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STRATEGIC MANAGEMENT

MODERATING EFFECT OF SOLAR DEALER BUSINESS SIZE ON THE RELATIONSHIP BETWEEN STRATEGIC MANAGEMENT PRACTICE CRITICAL SUCCESS FACTORS AND GREEN MARKETING STATUS AMONG SOLAR ENERGY TECHNOLOGY DEALERS IN NAIROBI CITY COUNTY

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ABSTRACT

Purpose of Study: This study employed strategic management concept in analyzing and understanding the moderating effect of solar dealer business size on the relationship between strategic management practice critical success factors and green marketing status among solar energy technology dealers in Nairobi.

Problem Statement: The dominant position of the energy sector in supporting national economic growth while producing employment opportunities together with improved living conditions cannot be over emphasized. This is leading to substantial worldwide energy generation technology adoption. However, the increased generation of electrical power energy through un-environmentally friendly means and now the growing electronic waste from the alternative environmentally friendly means such as solar power energy means have just informed that the products at their end-of-life stage are creating major environmental problems.

Methodology: The research design employed descriptive elements and the EPRA (2022) recorded 521 solar energy dealer businesses in Nairobi as the target population. The study used 226 firms as participants which researchers selected in line with Krejcie & Morgan (1970) table specifics along with purposive selection of established solar energy dealers operating for at least five years. The research involved using open and closed-ended questionnaires that allowed the gathering of qualitative and quantitative data.

Result: The study found that technological, organizational, environmental, and individual factors significantly influence Green Marketing Strategy Status (GMSS), and that business size has a statistically significant moderating effect, albeit weak, in strengthening the relationship between these factors and GMSS among solar energy dealers in Nairobi, Kenya.

Recommendation: The study recommends that all the organizational factor indicators identified in the study be put into consideration when developing and implementing green marketing strategy and associated strategic management practices, especially for the solar energy technology market in Kenya.

Keywords: *eGovernment Initiative, Service quality, Manufacturing companies, Strategic Performance, Customer Loyalty, Customer satisfaction, Business size*

INTRODUCTION

According to Thompson and Davis (2023), a lot of attention has been given to an emerging requirement for technological innovative ideas to sustain practical applications. This study therefore is born under the same notion and operates in the strategic management of technological innovations domain because Lee and Gonzales (2021) have also observed that limited understanding of innovation processes results in insufficient effective management practices. Furthermore, from consumer point of view, these researchers maintain that innovation management requires solutions for intricate complicated systems which present unknown risks. From business dealers point of view, according to Johnson and Smith (2022) technological innovation extends beyond new technology deployment to include deploying new technologies for carving out market opportunities and gaining competitive advantage. Therefore, generally, strategic technology management practices stands as a process which develop new value by enhancing technologies while improving efficiency along with quality and performance according to Thompson and Davis (2023).

The national energy strategy in Kenya is directed by the Ministry of Energy and Petroleum through their objective to expand clean and affordable energy availability across the country. Until the 1970s Kenya started using renewable energy while today it constitutes a fundamental component of national energy policy to achieve universal citizen energy access by 2020 (World Bank, 2020). Solar energy accessibility faces ongoing difficulties according to George et al. (2019). Multiple e-waste management guidelines and legal instruments support the growing e-waste challenge in Kenya through the Environment Management and Coordination Act (EMCA, 1999) together with the Waste Management Regulation 2006 (Otieno & Omwenga, 2016). The guidelines established by Otieno and Omwenga (2016) have not resolved the shortage of appropriate disposal solutions. The Public Procurement and Disposal Regulation 2020 established a requirement for environmentally-friendly ICT equipment yet its implementation is slow so obsolete electronic devices now accumulate most prominently in public institutions. Most e-waste gets handled through informal means which requires a developed green marketing strategy between supply and demand stakeholders to properly address solar e-waste management according to Tasnim et al. (2022) and Otieno and Omwenga (2016).

The process of implementing technological innovation within strategic frameworks serves businesses to stay competitive in modern evolving environments while offering quality hence requires substantial strategic management efforts according to Lee and Gonzalez (2021). The integration between technology and organization demands a methodical strategic method to make sure new developments support enterprise goals and customer interests according to Patel and O'Brien (2020). According to Zhang and Liu (2019) organizations must therefore strategically identify technologies which improve business operations as well as products and services to gain competitive advantages. Furthermore, Rawat and Pande (2024) have documented the current rise of sustainability-oriented global market trends which have caused the emergence of new green marketing approaches designed to strategically support eco-

friendly products. Consumer demand for environmentally responsible choices now drives the market which makes green marketing strategy a fundamental component for modern business organizations strategic management practices.

Since strategic management practices are diverse and as many as the types of business activities, products and services, Rockart (1979) established the Critical Success Factors (CSFs) approach which multiple industries use to determine the few vital success elements. Recently, in the power energy domain, authors such as Hsiang-Yung (2012) confirms that CSFs exist universally within organizations devoted to energy operations while Stainforth and Staunton (1996) recognized five crucial factors for renewable technology deployment starting with project structure followed by competitive approach and environmental factors with leadership and challenges included. Furthermore, Mokan, Lee and Ramlan (2019) suggested that renewable energy projects require a thorough grasp of key success factors to maximize generation, transmission and distribution efficiency. Specifically, Mokan, Lee, and Ramlan (2019) pinpoint that renewable energy initiative CSFs aspects fall with social, technological, government, economic and environmental factors as they are fundamental success components.

The environmental sensitivity of solar energy professionals has led to green marketing strategy becoming a means to reduce problems such as environmental deterioration and pollutant threats (Tasnim et al., 2022). Green marketing strategic management practices describe the product lifecycle process of developing environmentally-friendly offerings according to Vilkaite-Vaitone and Skackauskiene (2019). The research applies this definition to determine the strategic management practice critical success factors that impact green marketing strategy implementation within Kenya's solar energy industry. This is because, in the solar energy industry, Mokan, Lee, and Ramlan (2019) suggest that the implementation of green marketing strategies in requires the CSFs identification first.

This study therefore sought to determine the strategic management practice critical success factors affecting green marketing strategy status but also the moderating effect of the solar energy business size on such relationships in Kenya with aim of offering practical recommendations for enhancing sustainable renewable energy solutions without worsening e-waste pollution. This is because research has shown that solar technology development requires organizations to adjust their business approach alongside changes to the sociotechnical system to not only maximize the energy production but also minimize e-waste accumulation that may result from the technology at their end of life (Irfan et al., 2021; Davis et al., 2013). Many reserachers have suggested that Public Science and Technology Institutions (STIs) must employ technological advancements through practical solutions that develop sustainable business environments (Bigliardi et al, 2020; Dodgson et al, 2014). The study output suggests developing a green marketing strategy managerial model for sustainable solar energy promotion in developing nations through facilitation of stakeholder collaboration managerial practices and business organizational attributes.

