PERCEIVED SUITABILITY, PERSONALITY TRAITS, COMMUNICATION CHANNEL AND ADOPTION OF GRID ELECTRICITY BY SMALL FIRM ENTREPRENEURS IN KAGADI TOWN COUNCIL

BY

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DECLARATION

I Kisira Daniel declare that this dissertation is my original work and has not been presented for a degree in any other university or higher learning institution and that all the references or materials used for the study have been duly acknowledged.

Signature…….Date……

APPROVAL

This dissertation has been submitted for review with my approval as university supervisor.

Dr. Muhammed Ngoma

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Dr. Levi Kabagambe

Signature……. Date…….

DEDICATION

This work is dedicated to my wife Lydia and children Daniela, Briana, Elijah and Keren. I thank them for their prayers and support during the study period.

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I thank my supervisors Dr. Ngoma Mohammed and Dr. Levi Kabagambe for the professionalism, patience and warm encouragement accorded especially in the times when crossing the bridge seemed so near yet too far. I also thank the entire academic family of Makerere University Business School for the positive work they are doing in enabling the future.

Finally I thank the almighty God for allowing me the wonderful experience and joy of seeing the dissertation come to a positive end.

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ACRONYMS

CVI	Content Validity Index
EIS	Electrification Impact Survey
ERA	Electricity Regulatory Authority
ERT	Energy for Rural Transformation
FESL	Ferdsult Engineering Services Ltd
GoU	Government of Uganda
IEA	International Energy Agency
MEMD	Ministry of Energy and Mineral Development
NDP	National Development Plan
REA	Rural Electrification Agency
RESP	Rural Electrification Strategy and Plan
SPSS	Statistical Package for Social Sciences

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ABSTRACT

This study examined the relationships between perceived suitability, personality traits, communication channel and adoption of grid electricity by small firm entrepreneurs in Kagadi town council. Despite the Government's efforts to increase access to grid electricity in the rural areas such as Kagadi town council for socio economic transformation, less than 10% of the originally intended users make a connection after two years of electrification. Adoption was conceptually linked to perceived suitability, personality traits and communication channel.

The objectives of the study were; to examine the relationship between perceived suitability and adoption of grid electricity, to examine the relationship between personality traits and adoption of grid electricity, to examine the relationship between communication channel and adoption of grid electricity and to establish the effect of perceived suitability, personality traits and communication channel on adoption of grid electricity. The study employed a cross – sectional survey design using quantitative methods, drawing a sample of 201 entrepreneurs from Kagadi town council. Primary data were collected using closed ended questionnaires and SPSS was used to analyze data. The methods of data analysis used were descriptive statistics, the point-biserial correlation and the logistic regression analysis.

From the findings obtained, perceived suitability has a significantly positive relationship with adoption of grid electricity. The results of the study also show that there is no significant relationship between personality traits and adoption of grid electricity. Finally, results have shown that there is no significant relationship between communication channel and adoption of grid electricity. The recommendations of the research are adoption of grid electricity may be increased by placing emphasis on building the perceived suitability of the intended users. Grid electricity should also be designed to be suitable and fit the needs of the users.

CHAPTER ONE

INTRODUCTION

1.0 Background of the Study

The creation of an enabling environment is essential for the performance of small firm entrepreneurs (Namatovu, Bulunywa, Kyejusa &Dawa, 2011). Drucker (1996) defines an entrepreneur as one who organizes, manages and assumes the risks of a business. The provision of physical infrastructure such as grid electricity supply to rural areas presents new opportunities which if adopted and exploited lead to improvements in firm productivity and employment creation thereby transforming rural livelihoods (Barnes, 2007). According to Rogers (2003), adoption of new technologies varies among users as decisions to adopt or not to adopt are affected by factors such as perceived suitability of the technology by the intended users to their needs, the personality traits of the users and the communication channels used to disseminate the new technology information to the users.

Bush (2006) argues that small firm entrepreneurs have their own desires, abilities, histories, preferred technologies and needs which have to be appreciated as new innovations are introduced. Suitability of the technology to user needs is perceived through relative advantage, compatibility and complexity (Roger, 2003). Small firm entrepreneurs being central to the performance of their firms are usually crucial decision makers for the adoption of innovations (Robinson, 2009). The small firm entrepreneurs' personality traits, such as need for achievement, tolerance for ambiguity, risk taking and locus of control may therefore play a crucial role in their small firm related decisions (Antoncic, Bratkovic, Singh & De Noble, 2008). Because new technology innovations are generally positively evaluated, little emphasis is placed on the importance of communication in adoption of the technology (Bush, 2006). Adoption of

innovation involves risk and uncertainty hence the communication channels such as mass media and interpersonal communication chosen to disseminate the new technological information affects adoption decisions (Robinson, 2009).

In an attempt to create an enabling environment for small firm entrepreneurs, the government of Uganda is currently extending grid electricity supply, through the national rural electrification strategy and plan as one of the ways of providing affordable and reliable modern energy to rural areas with the objective of achieving 100% national access by 2035. This will be a great leap from the present 4% rural access which is still below the African and global rural access rates of 22.7% and 63.2% respectively (International Energy Agency, 2012). These efforts are however being hampered by the findings that only about 10% of the anticipated rural consumers make connection in the first two years after electrification in Uganda (Ministry of Energy and Mineral Development (MEMD), 2010). This has led for calls from some social activists for a review of the national poverty alleviation strategy to reduce the present emphasis on rural electrification and prioritize other intervention measures like provision of health and education services (Kamugisha, 2012). Before grid electricity was provided to Kagadi town council, the community leadership described lack of reliable electricity supply as one of the major hindrances of development to the area (Rukere, 2006). However a performance review undertaken after two years of operation revealed low adoption of electricity as one of the major problems faced by the utility operator (Ferdsult Engineering Services Limited, 2009).

Persistence of the low adoption of grid electricity is likely to affect the sustainable supply of electricity to rural areas thereby jeopardizing achievement of the targeted 100% national access by 2035.

1.1 Statement of the Problem

Despite the government of Uganda's efforts to increase grid electricity access to rural areas, anecdotal evidence shows that the adoption of electricity is low. Only about 10% of the anticipated consumers make a connection after two years of electrification (MEMD, 2010). The low adoption of grid electricity may be attributed to poor perceived suitability of grid electricity by intended users to their needs, personality traits that do not support adoption and ineffective communication channels used to disseminate information on grid electricity.

1.2 Purpose of the Study

The purpose of the study was to examine the relationship between perceived suitability, personality traits, communication channel and adoption of grid electricity by small firm entrepreneurs in Kagadi town council.

1.3 Objectives

The specific objectives of the study were;

i. To examine the relationship between perceived suitability and adoption of grid electricity

ii. To examine the relationship between personality traits and adoption of grid electricity

iii. To examine the relationship between communication channel and adoption of grid electricity

iv. To establish the effect of perceived suitability, personality traits and communication channel on adoption of grid electricity

1.4 Research Questions

i. What is the relationship between perceived suitability and adoption of grid electricity?

ii. What is the relationship between personality traits and adoption of grid electricity?

iii. What is the relationship between communication channel and adoption of grid electricity?

iv. What is the effect of perceived suitability, personality traits and communication channel on adoption of grid electricity?

1.5 Significance of the study

i) The research findings are expected to provide policy makers in the energy sector with information useful for planning and implementing future rural electrification projects.

ii) The study findings are expected to be of value to the private sector utility companies contracted by government to manage the rural electrification grids as the results of the study provide feedback information essential for service delivery improvement and increasing adoption of grid electricity.

iii) The study findings are intended to contribute to the existing body of research knowledge on entrepreneurship and adoption of energy technologies in developing economies.

1.6 Scope of the Study

Subject Scope: The study was restricted to personality traits, perceived suitability and communication channel as independent variables while adoption of grid electricity was the dependent variable. The research limited itself to examining relationships between the variables.

Geographical Scope: The study was carried out in Kagadi town council which is a rural area located in Kibaale district in Uganda. Kagadi town council was the first rural area to be

electrified under the national Rural Electrification Strategy and Plan that was put in place in 2001. It was also the first area in Uganda to use the prepaid meter system and to be managed by a non UMEME distribution concessionaire that is Ferdsult Engineering Services Limited. The above characteristics were designed to improve quality of supply and customer service making the area a model for future reference.

Time Scope: The study was cross sectional and only businesses found operational during the research period were considered under the study.

