

Article

Determinants of Employee Electricity Saving Behavior in Small Firms: The Role of Benefits and Leadership

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Abstract: The emission of carbon dioxide and other greenhouse gases through electricity consumption by firms is one of the significant drivers of climate change. The performance of a firm's environmental programme is to a large extent dependent on employee behaviour. Drawing on the Theory of Planned Behaviour (TPB), the study tested a theoretical model that incorporates benefits and leadership as antecedents of attitude towards electricity saving by the employees of small firms in the hospitality sector. The effects of five benefits (intrinsic, extrinsic, organisational, social, and environmental) and two leadership factors (leadership behaviour and leadership support) were examined. Investigating the antecedents of TPB constructs can help in understanding the process through which the constructs are associated with intention. In addition, the moderating effect of green psychological climate in the relationship between intention and electricity saving behaviour was examined. The study used the quantitative research design, and the cross-sectional survey method was used for data collection. The hypotheses of the study were tested using the Partial Least Square Structural Equation modelling (PLS SEM). The results of the empirical study indicated that intrinsic, organisational, social, and environmental benefits are positively related to attitudes towards electricity saving. In addition, the effects of leadership behaviour and support are significant. Furthermore, green psychological climate moderates the relationship between intention and electricity saving behaviour. Recommendations to improve employees' electricity saving behaviour are suggested.

Keywords: electricity saving behaviour; employee attitude; small and medium-sized firms; benefits; leadership; green psychological climate



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1. Introduction

Energy production and consumption are related to a country's social-economic development. One of the reasons for the great level of development witnessed by human societies in the last century is the production and consumption of conventional energy resources from oil and gas [1,2]. However, the emission of carbon dioxide and other greenhouse gases through energy (electricity) consumption by individuals and firms is one of the significant drivers of climate change [3]. Most of the energy produced currently is from non-renewable energy sources and coal mining for the production of energy can pollute water and create solid waste [4,5]. Coal accounts for approximately 75% of primary energy supply and over 90% of electricity generation in South Africa, and the country is ranked amongst the top fifteen largest carbon dioxide emitters in the world [6]. In addition, South Africa faces a significant electricity shortage leading to regular load shedding [7]. The total economic impact of load shedding in South Africa between 2007 and 2019 was between 167 billion rand and 338 billion rand [8]. Furthermore, the price of electricity in South Africa has increased significantly over the years with negative impact on the cost and performance of businesses [9].

Energy conservation is one of the ways to achieve a cleaner, healthier environment and manage climate change [10]. One of the ways to conserve energy is for individuals and

businesses to investment in green technologies [11]. Another way to ensure energy conservation is the behavioural change of individuals at home or at work [12]. Because climate change is largely anthropogenic, human behavioural changes are important to create a sustainable future [13]. Businesses consume a lot of energy and contribute significantly to world's environmental challenges [14]. The United Nations Framework Convention on Climate Change (COP26) remarks that there must be a commitment to systemic change and net zero emissions should be a part of business principles and operation [15]. Despite a high level of consumption of energy by business, studies on energy conservation have tended to focus on individuals at home [16,17]. However, the results of the studies that focus on household energy conservation at home may not be generalised to the business context [18]. While energy use in households is paid for the owners, energy use in firms is free of charge for the employee, and this can lead to energy wastage [18,19]. Therefore, it is important for researchers to investigate energy conservation in the business context. The performance of a firm's environmental programme is to a large extent dependent on employee behaviour [20]. Workplace Pro Environmental Behaviour (PEB) can be voluntary or involuntary. While involuntary PEB is often mandated by the organisation, voluntary PEB is discretionary [21]. The effectiveness of an organisation PEB is mainly dependent on employees' voluntary behaviour or organisational citizenship behaviour for the environment [22]. Individually, the impact of each employee in respect of energy conservation may look small, but collectively, the impact is significant [19,20]. Employee workplace energy saving behaviour is an important theoretical issue that deserves better investigation and understanding [18]. Electricity is the major type of energy used in organisations [19]. Thus, the focus of this study will be on the electricity conservation (saving) behaviour of employees.

To understand the antecedents of the electricity saving behaviour of employees of small firms, this study builds a theoretical model based on the Theory of Planned Behaviour (TPB). The TPB consists of three constructs, namely, attitude, subjective norms, and perceived behaviour control [23]. In addition, according to the TPB, attitude is supposed to influence intention, and intention is supposed to influence behaviour [23]. The TPB also proposes some antecedents of attitude, subjective norms, and perceived behavioural control. Behavioural beliefs are the antecedents of attitude, while normative beliefs and control beliefs are the antecedents of subjective norms and perceived behavioural control respectively [23]. Investigating the antecedents of each TPB construct can help in understanding the process through which the constructs are associated with intention [19,23,24]. However, the majority of studies that have used the TPB as the framework to study household or workplace energy conservation have used the three TPB constructs alone in determining whether they account for variance in behavioural intention [18]. This is of significance because whilst the investigation of the three principal TPB constructs may provide an explanation of their contribution to the variance in behavioural intention, it is by considering their antecedents that a researcher can explain why this is so [23,24]. Attitude towards a behaviour can be affected by internal and external factors [25], and personal motivations for environmentally friendly behaviour can be linked to perceived benefits [26,27]. In addition, leaders through their behaviour can influence employee attitude towards environmentally friendly behaviour [28].