STATEMENT OF THE PROBLEM

It was reported that about 75 MT (metric tonnes) of solar waste are generated for every 1 MW of solar PV installed capacity (Weckend et al., 2016). It was also projected that this renewable waste would grow to about 60 million tonnes globally by 2030 as reported by IRENA (2019). Therefore, solar e-waste management has become a global hot issue because of global environmental degradation, the international community, the efforts of governments, the green movement and the impact of public media (Mokan, Lee and Ramlan, 2019). The UN efforts to take a green marketing strategy approach to address e- waste problem by linking e-waste to three of its SDGs and supporting the sustainable consumption and quantification of e-waste has not born much fruits (Bhutta, Omar & Yang, 2011). This demonstrates the critical role that

can be played by business organization attributes such as size and resources endowments. This is why Guarnieri, et al. (2020) suggest adoption of other organizational strategic management practices to make development sustainability more meaningful. Today, according to Vilkaite-Vaitone and Skackauskiene (2019), there are many well-known international solar energy technology companies attaching importance to Green marketing strategy as a sustainable development strategy for them. Yet, their attributes and their effects in green marketing strategy status are yet to be explored. In Kenya, none of solar companies' attributes are so far known, leave alone documentation of their green marketing strategy management practices, and if any exist, then such knowledge is scanty and without clear identification of the necessary CSFs.

Given the above situation, this study was therefore born with the assumption that green marketing strategy is the best option in managing solar energy technology EOL e-waste in Kenya. Vilkaite-Vaitone and Skackauskiene (2019) suggest that successful green marketing strategy implementation should be reflected in an organization's engagement in strategic, tactical, and operational marketing activities and processes that have a holistic aim to create, communicate and deliver products with the minimal environmental impact. Such a conceptualization was adopted in this study so as to hook in not only all the solar energy dealership stakeholders, but also determine their business sizes effects on determining their strategic management practices and the overall green marketing strategy implementation status. So far, no existing study has been done to examine the moderating effect of solar dealer business size on the relationship between strategic management practices and green marketing status among solar energy technology dealers in a developing world context. This study therefore employs strategic management concept in analyzing and understanding the moderating effect of solar dealer business size on the relationship between strategic management practice CSFs and green marketing strategic status among solar energy technology dealers in Nairobi, Kenya.

RESEARCH OBJECTIVE

The primary aim of the study was to investigate the moderating effect of solar dealer business size on the relationship between strategic management practice CSFs and Green Marketing Status among Solar Energy Technology Dealers in Nairobi.

THEORETICAL REVIEW

The key proposition of the RBT was that the exploitation of a firm's unique bundle of valuable rare, inimitable and non-substitutable resource was the fundamental source of superior long-term performance (Barney, 2011). The firm's resources are either tangible or intangible. Tangible resources include equity capital, retained earnings, plant and equipment debt capital, computer hardware and software, geographical location, robots or buildings. Intangible resources are such resources as human capital, organizational structure, organizational culture and organizational strategy & reputation (Barney, Corte, Sciarrelli & Arikan, 2012). There are two main assumptions of the RBT applied in this study. Firstly, RBT assumes that solar energy dealer firms and solar energy technology potential consumer households possess heterogeneous bundles of resources for deployment in green marketing strategy implementation. Secondly, RBT assumes that the resources endowed by a firm and households are either inelastic in supply or costly to imitate (Barney, 2011). In this way, the RBT was useful in explaining the solar energy dealer firm managers' exploitation of resources to drive long term customer technology adoption loyalty and subsequently create and capture incremental customer lock ins in the solar energy competitive market through green marketing strategy implementation. Depending on a solar energy supplier, potential user and situation, various resources have to be deployed in a green energy marketing strategic implementation activities for both the supply and the demand side mutual benefits. Using this theory, the

various solar energy technology green marketing strategy implementation CSFs resources will be understood.

Resource Dependence Theory on the other hand was a useful complementary lens through which to examine resource deployment (Bass & Chakrabarty, 2014), consumer and dealer dependence on new solar energy technology (Dunford, 1987), and the new value chain network interdependencies created by the long-term energy transition (Rossignoli & Lionzo, 2018). In contrast, while RBT assisted in mapping the critical resources deployed in support of green marketing strategy implementation, Resource Dependence Theory stresses the interdependence of solar energy stakeholders, as well as the power dynamics and resource-seeking motives of diverse actors (Cuervo-Cazurra & Li, 2020; Mohr et al., 2016). Solar module users depend on their distributors who in turn depend on the manufacturers for supplies and the government for regulation of the industry (Boute & Zhikharev, 2019). Resource Dependence Theory therefore provides novel insights into the green marketing strategy implementation interdependence issues as far as resources sharing are concerned and also the strategic roles dependence relationships.

Finally, the Dynamic Capabilities literature will also be used in looking at how solar energy dealers adapt to changing business environments in terms of competition, innovation and green energy policy and regulatory frameworks (Luo, 2000; Teece, 2014). It will therefore be complementing these other two closely related Theories. While the three focus on dealer resource endowment advantages, Dynamic Capabilities Theory suggests that solar energy dealers can achieve competitive advantage if they can concurrently develop and deploy green marketing strategic capabilities for adapting in changing local, regional and global solar energy market landscape (Riviere et al., 2020). Given that the solar energy dealers green marketing strategy transition represents a global shifts based on environment protection dynamics and green marketing strategy implementation interdependencies, understanding how the solar energy dealers develop and deploy green marketing strategy capabilities is an important part of the puzzle.

CONCEPTUAL FRAMEWORK

Sekaran and Bougie (2016) define a conceptual framework as a diagrammatic representation illustrating the link between dependent and independent variables, as depicted in Figure 1.