1.7 Conceptual Framework

The conceptual frame work depicted in figure 1 below shows the relationship between the independent variables (Personality Traits, Perceived Suitability, and Communication Channel) and the dependent variable (Adoption of Grid Electricity). This frame work suggests that perceived suitability, personality traits and communication channel are important factors in the successful adoption of grid electricity.

Figure showing the conceptual framework of the study

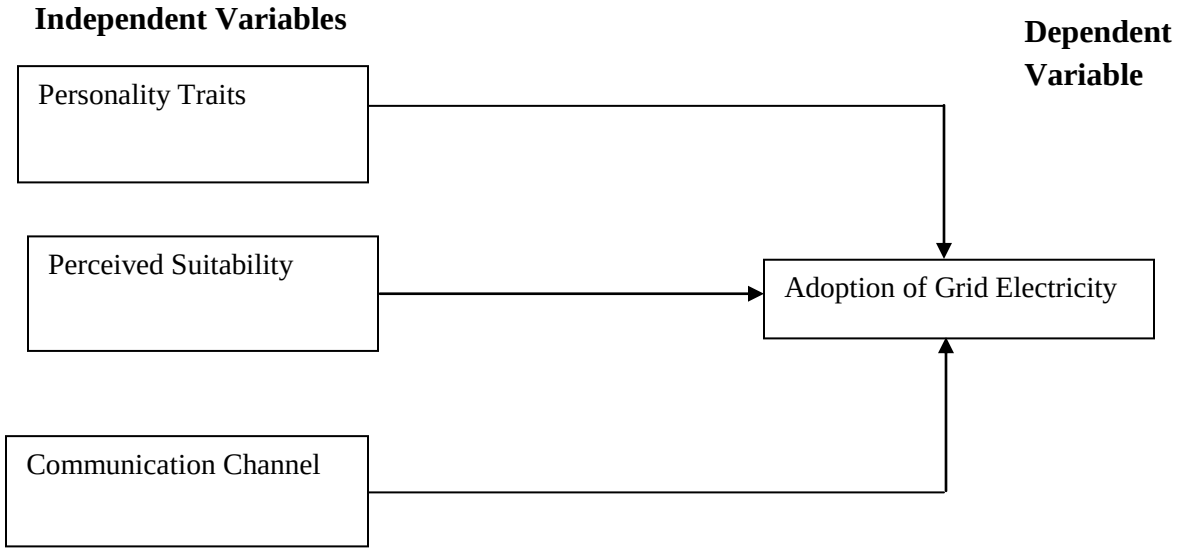

Figure 1: Conceptual framework adopted from the works of Roger (2003) & Robinson (2009)

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This section reviews the related literature on the study variables in relation to the study objectives as put forward by various researchers and scholars. It begins by defining and discussing the key research concepts followed by the relationships between the independent and dependent variables.

2.1 Grid Electricity

Lack of reliable and affordable electricity supply in rural areas is considered as one of the main reasons for the imbalance in socio-economic development between rural and urban areas. According to Ezor (2009), without reliable electricity access many communities struggle to obtain the resources necessary to lift themselves out of the static state thereby slowing down economic and social transformation. The process of providing electrical power to rural and remote areas of a given country is referred to as rural electrification (Barnes, 2007). Rural electrification is achieved through either installation of isolated single user systems or grid electricity systems where a network of electricity distribution systems are installed to supply closely located premises through a single source of supply. Grid electricity is generally the most preferred form of rural electrification as it provides the least cost solution as well as serving a multitude of people at the same time thereby creating homogenous exposure to the opportunities and advantages offered by electricity (Maleko, 2006).

Rural electrification forms an integral part of the Government of Uganda's (GoU) wider rural transformation and poverty eradication agenda (MEMD, 2010). The GoU is currently extending grid electricity supply through the national rural electrification strategy and plan (RESP) as one

of the ways of providing affordable and reliable modern energy to rural areas with the objective of achieving 100% national access by 2035. This will be a great leap from the present 4% rural access which is still below the African and global rural access rates of 22.7% and 63.2% respectively (International Energy Agency, 2012). The RESP was originally made on the assumption that as long as government provided the enabling environment, there would be private sector investment in rural electrification projects; however, this did not materialize (MEMD, 2010). While there is some degree of private sector interest in utility operation of completed projects, this is not the case for grid extension. Many projects have failed to demonstrate that, over time, they can be financially viable to the private sector (MEMD, 2010). It is therefore important that efforts are put in place to improve the present electricity adoption rates in the electrified areas in order to address the viability question.

2.2 Adoption of Grid Electricity as a Technological Innovation

Two concepts, diffusion and adoption characterise the debate on the spread of technology and the role of innovation in the evolution of economic systems (Scandizzo & Savastano, 2010). According to Carr (2000), adoption refers to the stage in which a technology is selected for use by an individual or an organization. Innovation is an idea, practice or object that is perceived as new by an individual. Roger (1995) defines diffusion as "the process by which an innovation is communicated through certain channels overtime among the members of a social system." In order to explain diffusion, Rogers (1995) presented four adoption/diffusion theories anchoring this study, that is, the innovation decision process theory, the individual innovativeness theory, the perceived attributes theory and the rate of adoption theory.

In the Innovation decision process theory, Rogers (1995) states that diffusion is characterised by four major stages, that is, awareness, interest, evaluation, and adoption. Thus according to this

interpretation, adoption is the final step of the diffusion process and involves decision making. Diffusion and adoption are therefore two related processes referring respectively to collective spread and individual choice (Carr, 2000).

In the individual innovativeness theory, Rogers (1995) states that individuals who are risk takers or otherwise innovative will adopt an innovation earlier in the continuum of adoption/diffusion. Thus according to this interpretation, individual's personality traits have a role to play in the adoption process. In the perceived attributes theory, Rogers (1995) states that there are five attributes upon which an innovation is judged, that is, it has an advantage over other innovations or present circumstance (relative advantage), that it is not overly complex to learn (complexity), that it fits in or is compatible with the circumstances into which it will be adopted (compatibility), that it can be tried out (triability), and that the results can be observed (observability). Research has however consistently found that compatibility, complexity and relative advantage are the important antecedents to the adoption of innovations (Bradford & Florin, 2003). Thus according to this interpretation perceived suitability has a role to play in the adoption process. In the rate of adoption theory, Rogers (1995) states that diffusion takes place overtime with innovations going through a slow, gradual growth period, followed by dramatic and rapid growth, and then a gradual stabilization and finally a decline. The communication channel therefore used to spread the technology innovation has a role to play in early adoption.

Energy use is common to all sectors of small scale enterprise, and the use of modern energy for a new enterprise activity or switch from traditional to modern energy form the major technological changes in small scale enterprise that are currently taking place in developing countries (Barnett, 2000). For the developing country context, Lall (1993) uses the term innovation to indicate adoption of technologies which are new to the specific developing country and industry context.

This lall (1993) posits is more relevant for the industrial development than the "global conventional" new innovations. In small scale industries in rural areas, the innovations occurring are typically adoption of proven technologies, which are new to the entrepreneur.

Grid electricity is perceived by people in rural areas as new and therefore becomes an innovation (Müggenburg, 2011). Innovations are dimensioned into symbolic and technological innovations. Symbolic innovations imply a new social meaning, while technological innovations result in a change within a group of products (Hirschman, 1982). Grid electricity access is not widespread in rural areas, therefore technological dimension is high. Due to improvements in daily life resulting from productive use, symbolic dimension should also be high. According to Kooijman (2008), adoption of grid electricity as a technological innovation differs according to the firm and industry sector. Rogers (2003) suggests that innovations should not be looked at in isolation but rather the individual users must be in consideration when considering issues of adoption and diffusion. This study takes the small firm entrepreneur in rural areas as its focal point, since it is this type of individual that is most important for the creation of livelihoods and diversification of opportunities for the rural population.

Wickham (2006) points that a common criterion of differentiating an entrepreneur from a non entrepreneur is that the person should have started their own business. This as Wickham (2006) suggests, is quite specific and easy to observe and confirm. According to the employee size classification of the World Bank, companies which have 0 to 50 employees are classified as small firms, 51 and 200 employees as medium firms, and more than 200 employees as large firms (Burcu & Tinar, 2009). In the classification of firms by age, Namatovu et al. (2011) classifies firms that have been in operation for less than three and a half years as young firms while firms that are in operation for more than three and half years are established firms.