This study addresses some gaps in the energy conservation behaviour literature. First, studies on energy conservation behaviour of individuals have mainly focused on households with scant attention paid to employees in the business context. Second, most of the studies on energy conservation behaviour have focused on the antecedents of intention. The focus of this study is on the determinants of attitude towards electricity saving. Third, studies on employee electricity saving behaviour in the context of small firms are scarce as research has tended to focus on large firms [29–31]. Although a single small firm does not have the same environmental impact compared to a large firm, their combined effects are bigger than for large firms [32,33]. Compared to large firms, small firms tend to exhibit a severe lack of resources, dependence on top managers, and lower level of awareness,

and these impact on their ability to adopt and implement sustainability initiatives [31]. Fourth, studies on the roles of benefits and leadership in stimulating electricity saving behaviour of the employees of small firms are scarce. Fifth, the moderating role of employees' green psychological climate perception in the relationship between intention and electricity saving behaviour has received sparse empirical attention. Reference [34] points out that in the context of pro-environmental behaviour, the relationship between intention and actual behaviour can be positive if there is a perception of a positive green psychological climate by employees.

Based on these identified gaps, this study is premised on the following research questions. RQ1: Do perceived benefits influence employees' attitude towards electricity saving in small firms? RQ2: Do leadership factors influence employees' attitude towards electricity in small firms? RQ3: Does attitude towards electricity saving affect intention to save electricity in small firms? RQ4: Does intention to save electricity affect electricity saving behaviour in small firms? RQ5: Does green psychological climate moderate the relationship between intention and electricity saving behaviour in small firms?

2. Literature Review

2.1. *Small Firms in the Hospitality Sector and Environmental Challenges*

There are qualitative and quantitative descriptions of small firms described as Small, Medium and Micro Enterprises (SMMEs) in South Africa. The qualitative description shows that to be described as a SMME, the firm should be a distinct and separate body operated by one or more owners. There is also a schedule of standards that clarifies the sector and uses the number of employees and annual turnover to quantitatively classify SMMEs into micro, small, and medium [35]. This study uses the number of employees to classify SMMEs in the hospitality sector. Number of employees. Micro (1–10), small (11–50), and medium (51–250). The small business sector is the lifeblood of the economy of South Africa. The sector account for more than 98% of all businesses in the country. In addition, the sector contributes between 50 and 60% of employment and 25% of job growth in the private sector [36]. The total number of small firms in South Africa was 2.36 million at the end of the 3rd quarter of 2020. This is made up of 653,530 formal small firms and 1,580,155 informal (unregistered) small firms. The share of small firms as a percentage of total turnover of all firms was 38.8% in the third quarter of 2020. The hospitality sector is the largest sector in the tourism industry, and many hospitality firms in South Africa can be classified as small firms [37]. The Department of Labour [38] defines hospitality as “a commercial business involved in the provision of accommodation. The hospitality sector includes hotels, motels, lodges, guest houses including bed and breakfast establishments, restaurants, pubs, taverns and cafés” Hotels provide paid accommodation to guests and provide offer services such as food and entertainment to guests [39]. Tourism including the hospitality sector contributes significantly to income generation, job creation, and economic growth in South Africa. The direct and indirect contributions of tourism to South Africa's gross domestic product are 2.9% and 8.6%, respectively. In addition, tourism supports about one-and-a-half million jobs and maintains an extensive value chain and generates foreign direct investment in South Africa [40]

Despite the positive contribution of hospitality, the activities of the sector have led to environmental challenges such as carbon dioxide emissions, waste, pollution, global warming, loss of biodiversity, and overconsumption of natural resources [41,42].

Reducing electricity consumption can provide internal and external benefits to firms and the larger economy [38]. On a micro level, reduced electricity consumption can lead to reduced energy costs, improved profitability, and competitiveness for firms. On a global level, reduced electricity consumption can lead to a reduction in fuel prices and volatility, improved energy security, and reduction of greenhouse gas emissions and pollution [43].