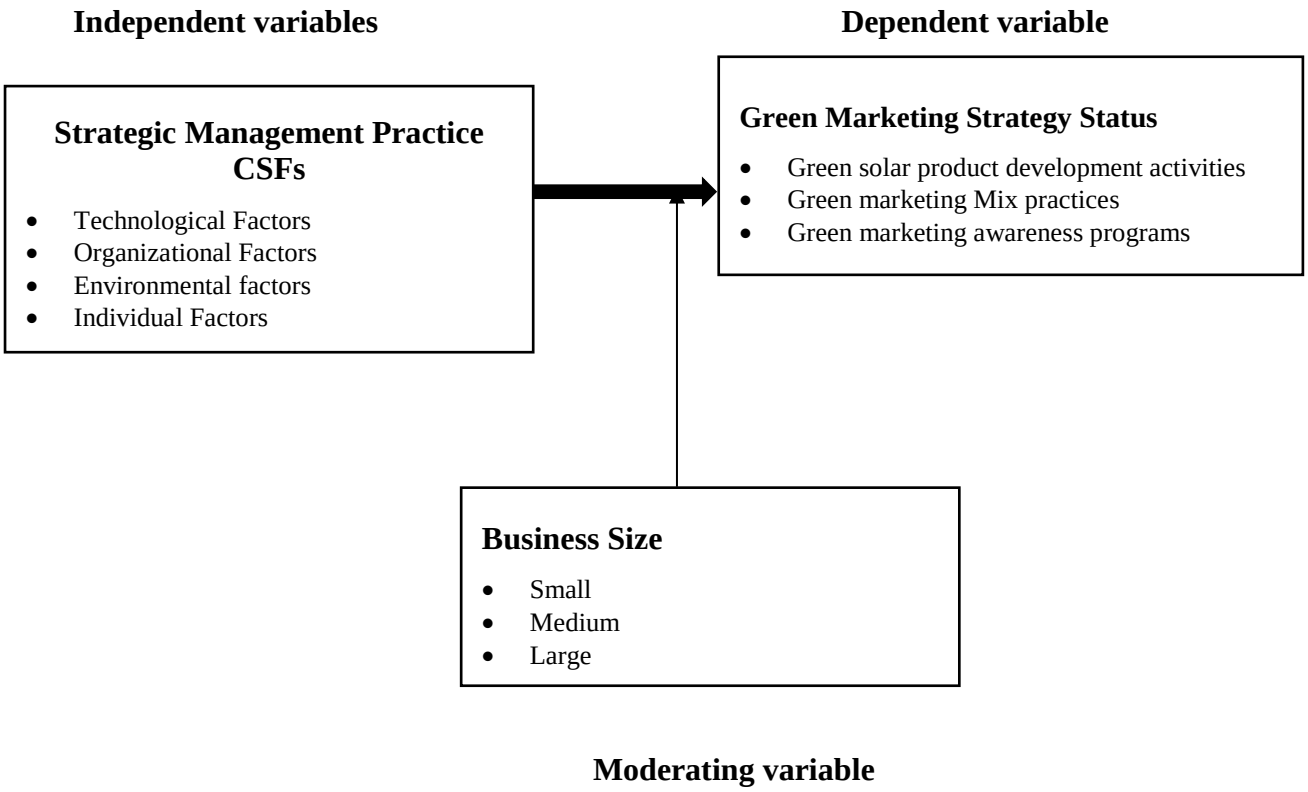

Figure 1: Conceptual framework

EMPIRICAL REVIEW

Technological Strategic Management Practice CSFs of Solar Energy Green Marketing Strategy Status

Relative advantage: Generally, many researchers (Urmee, 2016; Silk, et al., 2014) have found that people are more likely to adopt technological innovation when it has a relative advantage over alternatives; i.e., that it is found superior or better than the idea that it supersedes. To have a relative advantage, an innovation must be perceived as better than the idea that it supersedes. Caird, Roy and Herring (2008) and Caird and Roy (2010) found that the main drivers for adopting micro energy generation technologies were (perceived) energy savings and lowering of fuel bills. The main barriers were uncertainty about reliability of the technology and performance, long payback periods, high system costs and limited roof space in multi-story buildings. These studies concluded that consumers found environmentally friendly household products to have an advantage over conventional products commonly used in households.

Compatibility: According to Rogers (2003), when any innovation fits with the lifestyles of potential adopters, stays in line with their preferences, and matches similar technologies that they may have adopted in the recent past, the innovation becomes more appealing to them. The innovation must therefore be compatible, which implies the degree to which it is perceived as being consistent with past experiences and needs of potential adopters (Silk, et al., 2014). Previous studies on green innovation have found that compatibility significantly influences the attitudes and use intention of the potential adopter (Alam et al., 2014; Muller & Rode, 2013).

Complexity: In using any given technological innovation, an individual's knowledge about that innovation, and the related skills required to use that innovation, often determine the perception of complexity associated with the use of that innovation for the individual. The more comfortable an individual is with using a given innovation, the more attracted they will become

to that innovation (Rogers, 2010). Therefore, a new idea or innovation is less likely to be adopted if it is perceived to be complicated and challenging to use (Rogers, 2003). Thus, if a technology is viewed by stakeholders as complex, it becomes less likely to be adopted by them (Silk, et al., 2014). Researchers have found that too complex or difficult processes and technical interoperability influence implementation, adoption and use of new technologies (Ahmad et al., 2012; Makau, et al, 2015).

Observability: Observability concerns the degree by which the results of an innovation are visible in practice and demonstrations to potential adopters (Rogers, 2003). The underlying idea is that the innovation under consideration is already in use by other consumers, and the outcomes/results of using that innovation are available to be observed by potential users (Ahmad et al., 2012). The decision to adopt an innovation is greatly influenced by an individual's ability to observe the operations and even impact of the innovation on others who have already adopted it (Makau, et al, 2015). Some previous studies on the adoption of solar energy systems (Tapaninen et al., 2009a) and renewable energy systems (Sardianou & Genoudi, 2013), observability had a non-significant effect on attitudes and behavioral intention. However, several studies on the adoption of green practices have reported a significant influence on the consumers' use intention (Claudy et al., 2011; Plotz et al., 2014). Silk et al. (2014) also found that when stakeholders were able to observe a renewable energy innovation that was used elsewhere, they became more comfortable with the idea of adopting the innovation themselves.

Trialability: Trialability is the degree to which an innovation can be tested on a limited scale (Rogers, 2003). Regarding this predictor, Silk et al. (2014) found that the absence of the opportunity to test an innovation decrease the likelihood of adoption. However, at the individual level, trialability was difficult to implement based on the financial costs associated with the renewable energy systems (Labay and Kinnear, 1981).

H1: Technological Strategic Management Practice CSFs will not have influence on Solar Energy Green Marketing Strategy Status in Kenya.