2.3 Personality Traits

Rogers (1995) introduced the concept of adopter categories as a classification of individuals within a social system on the basis of the rate at which they adopt new innovations. The categories of adopters are innovators, early adopters, early majority, late majority, and laggards. According to Robinson (2009) each of the adopter personalities is very different. It is vital to address one at a given time because it is not possible to address them all at once. Innovators are the first 2.5% of the individuals in a system to adopt an innovation. Venturesomeness is almost an obsession with innovators; innovators must be able to cope with a high degree of uncertainty about an innovation at the time of adoption. Innovators are not normally integrated in the local system and they play an important role of importing the innovation from outside the systems boundaries (Robinson, 2009).

Early adopters are the next 13.5% of the individuals in a system to adopt an innovation. Early adopters are a more integrated part of the local system than are innovators. Early adopters are often opinion leaders and serve as role models for many other members of the social system. According to Robinson (2009), early adopting individuals tend not to be different in age but have greater empathy, greater ability to deal with abstractions, greater rationality, a greater ability to cope with uncertainty and risk, higher aspirations, more contact with other people, greater exposure to both mass media and interpersonal communication channels and engage in more active information seeking.

Early majority is the next 34% of the individuals in a system to adopt an innovation. The early majority adopt new ideas just before the average member of a system. The early majority interact frequently with peers but seldom hold positions of opinion leadership in a system. The early majority may deliberate for some time before completely adopting a new idea. Late majority is

the next 34% of the individuals in a system to adopt an innovation. The late majority adopt new ideas just after the average member of a system. Adoption may be the result of increasing network pressures from peers. Innovations are approached with a sceptical and cautious air, and late majorities do not adopt until most others in their system have done so. Laggards are the last 16 % of the individuals in a system to adopt an innovation. They possess almost no opinion leadership. Decisions are often made in terms of what has been done previously. Laggards tend to be suspicious of innovations and change agents.

Robinson (2009) notes that adoption efforts must be concentrated on early adopters as they form the critical mass which occurs at the point at which enough individuals have adopted an innovation that the innovation's further rate of adoption becomes self sustaining. This study looks at the personality traits of small firm entrepreneurs as being similar to the characteristics of the early adopter category. Entrepreneurs have been reported in personality and psychological research as exhibiting unique traits that distinguish them from others. These traits could have different implications on their technology adoption (Ndubisi, 2005). The term entrepreneur was first introduced by Richard Cantillon who defined the entrepreneur as the agent who buys means of production at certain prices in order to combine them into products that he is going to sell at prices that are uncertain at the moment at which he commits himself to his costs (Carland, Hoy, Baulton & Carland, 1984). Zimmerer and Scarborough (2006) define an entrepreneur as a one who creates a new business in the face of risk and uncertainty for the purpose of achieving profit and growth by identifying significant opportunities and assembling the necessary resources to capitalize on them. Drucker (1996) defines the entrepreneur as one who organizes, manages and assumes the risks of a business. According to Davidson (1989), the entrepreneur is a change agent in the economy. Entrepreneurs see things differently. They are usually eternally optimistic

and see opportunity where others despair (Davidson, 1989). Carland et al. (1984) also suggests that entrepreneurs are opportunistic, innovative, creative, imaginative and proactive, as change agents they are ideas people whose judgment differs from the norm. In the context of this study, a small firm entrepreneur is defined as one who organizes, manages and assumes the risks of a business whose total number of employees does not exceed fifty.

Personality theories of entrepreneurship consider that it is the personality of individuals that explains their actions. The simplest theory suggests that it is the possession by individuals of traits that predisposes them towards entrepreneurship behavior (Bridge, O'Neil & Cromie, 1998). Traits can relate to motives, temperament, style and ability. Different researchers have come up with many different personality traits that are essential for being an entrepreneur. However a single set of personality traits that explains the entrepreneur does not exist (Wickham, 2006). It is therefore more appropriate to accept the view that there is a continuum along which several types of entrepreneurs belong (Carland et al., 1984). Bonnett and Furnham (1991) identify four personality traits, that is, need for achievement, tolerance for ambiguity, risk taking and locus of control which were analyzed and found to be correlates of being or desiring to be an entrepreneur.

Need for achievement is defined as a tendency to choose and persist at activities that hold a moderate chance of success or a maximum opportunity of personal satisfaction without the undue risk of failure McClelland (1961, as cited in Okhomina, 2009). Individuals with a high need for achievement exhibit strong behavior traits such as, taking personal responsibility for finding solutions to problems, setting moderate achievable goals and demanding concrete feedback regarding performance (Okhomina, 2009). Entrepreneurs have a high need for achievement which stimulates them into action (Bridge et al., 1998). When entrepreneurs

accomplish something they consider to be worthwhile, their self esteem is enhanced and they are encouraged to seek other demanding assignments. Hence entrepreneurs are constantly on the lookout for challenges (Bridge et al., 1998).

Rotter (1966, as cited in Okhomina, 2009) defined Locus of Control as an individual's perception about the underlying main causes of events in his/her life. People with internal locus of control believe that they can control what happens in their lives. Rotter (1966, as cited in Bridge et al., 1998) designated those persons who feel in control as 'Internals' and those not in control as 'externals'. 'Internal' declarations emphasize the importance of ability, hard work, determination and planning in achieving outcomes and their outlook is epitomized by the statement the 'what happens to me is my own doing' (Bridge et al., 1998). Entrepreneurs believe that they personally make things happen in a given situation and under play the importance of luck and fate.

Budner (1962, as cited in Okhomina, 2009) defined tolerance for ambiguity as the tendency to perceive ambiguous situations as desirable, whereas intolerance for ambiguity was defined as the tendency to perceive ambiguous situations as sources of threat. An ambiguous situation is one in which the individual is provided with information that is too complex, inadequate, or apparently contradictory (Norton, 1975, as cited in Okhomina, 2009). The person with low tolerance of ambiguity experiences stress, reacts prematurely, and avoids ambiguous stimuli. On the other hand, a person with high tolerance of ambiguity perceives ambiguous situations/stimuli as desirable, challenging, and interesting and neither denies nor distorts their complexity of incongruity. Entrepreneurs tend to have a high tolerance for ambiguous, ever changing situations, the environment in which they most often operate (Zimmerer & Scarborough, 2006).

Risk Taking is the perceived probability of receiving rewards associated with the success of a situation that is required by the individual before he or she will subject himself/herself to the consequences associated with failure, the alternative providing less reward as well as less severe consequences than the proposed situation (Brockhaus, 1980, as cited in Okhomina, 2009). According to Bridge et al. (1998), risk taking tendencies are characteristic of entrepreneurs although there is debate about whether they take high, moderate or calculated risks. Entrepreneurs continuously seek business opportunities without being concerned about the necessary resources. They take a chance on resources and consider that profits shall be forthcoming. Entrepreneurs therefore need to have the capacity to tolerate risks in terms of personality and resources to cope with any failure (Bridge et al., 1998). Entrepreneurs are calculated risk takers who access situations thoroughly and do not pursue options which they consider to have a small probability of success (Drucker, 1996). Bridge et al., (1998) however conclude that possession of personality traits is not necessarily sufficient for a person to act in an entrepreneurial manner especially when it implies taking the initiative in business formation and development. What is also needed may be the resource with which to act and a trigger to start it.

2.4 Perceived Suitability

Bush (2006) argued that individuals and communities have their own desires, abilities, histories and preferred technologies and this needs to be appreciated as new technologies are introduced in communities. Suitability is the degree to which something or someone has the right qualities for a particular purpose. According to Robinson (2009), new products must continuously change so that they become better fits for the needs of individuals and groups. In their study, Bradford and Florin (2003) found that compatibility, complexity, and relative advantage as the most important antecedents to the adoption of technological innovations.

Relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes by a particular group of users, measured in terms that matter to those users, like economic advantage, social prestige, convenience, or satisfaction (Robinson,2009). It indicates the degree to which a person feels rewarded or disadvantaged in adopting an innovation or a new technology (Pandey & Yadama, 1992). The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption is likely to be. Compatibility with existing values and practices is the degree to which an innovation is perceived as being consistent with the values, past experiences, and needs of potential adopters (Müggenburg, 2011). An idea that is incompatible with their values, norms or practices will not be adopted as rapidly as an innovation that is compatible. Incompatibility with cultural values leads to problems in terms of social acceptance. Complexity of use is the degree to which an innovation is perceived as difficult to understand and use. New ideas that are simpler to understand are adopted more rapidly than innovations that require the adopter to develop new skills and understandings (Ndubisi, 2005). Perceived Suitability could imply grid electricity offering relative advantages over other competing alternative forms of energy for example reduced cost of production, reduced health hazards, increased quality and reliability, or grid electricity being compatible to existing strategies and practices for example need for quality improvement, need for labour reduction and increased profitability or grid electricity being perceived as not complex and easy to use for example no need to employ additional technical staff or training of existing staff (Kooijman, 2008).

