as indicated Eskom's sudden decision to terminate the SWH Rebate programme left the participants "clueless and unaware" because there was no remedial action implemented to assist the termination of the programme, this created an emotional reaction of stress and anger as a subsequent result of Eskom's action.

It is clear the SWH Rebate Programme instituted by Eskom South Africa had more of a beneficial impact than expected both short term (knowledge and understanding) and long term (sustainability and renewable energy), and the decision to terminate the programme was impartial decision made. The primary reasons of stress and anger fostered an emotional reaction on the participants of solar water heating businesses, and thus can be linked directly to the theory of Action and Reaction (Dourmashkin, 2012) as indicated, and (Sessa, 2015).

Trustworthiness of the Findings

The research used trustworthiness to demonstrate evidence regarding the results reported are comprehensive and well established (Du Plooy-Cilliers et al., 2014).

According to Du Plooy-Cilliers et al. (2014), this is categorised as a qualitative study, therefore Credibility, Transferability, Dependability and Conformability was utilised to analyse the trustworthiness of this research.

According to Du Plooy-Cilliers, et al. (2014) and Maree (2016) credibility is defined as the accuracy with which the researcher interpreted the data that was provided by the participants. The individual managers of SWH businesses of this research study were physically given a hardcopy of the interview outline. The researcher allocated research interview time with each participant to help provide credibility to the research study. The information gathered from the interviews of SWH managers was recorded and scripted accurately as per the exact contributions from the SWH managers, in order to ensure credibility.

Du Plooy-Cilliers, et al. (2014) and Maree (2016) suggest that transferability is identified as the ability of the findings to be applied to a similar situation and delivering similar results. The research findings obtained from this particular study can be used further as a benchmark to a similar or same industry that is experiencing problems with a rebate programme provided by parastatals to the government. Moreover, the findings of the research can be used as an example to apply to a larger study that implements solar water heating programmes and/or initiatives. If the findings of the research can be transferred to a similar research study, it therefore has transferability. This would increase the trustworthiness of the research study.

Dependability refers to the quality of the process of integration that occurs between data collection method, data analysis and the theory generated from the data (Du Plooy-Cilliers, et al., 2014; Maree. 2016). The researcher ensured that the study was dependable by clearly identifying data collection and analysis method steps were followed to ensure quality integration of data occurred.

Du Plooy-Cilliers, et al. (2014) and Maree (2016) indicate confirmability refers to how well the data collected support the findings and interpretation of the researcher and indicates the flow of the findings to the data.

During the process of the research study, the researcher's supervisor who is qualified in the field of qualitative research was utilised to verify the collection and analysis methods, and results obtained from the solar water heating managers. This was implemented to identify and analyse the conclusions and assumptions made, support the findings and interpretations, this ultimately ensured the flow of data. To guarantee confirmability the researcher is certain the findings of this study drew similar conclusions to that of any other researcher conducting this study.

The criteria was utilised with vigor, in order to ensure the research study was conducted with complete trustworthiness.

Ethical Considerations

The following are considered to be possible participant ethical issues, followed by suggested limitations of the intended study.

Participants of this research study were informed about the objective of the research, hence to determine the solar water heating manager experiences of Eskom's decision to terminate the Solar Water Heating Rebate programme. It was clearly explained how information obtained will be utilised to provide concrete conclusions and what is required from each participant in terms of transparency and honest judgement (Creswell, 2013). This protocol of informed consent was issued in writing and signed by each participant to approve their consent to be a part of the research study (Creswell, 2013; Du Plooy-Cilliers, et al., 2014).

Data provided and collected from participants of the research study were informed about the protection of their identities and personal information (Creswell, 2013; Du Plooy-Cilliers, et al., 2014). In addition the context of each in-depth interview conducted was secure and private, therefore providing discretion and a code of professionalism.

The data reported by each participant during the research study was strictly protected and confidential. This was administered to ensure the safety and comfort of each individual and accurate information was provided extendedly. Furthermore it was the principal of the researcher to be ethical in conducting the research study (Creswell, 2013; Du Plooy-Cilliers, et al., 2014).

An element of confidentiality was initiated by safe keeping of each individual's information. Furthermore, an essential component of information obtained during research time was protected and guaranteed by the researcher, to be ethically responsible and professional (Du Plooy-Cilliers, et al., 2014).

In addition an element of anonymity was guaranteed to keep participants information identities strictly private and unknown when conducting the interview (Du Plooy-Cilliers, et al., 2014). However for the researchers own data collection and identification a numbers system was initiated and implemented, this was clearly explained in writing and consent was approved by each participant to ensure understanding and research protocol.