2.2. Energy (Electricity) Saving Behaviour

Energy (Electricity) saving behaviour refers to the behaviours that an individual performs to reduce overall energy (electricity) use [43]. Electricity saving behaviour includes the following: (1) Curtailment behaviour. This kind of behaviour saves energy through reduced use. Curtailment behaviour includes activities such as turning off lights, reducing appliance usage, and unplugging appliances. These activities must be repeated repeatedly for consistent energy savings [44]. (2) Efficiency behaviour. This approach is related to the purchase of more efficient appliances. (3) Maintenance behaviour. This involves saving energy by better maintaining appliances as this improves their performance and efficiency [45]. Energy conservation in small firms is limited because of lack of financial capacity, cost of additional equipment, low sensitivity and awareness, and staff attitude and behaviour [46]. This study focuses on how curtailment behaviour can improve employee energy saving behaviour. Boudet et al. [44] point out that energy savings and cost associated with a particular behaviour are important economic factors in a firm's rational decision-making. Curtailment behaviour is relatively low cost compared to efficiency behaviour. This is important for many SMMEs with limited financial resources. In addition, the frequency of the performance of curtailment behaviour is important to habit formation, and this becomes a strong predictor of intention [47].

Sections 2.3–2.5 will review the theories that are related to the study. The section will examine the TPB from which attitude is derived. In addition, the self-determination theory provides the basis for intrinsic and extrinsic benefits of electricity saving behaviour, and theories that are related to leadership and electricity saving behaviour in the workplace are also discussed.

2.3. Theory of Planned Behaviour (TPB)

The TPB by [23] extends the Theory of Reasoned Action (TRA) [48]. The TRA argues that intention is the basis for actual behaviour. Intention depends on two factors, namely, attitude and subjective norms [48]. According to the TPB, intention also determines individual performance of a specific behaviour. The TPB is made up of three independent constructs, namely, attitude towards a behaviour, subjective norms, and perceived behavioural control. Attitude towards a behaviour is the extent to which an individual positively or negatively evaluates a behaviour. Subjective norms describe the possibility that an important individual, who is valued by an individual, will approve or disapprove of a behaviour. Perceived behavioural control describes the perceived difficulty or ease that an individual has in the performance of a behaviour. The TPB also proposes some antecedents of the three constructs [23]. This study focuses on perceived benefits and leadership as antecedents of attitude towards electricity saving.

2.4. Self-Determination Theory (SDT)

The Self-Determination Theory (SDT) by [49] focuses on the extent to which the behaviour of an individual is self-motivated and self-determined. The SDT explains the motivation behind the choices made by an individual in the absence of external influences and distractions. SDT distinguishes between two types of motivation: intrinsic and extrinsic. Intrinsic motivation focuses on the engagement of activities for the inherent rewards of the behaviour. Intrinsic motivation can be used to describe activities carried out for their inherent interest and enjoyment [50]. Extrinsic motivation focuses on behaviours prompted on an individual for reasons that are not related to inherent satisfactions. While intrinsic motivation comes from within the individual, extrinsic motivation comes from outside [50].

2.5. Leadership Theories

The link between leadership and the PEB of employees at work can be explained by the Social Learning theory (SLT), the Social Information theory (SIT), and the Social Exchange theory (SET). The SLT argues [51,52] that many human behaviours are learned through learning and observing other people. This suggests that employees can learn electricity sav-

ing behaviour at work by observing how managers save electricity. The SIT [53] contends that subordinates learn acceptable behaviour through interaction with and emulation of the activities of a leader. This suggests that PEB such as electricity saving can be learned by employees by emulating leaders. The SET [54] remarks that employees reciprocate leaders' behaviour towards them with their own matched behaviour on the basis of mutual reciprocity. These theories suggest that leaders through appropriate behaviour can influence the electricity saving behaviour of employees.

2.6. Hypotheses

2.6.1. Intrinsic Benefits and Attitude towards Electricity Saving

Intrinsic benefits can be described as benefits obtained from activities done for their inherent interest or enjoyment. Enjoyment includes pleasure, delight, and happiness in engaging in certain activities [49]. According to [55], acting in an environmentally friendly way can elicit psychological rewards through positive feelings. Intrinsic benefits can show themselves in the warm glow that an individual experiences when they feel good about themselves because of pro-environmental behaviour [56]. Thus, if an employee enjoys PEB, such employee will engage in environmentally friendly behaviour [49]. The findings of the study by [57] show that students engage in PEB because they enjoy it, and it is the fun thing to do. Another stream of research however finds that enjoyment is not positively associated with PEB. Tanu et al. [58] note that not environmentally friendly behaviour is pleasurable or enjoyed. Individuals that want to feel good should not include PEB in their goals because it often involves personal sacrifice. Enjoyment of a particular behaviour can significantly motivate the performance of such behaviour [15,59]. Enjoyment can also positively influence knowledge of pro-environmental action and positively affect attitude towards electricity saving [19]. It is hypothesised that:

Hypothesis 1. *Intrinsic benefit (enjoyment) is positively related to employees' attitude towards electricity saving.*