A decision maker will invest in a new technology if this helps reduce the causes of uncertainty he has to face and when the expected marginal benefits are larger than the costs he has to sustain. The adoption of a new technology can be conceived as resulting from a fine balancing act

between its profitability and the individual's attitude towards the risk associated with it (Scandizzo & Savastano, 2010). An impressive set of empirical evidence among the early literature of new technology adoption has shown that people in developing countries are risk averse and tend therefore to delay the decision to adopt a new technology (Müggenburg, 2011).

Rural electrification plays a crucial but indirect role in the development process through its contribution to increased productivity (Barnes, 2007). Various studies in India and Bangladesh have brought out that investments in rural electrification were instrumental in enabling farmers to adopt new technologies in agriculture and promoted the growth of the economy. This, in turn, not only led to increases in the productivity and income of the poor, small and marginal farmers, among others, but also resulted in providing more employment to the landless labourers both in agriculture and non-farm activities. Kooijman (2005) evaluated the socio-economic impact of rural electrification in Bangladesh for the areas that had been electrified three years earlier and established that 82% of the respondents for the small enterprises running on grid power had their income and production levels increase threefold over a period of three years, and that this subsequently had a positive implication on the household sizes, health status, and education commitment. Mapako and Prasad (2007) established a positive and strong correlation between rural electrification and employment levels among the rural country inhabitants in the electrified villages of Zimbabwe.

Despite the advantages that electricity brings, its perceived suitability varies among individual users. According to Badri (2003), if rural electrification is left to grow without any directional inputs, uses which might bring economic development to an area are slow to emerge. A study undertaken in Namibia showed that the share of households with home-based income generating activities was highest among un-electrified households. Furthermore, few home- based

enterprises use electricity for income generating activities, and when they do, mainly make use of electricity only for lighting. None of the businesses using electricity started after rural electrification and hence electricity service could not have been the driving factor behind the establishment of the new micro-enterprise (Wamukonya & Devis, 2001). Kjellstrom (1992) found that small businesses in rural Tanzania did not depend on grid electricity for operation, but mainly used charcoal, firewood, kerosene and diesel. Further studies need to be conducted since the findings do not show why enterprises located in the place where an electricity service is available have not been connected and do not use the services for production, and why those connected to the services do not use electricity for income generating activities.

2.5 Communication Channel

Roger (1995) defines a communication channel as the means by which messages get from one individual to another. All change inherently rests on the spread of new ideas. These new ideas may be technological innovations in agriculture or new manufacturing techniques, which involves changing human behavior by communicating new ideas. According to Rogers (1995) there are two different kinds of communication channels, that is, mass media and interpersonal communication channels (Rogers, 2003).

Mass media channels include broadcast and print media. Interpersonal channels can be described as a face-to-face exchange of information between individuals. Interpersonal communication is defined by Rogers (1995) as a type of communication that occurs between or among a small group of communicators usually in two face setting with opportunity for immediate feedback. In order to inform people about new innovations and create a state of awareness, communication through mass media is fastest and most effective Rogers (2003). Although mass media can reach a very large audience, this channel is able to change only weakly held attitudes towards the

innovation. Changing strongly held attitudes is the advantage of interpersonal channels, especially in persuading an individual to adopt an innovation (Müggenburg, 2011). Most individuals evaluate an innovation not on the basis of scientific research by experts but through the subjective evaluations of near peers who have adopted the innovation (Robinson, 2009). Bridge et al (1998) point that even if for instance government assistance is made available to encourage small business development, it may be designed to add a positive influence but it is unlikely to work if it does not outweigh other existing negative influences. If friends when consulted are negative in their advice, this advice will be far more influential than any positive input from government agencies.

2.6 Perceived Suitability and Adoption of Grid Electricity

Technologies as environmental structures are socially constructed and shape behavior in turn (Torniski, 2003). Experiences determine behavior and perception of individuals. Hence, perception and evaluation are often habits, developed over many years (Müggenburg, 2011). Grid electricity as a modern energy is an established part of development and industrialization policies. However, understanding of linkages between supply of grid electricity and the actual use of the grid electricity is lacking (Fishbein 2003). Robinson (2009) argues that instead of focusing on persuading individuals to change, the focus should be on the evolution of products so that they become better fits for the needs of the individuals. The successful development and dissemination of grid electricity is reliant on its suitability and subsequent acceptance by the rural communities in need of energy (Bush, 2006).

In their study on adoption of energy saving stores, Pandey and Yadama (1992) found that relative advantage for a new stove should be noticeable for its successful adoption by rural women. They also found that social and cultural compatibility of the new stove technology is a

major factor in determining the level of use of the new stove. Kimberly (2004) noted that even though a social system thinks highly of an innovation, it does not necessarily mean that they are going to adopt it. Kimberly (2004) believes that before adoption occurs, the potential adopter must have a specific application for the innovation. Most rural households and small scale enterprises still largely depend on traditional fuels such as firewood, candles and kerosene to cover their energy needs. A rural electrification impact survey aimed at examining the socio-economic impacts of rural electrification in the country on private households and businesses indicated that households and small businesses tend to use a range of fuels and do not necessarily or immediately switch to electricity for all energy services Gwyer (2008).

In his study Carr (2000) concludes that in addition to a strong stable advocacy needed to ensure the conditions necessary for technology adoption and diffusion, training in its technical aspects and applications to real needs is crucial to its integration beyond the innovators and early adopters. If the technology is perceived as difficult to learn and /or too time consuming to prepare and use, or in some other way perceived as threatening, it probably will not be used. Kooijman (2008) in his study of adoption of grid electricity in the Himalayas state found that small scale firms that are young in age tended to adopt more than older firms due to their growth ambition and flexibility in their operations.

2.7 Personality Traits and Adoption of Grid Electricity

Sitkin (2001) believes that organizational behavioral change has its base in individual behavior and there is a strong link between individual and organizational behavior. That a change in behavior can more easily be expected when there is both a positive personal attitude and a positive personal environment. Ndubisi (2005) argues the fact that entrepreneurs have a high need for achievement and such a desire to succeed may explain why they tend to adopt new

innovations. In other words, the need to achieve goals causes the relative advantage offered by the new innovation to overshadow a technology perceived as complex, thereby ensuring that the system is adopted. Lakhanpal (1994) reveals that personality traits of individuals in key positions have significant impacts on explaining differences in the degree of innovation adoption.

A common aspect of innovation and diffusion literature is the implicit assumption that entrepreneurs perceive innovation as beneficial for their enterprise. King and McGrath (1999) pointed out that some people in rural areas are pushed to operate small firms by a lack of viable alternatives. Examples to this include landless households or people living in unfavorable agro-climate conditions. In his study in the Himalayan state in India Kooijman (2008) found out that entrepreneurial traits can be a drawback for adoption of grid electricity as some entrepreneurs stated that they could not justify investing in a new technology as they did not have the money and the market that was big enough to earn an investment back.

2.8 Communication Channel and Adoption of Electricity

Knowledge of a new technology innovation is crucial to its adoption. It is likely that individuals may reject an innovation because they lack knowledge about it or lack technical knowledge in general or both (Pandey & Yadama, 1992). According to Bush (2006), technology provision alone will not provide additional income for rural communities nor raise their standard of living. Promoting new innovations as suitable technologies to their values and practices using appropriate communication channels is essential.

Roger (2003) states that the stages through which a technological innovation passes are knowledge where users are exposed to its existence and understanding its functions, persuasion where users form a favorable attitude to it, decision where users commit to its adoption, implementation where it is put to use and confirmation where its use is reinforced based on

positive outcomes from it. Mass media channels are relatively more important at the knowledge stage whereas interpersonal channels are relatively more important at the persuasion stage. An innovation might be adopted without this knowledge, but a continuous misuse of it may cause a later rejection of the innovation (Sahin, 2006). The mass media communication channel used to spread knowledge about an innovation may suffice to early adopters who are always on the lookout for advantages and tend to see risks as low. Often they will grasp at innovations on the basis of no more than a well worded news article where the rest of the population require assurance from trusted peers that an innovation is doable and provides genuine benefits (Robinson, 2009).