Furthermore, a crucial ethical issue regarding the falsifying of information by the researcher is considered (Du Plooy-Cilliers, et al., 2014). The manipulation and creation of data is considered to be unethical (Du Plooy-Cilliers, et al., 2014). The researcher did not create any information to match the research topic, such as creating false information from the experiences of the SWH managers to highlight the impact of the termination of the SWH Rebate Programme.

Limitations of the study

The research study focused on Small Medium Micro-Sized Enterprises (SMME's) in the central Durban area only, limited to managers and owners, there is limited knowledge and understanding of the total industry impact regarding the termination of the Eskom solar water heating rebate programme, thus, results obtained cannot be generalised to companies in other cities, provinces or countries (Creswell, 2013).

Moreover, the value of time to conduct the proposed research study is identified as a short period of time that is available. In addition, the sample is identified as a limitation due to the sample size being small (3) and restricted to only individual managers of SWH businesses in KZN (Du Plooy-Cilliers, et al., 2014). This is a limitation to the study, as if more SWH managers were interviewed, larger findings could be gathered, this will enable greater depth to the research study. And lastly, the procedure to acquire valuable information from government authorities was identified as a limitation owing to government protocol and transparency.

Conclusion

Discussion of Findings

The research aimed to explore Kwa-Zulu Natal (KZN) solar water heating manager's experiences of Eskom's decision to terminate the Solar Water Heating Rebate Programme in April 2015 (Sessa 2015).

Through the research conducted it can be concluded the implications of Eskom's decision following the experiences of the SWH managers regarding the termination of the SWH programme have resulted in three core themes of which reduced operations, financial loss and an emotional reaction emerged successfully.

Due to the termination of the SWH Rebate Programme, the managers of SWH businesses in KZN experienced the need to reduce operations, this translated into retrenchment, downsize in business and an excess of equipment. The decision experienced by the managers to retrench employees was due to the decrease in business activity, prior to the termination of the SWH Rebate Programme, SWH business managers were forced to employ more staff to meet consumer demand thus creating employment opportunities and actively engaging in responsible social practices, however post termination of the programme, SWH managers had no actual work for the employees. As a result, the decision was to retrench and/ or place employees on short time.

Additionally, the decision to downsize business was fostered by the termination of the programme, because during the rebate period the managers were required to increase business capacity and operations due to the influx of work, which required extending the premises, the purchase of additional machinery, tools and equipment. This experience created a state of excess of equipment when the programme was terminated by Eskom Holdings. As a result, the managers of SWH businesses were legitimately forced to retrench employees, add to the increased unemployment levels in South Africa, downsize business to ensure continued existence of the business and an abundance of excess SWH equipment wasted.

A further related core theme that emerged from data was the financial cost experienced by the KZN SWH managers. The termination of the SWH Rebate Programme, produced excessive financial losses, this translated into a decrease in sales and loss on investment. The decrease in sales experienced by the managers of the SWH businesses, clearly stipulate that as a result of the sudden termination of the SWH Rebate Programme, a sudden drop in sales was experienced too. Prior to the termination of the programme, managers stated that sales figures increased substantially and doubled in perspective. However, post termination, sales decreased drastically, forcing the SWH managers to diversify business operations into other areas of the plumbing industry to safeguard the existence of their SWH business.

Moreover, a loss on investment was experienced by the managers. During the implementation of the SWH Rebate Programme, KZN SWH managers invested excessive amounts of capital into labour, equipment, machinery and materials (solar geysers and solar panels) to cater for the increase in consumer demand and be readily available to provide a SWH service. However, as result of Eskom's termination of the programme, SWH businesses experienced loss on investments caused by the reduced demand.

The third and final core theme emerged within the research was identified as emotional reaction. The termination of the SWH Rebate Programme caused an emotional reaction on the managers of SWH businesses, which translated into anger and stress. The realised value and derived benefits experienced by the SWH mangers and society is non-existent due to the early termination of the programme. Moreover, SWH mangers were stressed about their financial and business obligations and further angered about the holistic implication being created as a result of the termination of the programme.

Therefore, the three core themes of reduced operations, financial cost and emotional reaction clearly reflected the KZN solar water heating managers experiences and the impact experienced on the SWH industry resultant of Eskom's decision to terminate the SWH Rebate Programme, this is directly linked to the theory of Action and Reaction (Dourmashkin, 2012) and effectively supports the contextual literature interpretations made by Collins (2017), Energy Efficiency Management (2017), Gosling (2015), Hogg (2015), Moodley (2015) and Sessa (2015).