Organizational Strategic Management Practice CSFs of Solar Energy Green Marketing Strategy Status

Robust Green Marketing Strategy: According to Nastase, (2009), an organization must also possess best process, method, or a technique that they define as a strategy or methodology, that is more efficient and much effective in achieving green marketing goals. Researchers have identified the various green marketing strategic options an organization can adopt for successful implementation of the same:

Defensive green marketing strategy is fronted by McDaniel and Rylander (1993), who argued that increased environmental consciousness means consumer marketers should realize that green marketing can bring profitability rather than only pure altruism. They emphasized that green marketing can be fully integrated into a company's marketing strategy through the defensive strategy (also called reactionary approach). McDaniel and Rylander (1993) claimed that most companies tend to adopt a defensive green marketing strategy because it requires the minimum effort aimed at avoiding negative consequences. They described three types of defensive approaches. The first type is to comply with minimum government environmental regulations to avoid tax or penalties. A second type is to meet minimum standards to avoid a consumer boycott. A third type is reacting to competitors'' environmental activities to keep pace with competition by doing no more than what is needed (McDaniel and Rylander, 1993).

Lean Green marketing strategy is adopted by companies that can be regarded to be good corporate citizens. They are usually in a small green market where there is no substantial

profitability. They seek long-term pre-emptive solutions and want to comply with legislation, but their major interest is cost reduction and efficiency improvement through pro-environmental initiatives, with the goal of achieving a lower-cost competitive edge rather than a green one. Lean Greens are frequently cautious to publicize or advertise their green projects because they lack the ability to distinguish themselves from competitors in terms of greenness and cannot afford to be held to a higher environmental standard (Ginsberg and Bloom, 2004). Protective Companies that appreciate the importance and profitability of green market segments use green marketing strategies.

Thus researchers have concluded that to make green marketing strategy success and attract stakeholder's interest, companies should make the green product novel and take the lead by adopting innovative things during green marketing (Lao, 2014). An investigation to determine green purchasing unveils green product value predicts consumer purchase intention (Karatu and Nik, 2015b). Several studies have acknowledged the influence of green products and their values on consumer purchasing behaviour (Kong et al., 2014). Limited studies report contradictory findings (Bhaskaran et al., 2006).

Green Price: Green Prices according to Sharaf & Perumal (2018), have been defined as costs in traditional economics, but recent studies recognize that prices serve to inform people about the value of goods or services. The green price is the price that consumers pay for environmentally friendly products. In determining the price of eco-friendly products, marketers account for the environment, people, and profit (Solaiman et al., 2015). In most instances, the prices for green commodities are mostly higher than those for conventional items (Widyastuti & Santoso, 2016). Solaiman et al. (2015) found that some individuals are willing to pay a price that is up to 20 percent higher than that of non-green products while other dont. For instance, Singhal & Malik (2018) found that people are willing to pay a higher price for greener products because they want to recognise themselves with brands that are green compliant. Furthermore, Sima (2014) found that the real manifestation of consumer attitudes and behaviors toward paying premiums for green products vary during cost considerations. Some researchers call for green marketing campaigns to promote intrinsic ethics and moral intensity in order to realize the goals of green pricing (Sima, 2014; Foster, 2013).

Green Place (Distribution): Green distribution strategies usually aim at minimizing green emissions during transport Foster, 2013; Solaiman et al., 2015). Working with channel partners to build product reuse or disposal arrangements, as well as ensuring that customers can return recyclable items, are two tactical approaches that businesses should take in their quest of green distribution (Eneizan et al., 2015). Green Marketing Strategy Team Behaviour: It is widely accepted that organizational marketing team behavior affect overall achievements of the set objectives of overall projects (Dvir et al.1998). According to Prabhakar (2008) and Sudhakar (2012), seven team attribute factors that can affect projects and hence green marketing strategy implementation include: 1) team capability/competence, 2) teamwork, 3) select right project team, 4) project team coordination, 5) task orientation, 6) team commitment, 7) team empowerment. In line with the above factors, the following hypothesis is proposed:

H2: Organizational Strategic Management Practice CSFs will not have influence on Solar Energy Green Marketing Strategy Status in Kenya.

Environmental Strategic Management Practice CSFs of Solar Energy Green Marketing Strategy Status

Competitive Pressure and Related Contextual Issues: Research have pointed out that sometimes competitive pressure pushes the entire industry to adjust its environmental behavior (Chan, 2013; Polonsky, 1994; Shi and Yang, 2008). According to certain studies, business

stakeholders and partners' pressure may also encourage organizations to implement green marketing (Shi and Yang, 2008). Such pressure may be tied to partners' participation in green initiatives, which in turn encourages other supply chain players to become greener.

Political and technological factors are also important ingredients of the environmental factors to alter green project's destiny (Westerveld, 2003), whereas environmental factor is identified as a macro factor (Hayfield, 1979). Particularly, the existing policies and regulatory frameworks that have been designed to protect the reliability of non-renewable energy supplies can be extended to protect renewable energy supplies (Stegen et al., 2012). Weather and climate Conditions can also negatively affect the efficiency and effectiveness of solar panels and batteries which could lead to low output of the initiative. For instance, Aliyu, et al. (2015) found that northern part of Nigeria is extremely hot concluding that the potential for solar energy panels and storage cannot be efficiently and effectively achieved due to the adverse effect temperature of the weather in the region (Ramli, 2016).

Government Legislation, Policy and Market Regulations: Lack of policies and regulations for the development of solar energy has been found to hinder the adoption of the initiative (Aly, et al. 2019). For solar energy initiative to thrive in in a country, clear policies, procedures, and predictable mission for investors need to be stipulated (Ozoegwu, et al. 2017). The ability of regulators to encourage firms to embrace green marketing strategy varies across locations (Backman et al., 2017). Based on AlFuqaha and AlSaifi, (2015), factors that impact green marketing adoption, include environmental protection legislation, shortage of natural resources, changes in consumer behavior, and the attitudes of senior management towards green marketing. Therefore, government agencies are pressuring businesses to become more socially responsible in order to protect their customers and society (Chan, 2013; Jain and Kaur, 2004; Polonsky, 1994; Mahamuni and Tambe, 2014; Mishra & Sharma, 2014).

Therefore, the general environmental protection strategies should be subject to a number of criteria: to have a clear role toward achieving the environmental objectives, to be effective in terms of social cost, to contribute to providing necessary information to government agencies, to be easily applied and controlled; and finally, the extent to which they provide positive support in industry (AlFuqaha and AlSaifi, 2015; Carcasov et al., 2017). In their research, Pinkse and Dommisse (2009) and Comodi et al. (2012) found that the local government was seen as powerful enough to influence the adoption of green energy technologies through implementing tight norms to create the conditions in which adoption was encouraged. According to Murphy (2012), non-financial aspects are also of great importance. Moreover, the non-financial aspect of policy implementation is associated with marketing strategies and consumer trust in sponsoring incentive programmes.