The entrepreneurial process involves gaining access to gathering of scarce resources from the environment through personal network of the entrepreneur (Kanungo, 1998). Aldrich (1991, as cited in Kanungo, 1998) observes that social networks of entrepreneurs may facilitate or constrain their activities and are often a crucial component of an entrepreneurial venture. In their study, Jack and Anderson (2002) attempted to show how entrepreneurs manipulate constraints in their specific environments and profit from them. Their findings portray a context where personal and social relationships are an important platform for developing and exploring opportunities. Tornikoski (2002) emphasizes that the outcome of the entrepreneurship process is contingent on the environment. “Humans may have a free-will, but only in a limited sense: environment constructs 'a room', inside where humans can freely act” (Tornikoski, 2002).

Robinson (2009) highlights the importance of peer-peer conversations and peer networks. He argues that adoption of new products or behaviors involves the management of risk and uncertainty. It is usually only the people we personally know and trust and who we know have

successfully adopted the innovations themselves who can give us credible reassurances that our attempts to change won't result in embarrassment, humiliation, financial loss or wasted time.

According to Scandizzo and Savastano (2010), adoption depends on whether and how communication among individuals within the community occurs and in particular whether individuals communicate more easily with people who are homophilic (similar to them) or heterophilic (different from them). The empirical evidence is ambiguous with some pointing towards a major flow of information from higher status groups to lower strata. Rogers (1995) discusses the challenge of compatibility with existing cultures and beliefs in Peru where the implementation of water boiling to obtain higher health and wellness levels of the individuals living within the village of Los Molinas was failed by the belief that only the sick and unwell consume boiled water. Those who boiled their drinking water were not accepted by society. This failure better exemplified the importance of the roles of the interpersonal communication channels that are involved in such a health-related campaign for social change.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This section spells out how the study was conducted. It describes the research design used for the study, the survey population of the study, and all the steps undertaken to select the sample, collect data and carry out data analysis. The details of each step are presented in the sub-sections below.

3.1 Research Design

The cross sectional survey design using quantitative research approach was adopted for the study

3.2 Study Population

A study population of 426 small firm entrepreneurs whose firms require electricity in their operations and have fixed locations in Kagadi town council, Kibaale district was used. The population consisted of 31 small firm entrepreneurs from the manufacturing sector, 332 from trade sector and 63 from the leisure and hospitality sector. The sampling frame used was the register of firms located in Kagadi town council as detailed in the national census of business establishments 2010, conducted by the Uganda National Bureau of standards.

Only small firm entrepreneurs whose firms are located within a radius of 50 meters from the nearest electricity grid distribution line were considered for the study as these are deemed to have access to electricity. Kagadi town council has been chosen because the area has been exposed to grid electricity since March 2007 which is sufficient time for the adoption process. Kagadi also provides an ideal rural context since it is located more than 50km from the nearest tarmac highway.

3.3 Sample Size and Sampling Procedure

A sample size of 201 small firm entrepreneurs was determined using the Krejcie & Morgan's table as cited in Amin (2005). Proportionate stratified random sampling technique is used to select a representative sample from the population. The small firm entrepreneurs were stratified into three major types according to the nature of their businesses; manufacturing (agro processing, metal fabrication, and carpentry), trade (whole sale, retail, saloons, clinics, tailoring and motor repair garages) and leisure and hospitality (hotels, restaurants, camping sites, entertainment centre and bars). Stratification of the SMEs is required because the small firms are not homogenous; they have different characteristics and different needs; some depend more on electricity services for their operation than others.

Table 3.1: Study Population and Sample Size

Stratum	**Population**	**Sample**
Manufacturing	31	15
Trade	332	157
Leisure and Hospitality	63	29
Total	**426**	**201**

3.4 Data Collection Instruments

The study used self-administered questionnaires as the main data collection instrument. In cases where the respondent expressed inability to use the self-administered questionnaire then the instrument was researcher administered. Quantitative data was collected for the independent variables, that is, perceived suitability, personality traits and communication channel while qualitative data was collected for the dependent variable that is adoption of grid electricity.

3.5 Measurement of Variables

- Adoption of grid electricity was measured in respect to grid connection status as suggested by Kooijman (2008) who urged that technological innovations should be measured by actual usage rather than intention to use. The measurement was therefore done using a discrete dichotomous scale by determining whether the small firm entrepreneur is connected to grid electricity (Yes =1) or not connected (No = 0).

- Communication Channel was measured in respect to mass media and interpersonal communication as suggested by Robinson (2009) and Kimberly (2004). Five point likert scales ranging from 1 (strongly disagree) to 5 (strongly agree) were used to measure the extent of agreement pertaining to mass media and interpersonal communication questions.

- Perceived Suitability was measured in respect to Relative advantage, Compatibility and Complexity as suggested by Robinson (2009) and Bradford & Florin (2003). Five point likert scales ranging from 1 (strongly disagree) to 5 (strongly agree) were used to measure the extent of agreement pertaining to relative advantage, compatibility and complexity questions related of grid electricity.

- Personality traits was measured in respect to need for achievement, tolerance for ambiguity, risk taking and locus of control as suggested by Okhomina (2009). Five point likert scales ranging from 1 (strongly disagree) to 5 (strongly agree) were used to measure the respondent's extent of agreement to the personality traits questions.

3.6 Validity and Reliability of the Research Instrument

Closed questionnaires were developed in harmony with the guidelines suggested by Amin (2005). Validity of the instrument was obtained by seeking guidance from the supervisors. Pre-testing of the items contained in the questionnaire was done through pilot samples from the respondents which helped in improving the quality of the content of the questionnaire by re-phrasing some of the questions and maintaining the questions that were deemed relevant. The Content Validity Index (CVI) was also computed using the formulae below and found to be satisfactory (CVI > 0.5). CVI = the ratio of the number of relevant questions to the total number of questions in the questionnaire

To check reliability of the instrument, the researcher tested for inter – item consistency to ensure that there is consistency of respondent's answers to all items in the measures of perceived suitability, personality traits and communication channel. The test for reliability of the instrument was carried out using Cronbach's internal consistency and reliability test, via the Cronbach's coefficient or alpha (α) suggested by Cronbach (1946). Variables with high alpha reliabilities (α) were considered. After running the Cronbach's alpha using SPSS, the coefficient (alpha) for each variable was as follows; 0.74 for perceived suitability, 0.71 for personality traits and 0.6 for communication channel. All the items were therefore considered under each of the variables (perceived suitability, personality traits and communication channel) since the coefficients are high (> 0.5) hence consistency among the items under each variable (perceived suitability, personality traits and communication channel) and ultimately, it was concluded that the research instrument passed the test of reliability.

3.7 Data Analysis

Primary data on perceived suitability, personality traits, communication channel and adoption of grid electricity were compiled, sorted, edited, coded and entered into Statistical Package for Social Sciences (SPSS). Data analysis was also done using SPSS and the analysis was carried out based on the specific objectives of the study. Descriptive statistics were used to analyze the characteristics of the sampled population

To examine the relationship between each of the independent variables (perceived suitability, personality traits, and communication channel) and the dependent variable (adoption of grid electricity), the Point-biserial correlation analysis was used. This analytical technique was considered suitable considering the fact that adoption of grid electricity is a discrete dichotomous variable with no continuum between the two categories of adoption (adoption = 1 and No adoption = 0).

The effect of the perceived suitability, personality traits, and communication channel on adoption of grid electricity was established using logistic regression analysis. This analytical technique was considered appropriate since the independent variables (perceived suitability, personality traits, and communication channel) were measured using a continuous scale while the dependent variable (adoption of grid electricity) was measured using a discrete dichotomous scale.

The model used for estimating this effect is as given on the next page

$$P(Y) = 1/ (1 + e^{-(b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3)})$$

Where,

P(Y)	-	is the probability of Y occurring
Y	-	is the dependent variable (adoption of grid electricity)
X_1	-	is the independent variable (perceived suitability)
X_2	-	is the independent variable (personality traits)
X_3	-	is the independent variable (communication channel)
b_0	-	is the constant
b_1	-	is the coefficient (or weight) attached to that predictor (X_1)
e	-	is the base of natural logarithms

3.8 Ethical Considerations

A formal letter introducing the researcher was presented to the respondents before the research was conducted in the study area. Only information relevant for the research was sought. Before commencing each interview session, the respondents were assured of confidentiality that all data that would be gathered during the research would be used for academic purposes only.