Research Question, Problem & Objectives Addressed

The research question regarding the solar water heating manager's experiences after the termination of the Eskom SWH Rebate Programme, was successfully answered. This was illustrated by the themes of reduced operations, financial loss and emotional reaction. As the themes clearly depict the experience of the SWH managers.

The research problem was solved by obtaining a clear understanding of the experiences of SWH managers exposed to the termination of the SWH Rebate Programme. As the experiences of the managers indicate the result of the termination. The experiences translated into an emotional reaction which caused high levels of stress and anger, the SWH managers experienced a decrease in sales and a loss on investment. Moreover, the KZN SWH managers had to retrench employees and downsize business operations. As a further result of the termination, the managers experienced high levels of excess equipment.

The objectives of the research have been successfully achieved. The research clearly illustrated the experiences of the SWH managers in terms of the emerged themes and further indicated the implications the decision executed by Eskom to terminate the SWH Rebate Programme had on the solar water heating industry.

The implications of the findings for future practices suggest that parastatals such as Eskom South Africa, need to conduct intensive research and planning before implementing a programme in trying solve a specific problem, therefore perform market tests and surveys. Furthermore, the introduction of new government orientated programmes should be over an extended period to create financial viability and sustainability. And lastly, if programmes are scheduled for termination due to various circumstances, remedial action and contingency planning needs to occur, in order to ease the industrial impact, this indirectly will provide stability to the operations of the industry, government and importantly the economy.

The research can be considered a success. The research study identified the importance of solar water heating and renewable energy in South Africa. Moreover, the research identified information which was not mentioned in previous literature and theories. The heuristic value stimulates further investigation into market reaction theories and allows the discovery of new ideas related to the theory of Action and Reaction (Dourmashkin, 2012). Furthermore, for this research study, heuristic value was created by adding to the existing body of knowledge of solar water heating.

Anticipated Contribution

The research study will contribute to the existing body of knowledge and will be of beneficial importance to all plumbing and solar water heating businesses in the Durban area and furthermore South Africa as a whole. In addition the contribution of the research study will assist government authorities and educational institutions to build on knowledge.

The research could also assist solar water heating specialists to understand the solar water heating industry impact regarding the termination of the subsidy programme. The research results may assist SMMEs in enhancing their communication regarding solar water heating products offered in the market and the exchange of relevant information. Furthermore, the results of the research could also change or improve the solar water heating industry in terms of growth and sustainability.

The contribution of this research study in relation to the verification of a Bachelor of Commerce Honours: Management holds noteworthy importance. The understanding of the research study objective enhances the understanding of strategy implementation in business management. The research study also provided a valuable understanding of the importance of SWH, and therefore future programmes can be implemented through businesses to educate society about social problems.

The general contribution of building new knowledge is apparent regarding the solar water heating industry in South Africa. The research is likely to add to the body of knowledge therefore providing solutions to various anticipated solar water heating outcomes.

Word Count: 12 544

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Annexures

Annexure A: Results of Findings

Theme	Sub-Theme	Quotes	
1. Reduced Operations	1.1 Retrenchment	<i>"We only kept the staff that have been here for a long time. All the people that came in recently were asked to leave and um...sadly enough it wasn't a nice thing to do but that is the law of averages. The lesser the business. The lesser the staff."</i>	
		<i>"...as a result we had to let a lot of staff go".</i>	
		<i>"We had to place staff on short time. And I think it has contributed greatly or added to our problems of unemployment."</i>	
			<i>"We had to reduce stuff."</i>
	1.2 Downsize Business	<i>"So the termination of the Eskom programme, to put it in perspective saw the closure of many businesses...so to stay alive we reduce the size of our operations which meant reductions and cost cutting."</i>	
		<i>"The decision we took was to downsize. Naturally we got to downsize because if we don't we got to close down."</i>	
	1.3 Excess Equipment	<i>"...extra equipment that we were not even using...it's going to waste."</i>	
		<i>"We bought extra machinery and important tools to create for the new move. The swing in the market. Then left with it all."</i>	
	2. Financial Cost	2.1 Decrease in Sales	<i>"Okay, prior to the rebate company period, we um...our normal business was increased 100% when the rebate kicked in. Okay...so our business doubled when the solar water rebates kicked in. But since the rebate has been discontinued we have dropped at least 80% of our business in terms of sales."</i>
<i>"...it was very sudden the actual demand in sales drop drastically, to give you an indication towards the end and peak or the actual Eskom rebate programme sales were running from anywhere between 20 and 30 units per month and that's suddenly dropped to 1 and 2 units."</i>			
<i>"...sales dropped from anywhere of 20 to 30 units to an average of about 3 units per month."</i>			
<i>"Hoping that something would happen to revive this drop in sales in the industry."</i>			
<i>"...everything else decreased with the sales. Like your workforce."</i>			