Social Environment Pressure and Subjective norms: Consumer purchasing intentions for green products are influenced not just by individual variables, but also by the social environment and other individuals (Guerin, 2017). Individual behavior decisions are influenced by social forces in a variety of ways, including peer pressure and collectivist views (Bong Ko and Jin, 2017). Subjective norms are the societal pressures that individuals sense while deciding whether to engage in or refrain from a particular conduct (Ajzen, 1991). Individuals are frequently impacted by the people around them when making decisions. It represents how individuals are affected in society, i.e., how their reference group perceives them if they engage in specific actions. Previous research has revealed that people comply with subjective norms because they are fearful of social pressure from main referents, or because their referents advise them on appropriate or good social actions. Therefore, the concept of collectivism has an important influence on consumers' green purchase intentions. In line with the above factors, the following hypothesis is proposed:

H3: Environmental Strategic Management Practice CSFs will not have influence on Solar Energy Green Marketing Strategy Status in Kenya.

Individual Strategic Management Practice CSFs of Solar Energy Green Marketing Strategy Status

Because consumers and vendors are diversified, with distinctions in their green marketing role intents and demographic features influencing market green marketing strategy concerns. There have been few studies on the association between personality qualities and environmentally friendly actions (Dezdar, 2017).

Demographics: Marketing literature (Alharthey, 2019; Baktash and Talib, 2019; Rex and Baumann, 2007; Talebi, Omidi and Lashgarara, 2018) acknowledges that demographic features play a substantial role in intent to concerning environmentally friendly products. First, the marketers' demographic profiles, particularly their age, gender, and academic subject of study, have been discovered to be significant predictors of internal practices and marketing complexity in organizations. (Dief and Font, 2010). On the other hand, Nwokolo and Ogbulezie (2018) found that affordability was a critical factor hindering power generation and access in Nigeria. Particularly, the rural dwellers who are small scale farmers and herders, with low-incomes cannot afford the deployment of solar energy initiative (Purohit and Purohit, 2017). Rex and Baumann (2007) found out that young girls and persons with a relatively high income and education are more likely to engage in green behavior, according to the findings. This discovery allows us to identify age, gender, income, and education as crucial criteria that may influence customers' decisions to choose a greener company. Customer psychographic features also have an impact. Customers' political inclination and environmental concerns were highlighted by Rex and Baumann (2007) as major predictors of green marketing strategies. According to the findings of Arli and Tjiptono (2017), "religion has a favorable impact on pro-environmental identification and attitudes toward environmental concerns."

Attitude refers to a positive or negative judgment or appraisal of a certain object and is one of the three main notions in the theory of planned behavior (Ajzen, 1991). Because attitudes are employed in forecasting consumer behavior or establishing the desire to act, they might reflect consumer perceptions of the product. Many researchers have discovered that a positive attitude increases green purchase intention in examinations of the relationship between green items and environmental actions (Wang et al., 2016). Furthermore, several research has revealed that a favorable attitude influences consumer purchase intentions in respect to green hotels (Chen and Tung, 2014; Teng et al., 2015) and organic food (Wang et al., 2019).

Environmental consciousness, green product consciousness, and social responsibility: Environmental awareness is described as the sum of people's knowledge about ecological issues, as well as their ability to examine and assess their impact on the environment and the community (Alamsyah, Othman & Mohammed 2020). According to recent research, the level of environmental issues awareness puts substantial influence on the consumer green purchase intent (Xu, Wang, and Yu, 2020). Environmental awareness results to environmental concerns. Both individual and stakeholder groups's concern towards the environment as well as environmental problems is termed environmental concern (Kim and Choi, 2005). Environmental concern is defined as the level of concern about environmental issues, as well as measures to address these issues (Dunlap & Jones, 2002).

Regarding consumer social responsibility, according to Roberts (1995), a customer with a sense of responsibility will purchase products and services that are considered to protect the environment and use his or her influence to raise other people's awareness about the environment. Recent studies also emphasized the significance of consumer social

responsibility, which is proposed to implement activities that can bring benefits to humans, the environment, and solidarity, and suggested as a duty that customers should implement to improve the society (Vitell, 2015). In addition, Xu et al. (2017) also agreed that moral factors like responsibility will positively affect individuals' actions towards protecting the environment. Bempong (2017) conducted a study in Africa, to examine the influence of the green branding on customer buying behaviour by taking 117 consumers.

Zubair (2014) conducted a study in Pakistan, to measure the influence of green branding on green satisfaction by taking 207 customers. The findings indicate an overall strong correlation and effect between green ads, green brand recognition and customer trust. Moreover, the Papista & Dimitriadis (2019) conducted a study in Greece on green branding and consumer outcomes by taking 269 customers. The results suggest that the advantage of the trust has the greatest effect on quality, relationships and green product loyalty have a major influence on behavioral results. Thus, many companies see 'green' as a source of competitive advantage (Kane, 2011). The companies and entrepreneurs try to produce green or eco-friendly products to serve consumers' needs and satisfy them in this green.

Socio-cultural Concerns: Several behavioural researchers found that some non-financial factors influence household green energy adoption and use. For instance, values and environmental self-identity strengthen awareness of energy issues and lead to consequences in households' action and create a feeling of moral obligation to jointly addressing energy problems (Stern, et. Al., 2019; Steg, Perlaviciute & van der Werff, 2015). Some researchers have called this aspect subjective norm which dictate behavioural intention. A vast number of studies (Biswas & Roy, 2015; Ritter et al., 2015; Zhao et al., 2014) have previously suggested that social pressure encourages consumers to buy environmentally friendly products. Subjective norm is recognized as a predictor of consumer willingness to purchase environmentally friendly products (Biswas & Roy, 2015). Wahid et al. (2011) agree with this viewpoint, stating that one of the dominant factors influencing behavioural intention. Mulugetta, Nhete and Jackson (2000) found that sustainable energy development programmes required multi-faceted intervention that was well-coordinated.

Furthermore, studies done in Nigeria which has strong ethnic believes in cultures, tribal values, religion and gender found that the acceptance of solar energy was low due to certain social believes (Aliyu, et al. 2015; Wadu Mesthrige and Kwong, 2018). Such barriers had resulted in a financial loss for the solar energy distribution company of Nigeria, where the financial collections became almost impossible due to restriction of access to communities. Technical staff and supervisors from the power sector were likely to be denied access to many houses for surveys, assessment, inspection, and installation of electricity meters. The researchers concluded that socio-cultural barriers can affect communities from gaining the required socio-economic benefits of solar energy initiatives in the country.