CHAPTER FOUR

PRESENTATION AND INTERPRETATION OF FINDINGS

4.1 Introduction

This chapter presents and discusses the results of the study. Foremost the characteristics of the sample are presented. This is followed by findings on the research objectives that the study sought to achieve. The specific objectives of the study that were addressed include;

i. To examine the relationship between perceived suitability and adoption of grid electricity

ii. To examine the relationship between personality traits and adoption of grid electricity

iii. To examine the relationship between communication channel and adoption of grid electricity.

iv. To establish the effect of perceived suitability, personality traits and communication channel on adoption of grid electricity

4.2 Characteristics of the Sample

The characteristics of the sample, which were considered relevant to the study, were position held in the business, age of the business, type of business, number of employees in the business, ownership of business premise, age of respondent, gender of respondent, and respondent's highest level of education. The results are presented in the tables 4.1 – 4.8 below.

4.2.1 Position held in the Business

Table 4.1: Frequency distribution table showing position held by respondent in business

Category	Frequency	Valid Percent	Cumulative Percent
Owner	63	31.3	31.3
Manager	55	27.4	58.7
Owner-Manager	83	41.3	100.0
Total	201	100.0	

Source: Primary Data

Table 4.1 above shows that 41.3% of the respondents were owners who managed their firms, 31.3% were owners who delegated the management of their firms to someone else and 27.4% were employees who held the position of manager and were responsible for management of the business on behalf of the business owners. The results indicate that the majority of the respondents (72.6%) are owners of their firms.

4.2.2 Age of Business

Table 4.2: Frequency distribution table showing Age of business

Category	Frequency	Valid Percent	Cumulative Percent
Less than 3 years and 6 months	103	55.4	55.4
More than 3 years and 6 months	83	44.6	100.0
Total	186	100.0	

Source: Primary Data

Table 4.2 above indicates that 55.4% of the respondents who indicated were from businesses that had been in operation for less than 3 years and 6 months, while 44.6% of the respondents were from businesses had operated for more than 3 years and 6 months. This shows that the majority of the respondents were from businesses that are considered new. This finding further reveals that most of the enterprises started operations after grid electrification.

4.2.3 Types of Business

Table 4.3: Frequency distribution table showing respondents type of business

Category	Frequency	Valid Percent	Cumulative Percent
Retail	30	15.1	15.1
Whole Sale	32	16.1	31.2
Saloons	16	8.1	39.3
Clinics/Pharmacy	8	4.0	43.3
Stationery/Computer Center	22	11.1	54.4
Tailoring	15	7.5	61.9
Motor Repair Garages	10	5.0	66.9
Agro Processing	4	2.0	68.9
Metal Fabrication	6	3.0	71.9
Carpentry	5	2.5	74.4
Hotel	8	4.0	78.4
Restaurant	6	3.0	81.4
Camping Ste	3	1.5	82.9
Guest House	1	0.5	83.4
Bar	8	4.0	87.4

Entertainment Center	3	1.5	89.9
Other	22	11.1	100.0
Total	199	100.0	

Source: Primary Data

Results in the table 4.3 above show that 66.9% of the respondents are from the trade sector (that is whole sale, retail, saloons, clinics, and tailoring and motor repair garages), 14.5% belong to leisure and hospitality sector (that is hotels, restaurants, camping sites, entertainment centre and bars), 7.5% of the respondents are in the manufacturing sector (that is agro processing, metal fabrication, and carpentry), while the 11.1% belong to businesses not classified in the study. The indication of the results is that most of the respondents (66.9%) belong to the trade sector.

.4.2.4 Number of Employees in the Business

Table 4.4: Frequency distribution table showing respondents business number of employees

Category	Frequency	Valid Percent	Cumulative Percent
None	53	26.5	26.5
1-50	144	72.0	98.5
51-200	3	1.5	100.0
Total	200	100.0	

Source: Primary Data

Results in table 4.4 show that the majority of the respondents (72.0 %) are from businesses that employ 1 – 50 workers, 26.5% of the respondents are from businesses that have no employees while 1.5% employ between 51 and 200 workers. The results indicate that 98.5% of the respondents' businesses were small firms.

4.2.5 Ownership of Business Premise

Table 4.5: Frequency distribution table showing respondents ownership of business premise

Category	Frequency	Valid Percent	Cumulative Percent
Owned	97	48.7	48.7
Rented	102	51.3	100.0
Total	199	100.0	

Source: Primary Data

Table 4.5 shows that most of the respondents (51.3%) are from businesses that operate in rented premises while 48.7% of the respondents are from businesses that are owned by the business owner.

4.2.6 Age of Respondent

Table 4.6: Frequency distribution table showing respondents' age

Category	Frequency	Valid Percent	Cumulative Percent
18-24 years	29	14.4	14.4
25-34 years	72	35.8	50.2
35-44 years	57	28.4	78.6
45-54 years	35	17.4	96.0
55 and above	8	4.0	100.0
Total	201	100.0	

Source: Primary Data

Majority of the respondents (35.8%) were aged between 25 – 34 years, 28.4% were aged 35 – 44 years, 17.4% were aged 45 – 54 years, 14.4% were aged 18 – 24 years and 3.98% were aged between 55 and above years. These results show that majority of the respondents (81.6%) were aged between 25 years and 54years. This implies that the majority of the respondents may be conducting business as a career choice since they are above the age where they are expected to have completed formal education (24years) and have not yet reached the retirement age of 55years.

4.2.7 Gender of Respondent

Table 4.7: Frequency distribution table showing gender of respondent

Category	**Frequency**	**Valid Percent**	**Cumulative Percent**
Male	111	56.1	56.1
Female	87	43.9	100
Total	198	100.0	

Source: Primary data

The table 4.7 above shows that 56.1% of the respondents were male while 43.9% were female. The results show that although the male respondents were more than the female respondents, there is a gender balance among the respondents.

4.2.8 Respondents Highest Level of Education

Table 4.8: Frequency distribution table showing respondent's highest level of education

Category	Frequency	Valid Percent	Cumulative Percent
Completed primary or less	31	15.6	15.6
Completed O level or less	49	24.6	40.2
Completed A level or less	44	22.1	62.3
Some college or university not completed	18	9.1	71.4
Completed college/ university	57	28.6	100.0
Total	199	100.0	

Source: Primary Data

The table 4.8 above shows that pertaining to the educational level of the respondents; 28.6% completed college/university, 24.6% completed "O" level (UCE) or less, 22.1% completed "A" level (UACE) or less, 15.6% completed primary or less, and 9.1% reached some college/university but did not complete. The findings show that most of the respondents had general education.

4.3 Research findings related to the objectives of the Study

This section provides and analyses results of the study according to the research objectives. The relationships between the independent variables (Personality Traits, Perceived Suitability, and Communication Channel) and the independent variable (Adoption of Grid Electricity) were examined using the Point-biserial correlation analysis which is recommended for determining the relationship between continuous independent variables and discrete categorical dependent variables. The results are presented in table 4.9 below.

Table 4.9: Results of the Correlation Analysis

	Mean	Standard Deviation	Perceived Suitability	Personality Traits	Communication Channel	Adoption of Grid Electricity
Perceived Suitability	3.71	0.35	1			
Personality Traits	3.56	0.32	0.351(**)	1		
Communication Channel	3.40	0.59	0.385(**)	0.463(**)	1	
Adoption of Grid Electricity	0.88	0.32	0.399(**)	.020	0.097	1

** Correlation is significant at the 0.01 level (2-tailed).
Source: Primary Data

4.3.1 Relationship between Perceived Suitability and Adoption of Grid Electricity

The findings in table 4.9 above revealed that there is a positive significant relationship between perceived suitability and adoption of grid electricity ($r = 0.399^{**}$, P value < 0.01). This shows that the higher the small firm entrepreneurs' perceived suitability, the more likely they are to adopt grid electricity.

4.3.2 The relationship between Personality Traits and Adoption of Grid Electricity

The study revealed that there is no significant relationship between personality traits and adoption of grid electricity ($r = 0.020$, P value > 0.01). This implies that the possession of the need for achievement, tolerance for ambiguity, locus of control and risk taking personality traits is not a guarantee that a small firm entrepreneur will adopt grid electricity.

4.3.3 The relationship between Communication Channel and Adoption of Grid Electricity

The findings of the study shown in table 4.9 reveal that there is no significant relationship between communication channel and adoption of grid electricity ($r = 0.097$, P value > 0.01). This implies that a small firm entrepreneur does not necessarily need to receive information through an established communication channel to adopt grid electricity.