		<i>"It definitely did create a problem for our sales so much so that I think some of the players in terms of competitors and the other solar water heating companies have to diversify in order to stay alive."</i>
		<i>"We have learnt the art of diversifying a long time ago. As I said we have been in the solar water heating industry since the 1980's when the industry died we did other things, other things meaning aligned to the plumbing industry, we got involved in doing plumbing installations, general plumbing problems like burst pipes, supply and installation of electric geysers and involved in general plumbing."</i>
		<i>"...rush of clients during the month of April, in fact the month of April was one of our best month, in terms of turnover and sales. For consumers to try take advantage of the rebate programme before it ended."</i>
	2.2 Loss on Investment	<i>"As a businessman that has this investment into your business with all this extra equipment that you didn't need prior to the subsidy coming in um...it was a disadvantage to business owners. Because they catered for the demand and suddenly the demand was taken away. So we in debt ourselves in a situation where we over catered."</i>
		<i>"to date...we haven't totally been able to fill the gap of investing our money and resources into the programme."</i>
		<i>"It has a huge impact on the South African economy as well."</i>
3. Emotional Reaction	3.1 Level of Stress	<i>"Very high levels of stress, we fought the closure, we intervened, interacted with the Energy Society of South Africa who our spokesperson between the industry and Eskom. We wrote letters to Eskom and SEESA but we had little or no reaction, so then we knew we could not rely on this program or to get any assistance."</i>
		<i>"it was like we were clutching at straws not knowing what to do"</i>
		<i>"It was a stress for us, because we got new machines that we have to pay for. You've got more staff that you have to pay, you've got added meterage in you premise."</i>
	3.2 Level of Anger	<i>"...as I said it impacted negatively on everything."</i>
		<i>"To understand the mechanics. How important it is to have water. To have alternative energy. When they just started, they stopped the whole thing."</i>
		<i>"It upset and caused me anger as we prepared for this boom in the market."</i>
		<i>"clueless and unaware"</i>

Annexure B: Consent form

To whom it may concern,

My name is Kerushen Pillay and I am a student at Varsity College, Durban North. I am currently conducting research under the supervision of Donna Page about

The Solar Water Heating Managers Experiences of Eskom's Decision to Terminate the Solar Water Heating Rebate Programme

I hope that this research will enhance our understanding of the information gap regarding the termination of the Eskom subsidy programme and the impact it has had on the solar water heating industry. This research study will be of beneficial importance to all plumbing and solar water heating businesses in the Durban area and furthermore to South Africa as a whole. In addition the contribution of the research study will assist government authorities and educational institutions to build on knowledge.

I would like to invite you to participate in my study. In order to explain to you what your participation in my study will involve, I have formulated questions that I will try to fully answer so that you can make an informed decision about whether or not to participate. If you have any additional questions that you feel are not addressed or explained in this information sheet, please do not hesitate to ask me for more information. Once you have read and understood all the information contained in this sheet and are willing to participate, please complete and sign the consent form below.

What will I be doing if I participate in your study?

I would like to invite you to participate in this research because your insight and understanding of the Solar Water Heating (SWH) Industry is crucial to the understanding of the SHW industrial and business impact as a result of Eskom's terminated Subsidy Programme. If you decide to participate in this research, I would like to conduct an in-depth interview asking questions regarding the experience of SWH managers/owners as a result of the termination of the SWH Rebate Programme.

You can decide whether or not to participate in this research. If you decide to participate, you can choose to withdraw at any time or to decide not to answer particular interview questions.

Are there any risks/ or discomforts involved in participating in this study?

Whether or not you decide to participate in this research, there will be no negative impact on you. There are no direct risks or benefits to you if you participate in this study. You might, however, indirectly find that it is helpful to talk about your role and active participation in the solar water heating industry. If you find at any stage that you are not comfortable with the line of questioning, you may withdraw or refrain from participating.

Do I have to participate in the study?

- Your inclusion in this study is purely voluntary;
- If you do not wish to participate in this study, you have every right not to do so;
- Even if you agree to participate in this study, you may withdraw at any time without having to provide an explanation for your decision.

Will my identity be protected?