H4: Individual Strategic Management Practice CSFs will not have influence on Solar Energy Green Marketing Strategy Status in Kenya.

Moderating Effects of Business Size on Strategic Management Practice Critical Success Factors and Green Marketing Status

The Kenyan solar energy industry currently expands quickly because citizens understand growing environmental responsibility and seek clean energy solutions (Njoroge & Kamau, 2022). The modification of business practices within the sector is seen through businesses incorporating green marketing strategies into their operations. The practice of green marketing promotes sustainable products by linking business practices with sustainability principles according to Choi et al. (2023). The accomplishment of these methods depends on several

important critical success factors. Success rates of integrating green marketing strategies within the solar energy sector depend on four critical success factors including technology, organization, environment and individual needs (Rawat & Pande, 2024).

The effectiveness of green marketing strategies depends significantly on the business size as an underexamined influencing factor. The scale of a solar dealer business affects the manner through which Critical Success Factors affect and influence green marketing practice implementation. Larger solar dealer businesses obtain an inherent competitive advantage for green marketing through their advanced resources and technology together with well-developed organizational structures supporting sustainability initiatives. Small solar dealers experience limitations regarding their resource capabilities and technological infrastructure alongside their organizational structures required for successful implementation of such strategies (Odhiambo, 2023).

Technological progress functions as the most vital element that leads to green marketing achievements in the solar energy industry. Solar dealers use modern solar energy technology to deliver efficient and reliable environmentally friendly products that fulfilling green marketing principles (Mokan, Lee, & Ramlan, 2019). The effects that technological elements have on green marketing success depend considerably on the scale of the business operation. Larger solar dealer businesses possess sufficient financial resources and research capabilities through which they can lead technological innovation in renewable energy (Lee & Kim, 2021). Green marketing strategies receive a solid foundation through their ability to introduce revolutionary solar innovations that green-conscious consumers find attractive. Smaller solar dealers face difficulties adopting new technologies because their restricted budget and insufficient expert knowledge limits their capacity for successful execution of green marketing strategies (Choi et al., 2023). The connection between technology components and green marketing achievements proves stronger in big companies as opposed to small businesses according to Njoroge & Kamau (2022).

H5: Solar dealer business size does not significantly moderate the relationships between the strategic management practice critical success factors (CSFs) and Green Marketing Strategy status among solar energy technology dealers in Nairobi.

Studies show that successful socio-economic expansion together with survival of society and its people depend heavily on energy availability (Agyeman et al., 2020). True global climate change originates mainly from sustained traditional power source usage in electricity production (Ahmad et al., 2020). For the world to stop global warming it must adopt green energy technology according to Hussain et al (2021) and Ahmad et al (2021). Modern societies adopt solar Energy as their primary choice of clean energy because the Sun provides natural energy from its core nuclear fusion reactions. Research by Pan et al. (2019) shows that Solar PV systems have spread throughout the world to deliver 303 GW of installed capacity due to their annual growth rate of 33 percent. The International Energy Agency forecasts that solar PV systems will provide 4% of global electricity needs by 2025 because Solar PV represents an innovative renewable technology that lowers energy imports expenses and decreases atmospheric carbon emissions according to Rezaee, Yousefi & Hayati (2019).

Various nations have implemented measures to increase solar energy levels in their electricity generation portfolios (Merino, Herrera and Valdés, 2019; Valdés and Leon, 2019). In 2019 Solar PV experienced a 12% growth which resulted in the generation of 115 GW of electricity as reported in the sustainable global progress report 2020. The worldwide solar PV generation capacity amounted to 627 GW at the end of 2019 according to REN21 (2021). The African continent possesses abundant solar energy sources while PV technology has created practical electricity supply options for diverse use at both small and large scale across Africa (AU, 2021).

Solar energy now has established itself in the African market as a commercial asset as donor projects lose their relevance (Mutua & Kimuyu, 2015). Hussain et al (2021) establish from the literature that manufacturers use lead and cadmium compounds together with polymers at various stages throughout the solar module production process.

MATERIALS AND METHODS

Research Design

The research design used in this investigation was descriptive. The scientific method of descriptive research aims to find responses about "what" and "who" elements along with their locations and times during inquiry (Blumberg, Cooper, & Schindler, 2014). The selected research design helped the investigator to obtain impartial responses about the research question through detailed data collection on study variables (Blumberg et al., 2014; Saunders, Lewis, & Thornhill, 2012). The research design demonstrated effectiveness through its positive results from empirical studies about technological innovation adoption as reported in Tyce (2020), Ouma (2019), Wawire (2020); Makau et al. (2015).

The research drew its foundation from the positivist research philosophy. Babbie (2016) defines positivism as an epistemological framework which promotes systematic and structured scientific techniques from natural sciences for social phenomena research with the intention of performing experimental replication of findings. According to positivism there exists one concrete reality which functions through predetermined natural laws beyond what observers and their interests may perceive (Majeed, 2019). The study adopted this philosophical position because it offered the best method for objective investigation of critical success factors regarding green marketing strategies through scientific procedures controlled by researcher influence.

Target Population

The target population of the study comprised of all the 991 solar energy dealers in registered with Electrical and Petroleum Regulatory Authority (EPRA) as at May 2021 in Kenya categorized into technicians (463) and contractors (528). However, the study population was 521 (technicians (214) and contractors (307) solar energy dealers in registered with EPRA with offices in Nairobi City County. The target population therefore comprised of the 521 dealers' solar energy product and services sales/ marketing personnel who provided the strategic management practice CSFs data due to their experience in the field.

Sampling Frame

In this study, the sampling frame consisted of a list of all dealers with a minimum of five years of continuous experience in solar energy services, drawn from the 521 dealers operating within Nairobi City County.

Sample Size and Sampling Technique

The term sample defines a group chosen from the population to become the focus of investigation to create population-wide conclusions (Ragab & Arisha, 2018). Sample size represents the entire population selection conducted through systemic and objective methods to exhibit population characteristics (Babbie, 2016). Both mixed methods and multistage sampling techniques were used in this research because of its specific characteristics. A population specific sample size was determined by Krejcie and Morgan (1970) through their developed table and yielded 226 dealers which formed the sample. A stratified purposive sampling method selected 226 respondents by ensuring the participants possessed at least five years of continuous solar energy technology experience as well as exposure to green marketing strategy CSFs in Kenya. Kombo and Tromp (2006) support the sampling strategy which

divides the population into homogeneous subgroups before selecting appropriate experts through purposive methodology. A descriptive study requires a sample population that contains 25-30 percent of the whole group according to Sullivan (1995). The research selected over 20% of the total 521 dealers to achieve a participant number of 226. Simple random sampling identified the dealers from the EPRA listing but the research targeted just one representative from each selected dealer.