4.3.4 The effect of Perceived Suitability, Personality Traits and Communication Channel on Adoption of Grid Electricity

The purpose of the objective was to determine which of the independent variables (perceived suitability, personality traits, and communication channel) significantly predicts the dependent variable (adoption of grid electricity). This was done by conducting a logistic regression analysis. This analytical technique was considered appropriate because the analysis involved continuous data (perceived suitability, personality traits, and communication channel as the independent variables) and discrete categorical data (adoption of grid electricity as the dependent variable). Table 4.10 on the next page presents the results of the logistic regression

Table 4.10: Results of the logistic regression analysis

Variable Included	**B**	**Std. Error**	**Wald**	**Sig**	**Exp(B)**	**95.0% C.I for EXP(B)**	
						Lower	**Upper**
Constant	-10.568	3.997	6.992	.008	0.000		
Communication Channel	- 0.222	0.596	0.138	0.710	0.801	0.249	2.576
Perceived Suitability	4.392	0.946	21.539	0.000	80.788	12.673	515.025
Personality Traits	- 0.628	1.079	0.339	0.561	0.534	0.064	4.421
Model Summary							
-2log likelihood	96.043						
Nagelkerke R square (R^2_N)	0.305						

$X^2 = 30.231$, df = 3, sig = $0.000 < 0.05$

From table 4.10, only the variable perceived suitability significantly predicated adoption of grid electricity (wald statistic = 21.593, B = 4.392, P < 0.05). Communication channel was not a significant predictor of adoption of grid electricity (B = - 0.222, P > 0.05). The Personality traits variable was also not a significant predictor of adoption of grid electricity (B = - 0.628, P > 0.05). As suggested in the table 4.10 above, the model is a significant fit of the data (-2log likelihood = 96.043, $X^2 = 30.231$, df =3, sig = $0.000 < 0.05$).

The predictive power of the model was assessed using the Wald statistic with the Negelkerke's R square (R^2_N) suggested by Field (2009). As provided in table 4.10, the value of R^2_N is 0.305 implying that Perceived suitability explains 30.5% of the variations in adoption of grid electricity.

CHAPTER FIVE

DISCUSSION OF THE RESULTS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter discusses the findings of the study and draws conclusions from which recommendations are derived. The limitations of the study and suggestions for further research are also presented.

5.1 Discussion of the Findings

Discussion of the findings is based on the results obtained based on the study objectives and in relation to the literature reviewed.

5.1.1 Relationship between Perceived Suitability and Adoption of Grid Electricity

The study established a significant positive relationship between perceived suitability and grid electricity. This implies that the higher the perceived suitability by small firm entrepreneurs the more likely they will adopt grid electricity. Small firm entrepreneurs in Kagadi town council are more likely to adopt grid electricity if they perceive it as offering relative advantages over other competing alternative forms of energy for example reduced cost of production, reduced health hazards, reliability and social prestige, or if the grid electricity is compatible to existing strategies and values for example need for quality improvement, need for labour reduction and increased profitability or if the grid electricity is perceived as not complex and simple to integrate into the existing business formation.

This finding is consistent with prior studies that found that compatibility, complexity, and relative advantage are important antecedents to the adoption of technological innovations (Bradford & Florin, 2003).

The findings are also further consistent with the works of Bush (2006) who argues that the successful development and dissemination of grid electricity is reliant on its suitability and subsequent acceptance by the rural communities in need of energy (Bush, 2006). It can therefore be concluded that there is a positive relationship between perceived suitability and adoption of grid electricity.

5.1.2 Relationship between Personality Traits and Adoption of Grid Electricity

The findings of the study indicated that there is no significant relationship between personality traits and adoption of grid electricity. This implies that the small firm entrepreneurs in Kagadi town council do not adopt grid electricity because of possessing particular personality traits such as need for achievement, tolerance for ambiguity, risk taking and locus of control. This result surprisingly contradicts the works of Rogers (1995) who introduced the concept of adopter categories as a classification of individuals within a social system on the basis of the rate at which they adopt new innovations and Robinson (2009) who argued that each of the adopter personalities is very different and that it is vital to address one at a given time because it is not possible to address them all at once. The findings further contradict the works of Lakhanpal (1994) who posited that personality traits of individuals in key positions have significant impacts on explaining differences in the degree of innovation adoption.

However the study finding is consistent with Kooijman (2008) who in his study in the Himalayan state in India found out that entrepreneurial traits can be a drawback for adoption of grid electricity as some entrepreneurs stated that they could not justify investing in a new technology as they did not have the money and the market that was big enough to earn an investment back. Bridge et al., (1998) also concluded that possession of personality traits is not necessarily sufficient for a person to act in an entrepreneurial manner especially when it implies taking the initiative in business formation and development. Wickham (2006) further argues that a single set of personality traits that explain the entrepreneur does not exist and Carland et al. (1984) conclude that it is therefore more appropriate to accept the view that there is a continuum along which several types of entrepreneurs belong.

The study results also point to the works of King and McGrath (1999) who found out that some people in rural areas are pushed to operate small firms by the lack of viable alternatives. Hence some of their decisions may be driven by external factors such as need for basic survival rather than intrinsic factors such as personality traits. Furthermore Tornikoski (2002) emphasizes that the outcome of the entrepreneurship process is contingent on the environment. “Humans may have a free-will, but only in a limited sense: environment constructs 'a room', inside where humans can freely act” (Tornikoski, 2002). It can therefore be concluded that personality traits are not significant to adoption of grid electricity.

5.1.3 Relationship between Communication Channel and Adoption of Grid Electricity

The study revealed that there is no significant relationship between communication channel and adoption of grid electricity. This implies that the communication channel used to disseminate information on the advantages and benefits of using grid electricity does not necessarily

influence the decision to adoption of grid electricity by the small firm entrepreneur in Kagadi town council. This study finding is in contrast with the works of Rogers (1995) who emphasizes the importance of communication channel in the adoption of innovations. Furthermore the study result contradicts the finding of Bush (2006) who argued that technology provision alone will not provide additional income for rural communities nor raise their standard of living but rather promoting new innovations as suitable technologies to their values and practices using appropriate communication channels is essential.

The study finding is however point to the works of Robinson (2009) who urged that although communication channels are important to the adoption of innovations, early adopters are an exception to this rule. This is because early adopters generally see risks as low, are more personally confident, and are better informed about the product. Entrepreneurs have various sources of communication channels that may be outside the established mass media and interpersonal communication channels. This may include private networks outside the immediate businesses environment and personal research in search for business synergies.

The finding further points to the works of Okhomina (2009) who argues that entrepreneurs have a high locus of control that may drive them towards selfishness and self centeredness in search of personal success, this may cause the small firm entrepreneur to trust their own judgment more than the information received through the established communication channels. Furthermore, according to Bush (2006) grid electricity is generally positively evaluated thereby leading to the use of inappropriate communication channels which may not be trusted by the small firm entrepreneurs. It can therefore be concluded that there is no relationship between communication channel and adoption of grid electricity.

5.1.4 The effect of Perceived Suitability, Personality Traits and Communication Channel on Adoption of Grid Electricity

The findings of establishing the combined effect of the independent variables (perceived suitability, personality traits and communication channel) on the dependent variable (adoption of grid electricity) revealed that only perceived suitability significantly affects adoption of grid electricity. The results of study further reveal that perceived suitability predicts adoption of grid electricity by 30.5%. This implies that although perceived suitability significantly affects adoption of grid electricity by small firm entrepreneurs, there could be other factors that contribute to adoption of grid electricity but were not covered under the study.

This result is in concurrence with the literature as Bradford and Florin (2003) found that attributes of perceived suitability that is compatibility, complexity, and relative advantage are the important antecedents to the adoption of technological innovations. The results also support the works of Kimberly (2004) who established that perceived suitability alone may not predict adoption of grid electricity. Kimberly (2004) noted that even though a social system thinks highly of an innovation, it does not necessarily mean that they are going to adopt it. Kimberly (2004) believes that before adoption occurs, the potential adopter must have a specific application for the innovation.

5.2 Conclusions

The study sought to examine the relationship between perceived suitability, personality traits, communication channel and adoption of grid electricity by small firm entrepreneurs in Kagadi town council. The following conclusions are drawn from the results of the study:

In respect to the study objective of examining the relationship between perceived suitability and adoption of grid electricity, there is a significant positive relationship between perceived suitability and adoption of grid electricity by small firm entrepreneurs in Kagadi town council.

In respect to the study objective of examining the relationship between personality traits and adoption of grid electricity, there is no significant relationship between personality traits and adoption of grid electricity by small firm entrepreneurs in Kagadi town council.