I promise to protect your identity. I will not use your name in any research summaries to evolve out of this research and I will also make sure that any other details are disguised so that nobody will be able to identify you. I would like to ask your permission to record the interviews, but only my supervisor, I and possibly a professional transcriber (who will sign a confidentiality agreement) will have access to these recordings. Nobody else, including anybody at Varsity College, Durban North, will have access to your interview information. I would like to use quotes when I discuss the findings of the research but I will not use any recognisable information in these quotes that can be linked to you.

What will happen to the information that participants provide?

Once I have finished all interviews, I will write summaries to be included in my research report, which is a requirement to complete my IIE Bachelor of Commerce Honours in Management. You may ask me to send you a summary of the research if you are interested in the final outcome of the study.

Thereafter the raw data will be destroyed.

What happens if I have more questions about the study?

Please feel free to contact me or my supervisor should you have any questions or concerns about this research, or if there is anything you need to know before you decide whether or not to participate.

You should not agree to participate unless you are completely comfortable with the procedures followed.

My contact details are as follows:

Kerushen Pillay

(082) 709 3747

pillaykerushen@gmail.com

The contact details of my supervisor are as follows:

Donna Page

(074) 203 4701

donnapage.psychology@gmail.com

Consent form for participants

I, _____, agree to participate in the research conducted by Kerushen Pillay about The Solar Water Heating Managers Experiences of Eskom's Decision to Terminate the Solar Water Heating Rebate Programme.

This research has been explained to me and I understand what participation in this research will involve. I understand that:

1. I agree to be interviewed for this research.
2. My confidentiality will be ensured. My name and personal details will be kept private.
3. My participation in this research is voluntary and I have the right to withdraw from the research at any time. There will be no repercussions should I choose to withdraw from the research.
4. I may choose not to answer any of the questions that are asked during the research interview.
5. I may be quoted directly when the research is published, but my identity will be protected.

Signature

Date

Consent form for audio-recording

I, _____, agree to allow Kerushen Pillay to audio record my interviews as part of the research about The Solar Water Heating Managers Experiences of Eskom's Decision to Terminate the Solar Water Heating Rebate Programme

This research has been explained to me and I understand what participation in this research will involve. I understand that:

1. My confidentiality will be ensured. My name and personal details will be kept private.
2. The recordings will be stored in a password protected file on the researcher's computer.
3. Only the researcher, the researcher's supervisor and possibly a transcriber (who will sign a confidentiality agreement) will have access to these recordings.

Signature

Date

The Solar Water Heating Managers Experiences of Eskom's Decision to Terminate the Solar Water Heating Rebate Programme

Interview with managers/owners of SWH businesses in Durban, South Africa.

Interview Questions (Qualitative Research)

1. How long have you been involved in the SWH industry?
 - What has it been like thus far?
2. Eskom terminated the SWH Rebate Programme in April 2015.
 - What impact/effect did this decision have on your business?
 - What happened to your business?
3. What positive and negative experiences can you expand on as a result of Eskom's decision to terminate the SWH Rebate Programme?
 - Expand
4. What type of challenges did the termination of the programme create for your company?
 - Elaborate
 - What decisions were taken?
5. How did you feel when Eskom announced the termination of the SWH Rebate Programme?
 - Moral
 - Emotionally

Annexure D: Ethical clearance



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28 June 2017

Student name: Kerushen Pillay

Student number: 13012722

Campus: Varsity College Durban North

Re: Approval of Bachelor of Commerce Honours in Management Proposal and Ethics Clearance

Your research proposal and the ethical implications of your proposed research topic were reviewed by your supervisor and the campus research panel, a subcommittee of The Independent Institute of Education's Research and Postgraduate Studies Committee.



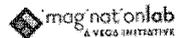
Your research proposal posed no significant ethical concerns and we hereby provide you with ethical clearance to proceed with your data collection.



There may be some aspects that you still need to address in your proposal. If this is the case, feedback will be provided to you in writing. You will need to address these aspects in consultation with your supervisor.



In the event of you deciding to change your research topic or methodology in any way, kindly consult your supervisor to ensure that all ethical considerations are adhered to and pose no risk to any participant or party involved. A revised ethical clearance letter will be issued in such instances.



We wish you all the best with your research!



Yours sincerely,



Donna Page
Supervisor

Leigh de Wet
Campus Postgraduate Coordinator



Directors: RJ Douglas (UK), JDR Oesch (non-executive), A Isaakidis (non-executive) **Company Secretary:** C Koopman

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Annexure E: Originality report