Data Collection Instruments

The research study implemented questionnaires as its main data collection tool which according to Creswell (2012) describes a series of pre-designed questions offered to participants. A semi-structured questionnaire contained closed-ended as well as open-ended questions to collect primary data. The researcher planned these questions in a way that would trigger extensive answers from the target respondents to resolve the research problem. Open-ended questions in the survey used by researchers allowed participants to express their thoughts but the closed-ended questions offered numerical data to address the research goals. The authors conducted a review of secondary information obtained from the EPRA and the annual reports of Kenyan manufacturing firms.

Pilot Study

A pilot study is a small scale research study undertaken to pre-test the questionnaire in order to establish potential flaws on the design, ordering and instrumentation of the data collection instruments, using target sample respondents before undertaking a full-fledged large scale study (Fraser, Fahlman & Arscott, 2018). A pilot study of 14 study respondents was undertaken in order to pre-test the questionnaire. The goal of pilot testing is to enhance data collection instrument reliability and validity quality assurance, as well as provide insight on the planned data analysis techniques effectiveness as well as spotlight the financial and human resource requirements (Doody & Doody, 2015).

Data Analysis and Presentation

Data analysis was conducted using SPSS version 21, employing a variety of methods. The first step involved performing diagnostic tests. Next, descriptive statistical analysis was carried out to assist in making statistical decisions, utilizing measures such as the mean and standard deviation. The third method involved factor analysis, which was used to transform correlated variables into a set of linearly uncorrelated explanatory variables (Kothari & Garg, 2014). Qualitative data analysis was conducted through content analysis, which, according to Hsieh and Shannon (2005), is a research method for the subjective interpretation of text data by systematically classifying, coding, and identifying themes or patterns. The study's hypothesis was tested using the analysis of variance (ANOVA) F-test statistic to assess the goodness of fit of the model. Additionally, inferential statistics derived from multiple linear regression (MLR) analysis were used to predict relationships and conduct rigorous statistical significance tests, including ANOVA, based on the data collected with SPSS version 21.

FINDINGS AND DISCUSSION

During the fieldwork, a total of 226 questionnaires were distributed, but only 210 questionnaires were returned having been dully filled. This translated to 92.9%. A response rate of 70% and above is considered excellent according to Mugenda and Mugenda (2013).

Effect of Solar Business Size on Green Marketing Strategy Status (GMSS) in Kenya

Respondents were asked to give their level of agreement with various statements to examining importance of various solar business size factors in affecting adoption of green marketing strategy and associated strategic management practices among solar energy technology dealers

in Nairobi County. The results in Table 4.19 shows that majority (60%) of the respondents agreed that they embarked on green marketing strategy since when their companies were small till now it has grown and they were still happy with the strategy. In addition, almost all of them (82%) disagreed with the statement that they didn't use green marketing strategy due to some difficulties associated with their company sizes. From the findings, it can be observed that most of the respondents were in disagreement. This implies the critical nature of solar dealer business size factors in affecting adoption of green marketing strategy and associated strategic management practices in the solar technology business in Kenya. These results are as shown in table 1.

Table 1: Effect of Business Size on GMSS in Kenya

	Disagree	Neutral	Agree	Mean	Std
I embarked on green marketing strategy since when my company was small till now it has grown and am still happy with the strategy.	17.5	22.6	60	2.6	1.09
I don't use green marketing strategy due to some difficulties associated with my small company size	81.7	11.3	7	1.2	1.16
Average	49.6	16.9	33.5	1.9	1.13

Solar Business Size Categorization in Kenya

Respondents were further asked to state their business sizes operated and dealing in solar energy technology within Nairobi County. Majority of the respondents indicated that their companies were small and micro with a few indicating otherwise. From this analysis, it is demonstrated that most of solar dealers in Kenya operate small and micro size businesses but that does not seem to affect their adoption of GMS.

Regression Analysis

The regression analysis was done to test the relationship between the dependent and the independent variables. The results were used to analyse the GMSS by different solar technology dealers and finally used to test the research hypothesis.

Model summary

The summary was used to determine the volume of variation in GMSS that can be explained by changes in IV (technological factors, organizational factors, environmental factors and individual factors). A composite index of the IV and size of business was included in the second model.

Table 2: Model summary

	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig.
Model 1	.520[a]	.271	.244	8.91	.003
Model 2	.530[b]	.280	.247	8.89	.001

a. Predictors: (Constant), organizational factors, technological factors, individual factors, environmental factors

b. Predictors: (Constant), organizational factors, technological factors, individual factors, environmental factors, Business Size

The results in Table 2 shows that the values of correlation for both model 1(R=0.52) and model 2 (0.53) were moderately strong and positive, implying that there was a moderate relationship

among the variables. The R square from both model 1 (0.27) and model 2 (0.28) suggests that 27.1% of GMSS can be explained by changes in IVs technological factors, organizational factors, environmental factors and individual factors for model 1 and 28% of GMSS can be explained by changes technological factors, organizational factors, environmental factors, individual factors plus the business size moderation for model 2 respectively.

Further, the model summary results in Table 1 above present the R Square values between the two mathematical models. All the four independent variables (technological factors, organizational factors, environmental factors and individual factors) in Model 1 explain 27% of GMSS variance as shown by an R Square value of 0.271. However, the inclusion of business size while acting as a moderator causes Model 2's R Square values to increase to 28% as shown by an R Square value of 0.280. The Adjusted R Square values in Model 1 equal 0.244 and Model 2 demonstrates 0.247 also show some increment due to the moderating effect. This supports the conclusion that business size actually does significantly enhance model explanatory power of GMSS.

ANOVA for Regression Analysis

The findings in the Table 3 below shows that both models fit the data well.

Table 3: ANOVA for Regression Analysis

	F	Sig.
Model 1	10.207	.000[b]
Model 2	8.494	.000[c]

a. Dependent Variable: GMSS.

b. Predictors: (Constant), organizational factors, environmental factors, individual factors, technological factors

c. Predictors: (Constant), organizational factors, environmental factors, individual factors, technological factors, Business Size

The results in Table 2 Analysis of Variance below further confirm that both models were significant ($p < 0.05$) thus the models are statistically significant in determining the effect of independent variables on the GMSS.