In respect to the study objective of examining the relationship between communication channel and adoption of grid electricity, there is no significant relationship between communication channel and adoption of grid electricity by small firm entrepreneurs in Kagadi town council.

In respect to the study objective of establishing the effect of perceived suitability, personality traits and communication channel on adoption of grid electricity, only perceived suitability significantly affects adoption of grid electricity by small firm entrepreneurs in Kagadi town council.

5.3 Recommendations

Rural access to grid electricity is an important part of the growth strategy in Uganda and is gaining increasing recognition. This is evidenced by the initiatives and strong commitment by government and donors towards rural electrification projects in Uganda. Hence based on the conclusions of the study, the following recommendations are proposed:

As a measure to increase the adoption of grid electricity, efforts should be concentrated on building the perceived suitability of its intended users. The utility companies operating rural electricity schemes should highlight the benefits grid electrification brings to the intended users. These advantages may be relative advantage over the other existing alternative forms of energy, compatibility to the existing values and practices, and ease to use. The utility companies should not assume that the advantages are obvious to the intended users. In addition, the government of Uganda should work to continuously ensure that grid electricity is genuinely suitable to the needs of the users. This can be done by first understanding the needs of the users and then designing the grid electricity in such a way that it fits the needs of the users. Regular reviews to obtain lessons on factors affecting suitability of grid electricity in already electrified areas should also be conducted.

Because the study results showed that personality traits are not significantly related to adoption of electricity, training should be emphasized to build perceptions of users towards grid electricity as anyone can adopt grid electricity irrespective of the personality trait they possess. The government of Uganda in conjunction with the utility companies should put measures in place like interactive radio talk shows, focus group discussions, visual aids like posters, and use of local leaders to disseminate information on the synergies created by using grid electricity.

As a measure to increase the rate of adoption in future rural electrifications projects, the government of Uganda should target small firm entrepreneurs as the anchor for achieving the critical mass of grid electricity users. This is because the study results show that the small firm entrepreneurs in Kagadi town council perceive grid electricity as being suitable to their needs.

5.4 Limitations of the study

The study was based on quantitative data collection methods using a closed ended self administered questionnaire as the main data collection tool. Some respondents found it difficult to respond to items that involved the likert scale. This was however overcome by researcher explanation to the concerned respondents on how the responses were required. Furthermore some respondents were not familiar with the English language since it is not frequently used in their daily operations. This might have hindered the quality of data collected by introducing some errors. To mitigate this challenge, research assistants with a good command of the local language were used to overcome the language barrier. In cases were the self-administered questionnaire was not practical, the researcher administered the questionnaire.

The study limited its self to measuring adoption of grid electricity by current grid connection status that is whether a respondent was using grid electricity at the time of the study or not. It did not consider respondents who had discontinued their adoption and it did not consider the extent of utilization as these were outside the scope of the study.

5.4 Future Research

Perceived suitability was found to predict adoption of grid electricity by 30.5%. Further studies should be conducted in future to investigate the other factors that may influence the adoption of grid electricity.

This research study considered only one geographical area of Uganda. Similar research should be conducted in other geographical contexts to further examine the relationships between the study variables.

Communication channel though highly suggested in literature as being important to the adoption of grid electricity was not found to have a significant relationship with adoption of grid electricity by small firm entrepreneurs in Kagadi town council. Further research may be conducted using different study scopes and sample sizes to confirm this finding.

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APPENDIX

MAKERERE UNIVERSITY BUSINESS SCHOOL

QUESTIONNAIRE

Dear Respondent,

This research study is on adoption of Grid Electricity by small firm entrepreneurs in Kagadi town council. Results of this research are aimed at making a contribution to efforts towards improving access to grid electricity in rural areas. Please fill this questionnaire as completely as possible. All your responses will be used for academic purposes only and with total confidentiality. Thank you for participating and making this research a success.

1.0 Demographic profile of respondent (Please circle or tick as appropriate)

1.1 Position held in business

Owner	Manager	Owner-Manager

1.2 How long has this business been in operation?

(a) Less than 3 years and 6 months (b) More than 3 years and 6 months

1.3 Type of business

Retail	Whole Sale	Saloons	Clinics/ Pharmacy	Stationary/ Computer Centre	Tailoring	Motor Repair Garages	Agro Processing	Metal Fabrication

Carpentry	Hotel	Restaurant	Camping Site	Guest House	Bar	Entertainment Centre	Other (Please Specify)

1.4 Number of workers / employees in business

None	1- 50	51 - 200	Above 200

1.5 Ownership of business premise

(a) Owned (b) Rented

1.6 Age of respondent

(a) 18 – 24 years (b) 25 – 34 years (e) 55 and Above
(c) 35 – 44 years (d) 45 - 54 year

1.7 Gender of respondent

(a) Male (b) Female

1.8 What is your highest level of education?

(a) Completed Primary or less (b) Completed "O" levels or less
(c) Completed "A" levels or less (d) Some college or university not completed
(b) Completed college or university

2.0 Adoption of grid electricity by small firm entrepreneurs

2.1 Are you currently connected to grid electricity?

(a) Yes (b) No

In the section on the next pages (i.e. page3 and page4), please indicate by ticking in the appropriate box to what extent you agree or disagree to the statements.

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
3.0 Perceived Suitability					
Relative Advantage					
Grid electricity is more reliable than the other forms of electricity supply					
Grid electricity offers a cost advantage compared to other forms of electricity supply					
Load shedding cannot prevent me from connecting and using grid electricity for my business					
Using grid electricity gives an advantage over my competitors					
The quality of my products can increase if I use grid electricity					
My business can loose customers if I don't use grid electricity					
Overall grid electricity has more advantages than disadvantages					

Complexity					
I do not have the capacity to use grid electricity for my business operations					
I have to hire an extra person to help me operate machines that use grid electricity					
If I want to get a new connection the procedure is clear					
If I have a compliant, the office of the grid electricity supplier is easy to access					
I feel that it takes a lot of time to become skillful and adjust my business to using grid electricity					
Machines using grid electricity are difficult to use					
Overall I find using grid electricity easier than using the other forms of electricity e.g. solar and generators					
Compatibility					
I need little specialized training to use grid electricity					
I am able to use grid electricity without significantly changing the structure of my business					
I don't mind extending my work hours to night time					
My business is flexible, I can use grid electricity with other existing forms of energy that I currently use					
Using grid electricity fits well within my business plans					
My important customers expect me to have grid electricity					
Having a business using grid electricity improves my respect in society					
4.0 Personality Traits					
Need for Achievement					
I always do things before being asked or forced to by bad circumstances					
I try to expand my business					
I often compare my business with others in the same businesses in order to improve on the services/ products or out compete the competitors					
I often set myself challenging goals in order to meet my targets					
I constantly try to improve my business performance					
I want my business to grow as much as possible					
I perform best in competitive situations					
Tolerance for Ambiguity					
It is more fun to tackle a complicated problem than to solve a simple one					
I don't need to plan a lot to make a big business decision					
I like people who do things that are different from the usual					
Risk Taking					
I do not hesitate to put money into a business that could fail if there are profits					
I see risk-taking as an integral part of a challenging career					
I am willing to continue taking risk to ensure my businesses remains profitable					
I am willing to sale some of my assets to get grid connection					
I often take loans from financial institutions and other lenders for the business					
I often pursue a business idea even when the chance of succeeding is low					
I do not view risks in businesses as a situation to be avoided at all costs					

I often give business credit to my customers					
If my subordinate takes a risk and fails, he shouldn't be punished					
I enjoy taking risks)					
Locus of Control					
Failure in business is because of bad luck					
We suffer in life because of the mistakes we make					
The government is to blame for many of our business problems					
Becoming a success is a matter of hard-work; luck has little or nothing to do with it					
Getting a good deal depends mainly on being in the right place at the right time					
When I get what I want it is usually because I have worked for it					
My life is determined by my own actions					
5.0 Communication Channel					
I receive regular information about grid electricity					
Whenever I need important information about grid electricity, I am careful about the source of information (from where I get the information					
I get the important information I need about grid electricity from my friends					
I get the important information I need about grid electricity from the broadcast media e.g. radio and television					
I get the important information I need about grid electricity from the print media e.g. newspapers and posters					
I trust the important information I get from the broadcast and print media more than the information I receive from my friends and colleagues					
Overall I prefer to get information about electricity from my trusted friends and colleagues when making important decisions about grid electricity					