Coefficient of Regression Analysis

From the results of the Table 4 below, the regression equation model was fitted as follows:

Considering Model 1.

Table 4: Coefficient of Regression Analysis

	Model 1	**Significance**	**Model 2**	**Significance**
Constant	27.92*	.0043	28.79*	.0011
Technological factors	0.52*	.0023	0.49*	.0061
Environmental factors	-0.47	.0615	-0.54*	.0031
individual factors	0.37	.0741	0.30	.0611
Organizational factors	0.99*	.0002	0.99*	.0042
Business Size Moderating effect X*Z	-	-	0.09*	.0021

*significant at the 0.05 level

$Y = 27.92 + 0.52\ X1 - 0.47\ X2 + 0.37\ X3 + 0.99\ X4 + \varepsilon$

The model equation above reveals that holding the variables technological factors, organizational factors, environmental factors and individual factors to a constant zero, GMSS will be at a constant value of 27.92.

Considering Model 2,

Y = 28.79 + 0.49 X1 -0.54 X2 + 0.30 X3 + 0.99 X4 + 0.09 X*Z + ε

From the Model 2 above, holding the independent variables at zero then the GMSS will be at a constant value of 28.79.

Hypothesis Testing

Table 4 on Coefficients of Regression Analysis contains the results to verify the hypothesis about Business Size Moderating Effect (X*Z) on the relationship between strategic management practice critical success factors and the dependent variable of Green Marketing Strategy Status (GMSS). The analysis depends on two regression models for its execution. The baseline regression model represented by Model 1 excludes the introduction of the moderating variable Business Size. By omitting business size, the Model 1 shows relationships between the separate independent strategic management practice critical success factors and their effect on the dependent GMSS variables. The interaction term XZ in Model 2 evaluates business size as a potential modifier between the independent variables and GMSS. The evaluation of regression analysis results between Models 1 and 2 helps understand the changes from omitting or including business size as a moderator variable.

The hypothesis testing starts with establishing two conflicting hypotheses:

The hypothesis states that business size (XZ) does not affect the relationship between independent variables and GMSS. A zero-coefficient value for XZ interaction term indicates that business size fails to affect the relationships between the independent variables and GMSS hence upholding the H1 null hypothesis otherwise, rejection of the H1 implies that business size (XZ) demonstrates a significant moderating effect on the relationship in study. The significance of business size as a moderator toward explaining GMSS relationship finds support through the non-zero (β=-0.09) coefficient value of business size (XZ) and significance of the outcome ($p = 0.0021$). Therefore, the coefficients presented in Table 3: Although Coefficients of Regression Analysis show a weak (β=-0.09) value for business size (XZ) implying weak moderating effect, the coefficient size doesn't matter much so long as the effect is significant when interpreted against the standard statistical significance levels ($p < 0.05$) in influencing on the relationship between independent variable factors and the GMSS performance. While determine how critical organizational, technological, environmental and individual factors are in explaining the status of Green Marketing Strategy implementation in Kenya, the regression analysis results also confirm how critical business size attributes are in influencing the relationship between the four independent variables and GMSS among solar energy dealers in Nairobi, Kenya.

CONCLUSION

Technological strategic management practices had a significant influence on GMSS among solar energy technology dealers in Nairobi as there was a positive and significant effect on both models hence emerging as critical success factors. For the Organizational strategic management practices, it can be concluded that there was significant effect on the GMSS among solar energy technology dealers in Nairobi also. The effects were same sizes, positive and significant on both models. For Environmental strategic management practices, it can be concluded that there was mixed results and further research is required on this aspect because although the relationship was always negative, without moderation effect, it was not significant

but inclusion of the moderating factor (business size), turned it significant. However, this confirms the critical nature of business size in moderating the relationship between environmental strategic management practices and GMSS leading to a conclusion that environmental strategic management practices vary based on size of solar business considered and hence critical in green marketing strategy adoption status and success among solar energy technology dealers in Nairobi. The assessment of influence of the Individual solar energy technology dealer strategic management practices on GMSS revealed that there was no significant relationship among solar energy technology dealers in Nairobi, concluding that individual factors are not significantly critical in green marketing strategy adoption status and success among solar energy technology dealers in Nairobi.

Finally, it emerged that there was positive but weak significant moderating effect of Solar Dealer Business Size on the relationship between all the four strategic management practices and GMSS among solar energy technology dealers in Nairobi. In the overall, it can be concluded that the strategic management practice CSFs (organizational, technological, environmental, individual and the business organization attributes) influencing the status of Green Marketing Strategy implementation adoption and status in Kenya have been determined and reported.

RECOMMENDATIONS

The findings clearly indicate that organizational strategic management practices are the most critical in enhancing adoption and promoting GMSS among solar energy technology dealers in Nairobi. They matter most in promoting green marketing strategies adoption and associated strategic management practices overall success among solar technology dealers in Kenya as it emerged to positively contribute significantly to the adoption of green marketing strategy and associated strategic management practices overall success. Thus, the study recommends that all the organizational factor indicators identified in the study be put into consideration when developing and implementing green marketing strategy and associated strategic management practices, especially for the solar energy technology market in Kenya.

The research findings also clearly show that technological strategic management practices are the moderately critical in enhancing adoption and promoting GMSS among solar energy technology dealers in Nairobi. They matter most in promoting green marketing strategies adoption and overall associated strategic management practices success among solar technology dealers in Kenya as it emerged to positively contribute significantly to the adoption of green marketing strategy and associated strategic management practices overall success. Thus, the study recommends that all the technological factor indicators identified in the study be put into consideration when developing and implementing green marketing strategy and associated strategic management practices, especially for the solar energy technology market in Kenya.

However, surprisingly, the findings revealed that the environmental strategic management practices importance in enhancing adoption and promoting GMSS is difficult to determine among solar energy technology dealer studies in Nairobi, Kenya because the results gave mixed findings. Furthermore, while individual strategic management practices influence was always positive, they emerged to be least important and critical in enhancing adoption and promoting GMSS among solar energy technology dealers in Nairobi. Therefore, it is here recommended that for these two variables, further research be done before declaring them are of little importance when developing and implementing green marketing strategy and associated strategic management practices, especially for the solar energy technology market in Kenya. Therefore, their further academic study investigations in similar studies are welcome in

analysing the CSFs of green marketing strategy and associated strategic management practices among solar energy technology dealers.

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