2.6.2. Extrinsic Benefits and Attitude towards Electricity Saving

Vanegas-Ricoa et al. [60] describe extrinsic benefits as benefits provided by sources external to the individual. Extrinsic benefits are benefits obtained by an individual for reasons that are not related to inherent satisfactions [50]. Organisations can use extrinsic rewards to drive employees' energy saving behaviour. These rewards can be in the form of improved pay, better job assignment, and increased job security [19]. Zibarras et al. [61] in a study on promoting PEB in the workplace in the United Kingdom find that the two practices most effective are internal awareness through lectures, seminars and debates, and active championing by senior management. The two least effective practices to encourage workplace PEB are penalties for non-compliance and individual incentives or reward programmes. External motivation for a behaviour can lead to increased resentment, resistance, and performance of the behaviour only under specific circumstances [54]. The findings of the study by [19] show that the association between extrinsic reward and employee energy saving behaviour in China is insignificant. Chen and Liu [62] remark that it is important to investigate how extrinsic motivation based on reward can affect attitude towards energy saving. Employees that feel that they are likely to obtain extrinsic benefits (bonus, promotion, job security, better work assignment, increased pay) are likely to be motivated to engage in energy saving and thus develop a positive attitude towards electricity saving [62,63]. It is hypothesised that:

Hypothesis 2. *Extrinsic benefit (workplace rewards) is positively related to employees' attitude towards electricity saving.*

2.6.3. Organisational Benefits and Attitude towards Electricity Saving

Organisational benefits can be described as benefits that accrue to an organisation because of electricity saving behaviour of employees. These benefits include cost savings and improved financial performance [19]. Singh et al. [64] point out that in recent times, businesses have started to witness pressure from customers, government, and shareholders to reduce their negative environmental impact. Environmentally oriented firms can derive benefits through cost savings, customer and employee attraction and retention, improved environmental performance, and sustained competitive advantage [65]. The study by [66] finds that commitment of an employee to an organisation and the desire to protect the image of organisation are significantly related to energy saving behaviour. Employee knowledge and awareness of the benefits that can accrue to an organisation through energy saving behaviour can affect their attitude towards energy saving [19]. It is hypothesised that:

Hypothesis 3. *Organisational benefit is positively related to employees' attitude towards electricity saving.*

2.6.4. Social Benefit and Attitude towards Electricity Saving

The social benefits of electricity saving behaviour include the impact of such a behaviour on the society in terms of costs, health, and air quality [67]. Social impact also includes availability of electricity to the population through the reduction in demand caused by electricity saving [68]. In South Africa, electricity supply is constrained, and the main energy supply company (Eskom) finds it difficult to meet demand leading to regular blackouts [69]. In addition, a significant part of the population of Sub-Saharan Africa does not have access to electricity, and the rate of electrification is not in line with the rate of population growth [69]. Saving electricity through demand side management can lead to a better match of electricity supply and demand [70]. According to [71], an organisation should take into consideration the social benefits of its activities such as the reduction of energy consumption on the society, as this can positively contribute to the sustainability of energy supplies. This suggests that the understanding by employees of the social benefits of energy saving in the form of reduction of load shedding and improved access to electricity can affect their attitude towards energy saving. [19]. It is hypothesised that:

Hypothesis 4. *Social benefits are positively related to employees' attitude towards electricity saving.*

2.6.5. Environmental Benefits and Attitude towards Electricity Saving

Environmental benefits can be described as the benefits of electricity saving to the environment. These benefits are derived through reduction in the direct and indirect emissions from fossil fuel consumption and electricity generation [72]. Climate change is one of the greatest challenges faced by the world, and PEB can make a positive contribution to environmental protection [73]. The perception of environmental benefits can influence the willingness of an individual to engage in PEB. Reference [10] finds that perceived environmental benefits are positively related with the acceptance by individuals of energy sources that protect the environment. Zhang et al. [19] find that environmental benefits are positively linked to attitude towards energy saving. The perception of environmental benefits can positively affect the attitude towards energy saving [10,19]. It is hypothesised that:

Hypothesis 5. *Environmental benefits are positively related to employees' attitude towards electricity saving.*

2.6.6. Leadership Behaviour and Support and Attitude towards Electricity Saving

Leadership is the process of influencing others towards the attainment of organisational goal. Leaders influence employees in an organisation through their moral commitment to their followers or employees and the collective good [74]. The effectiveness of an

organisation's environmental management strategy depends on leadership [20]. Leadership behaviour is a way and process through which leaders guide, direct, and influence followers to meet organisational goals [21]. Leadership support in the context of PEB describes deliberate activities by leaders and managers to encourage sustainability [21]. Robertson and Barling [21] remark that an individual can learn by observing the behaviours performed by others and subsequently initiate those kinds of behaviour themselves. In the case of PEB, which is often voluntary, leaders cannot mandate employees; however, they can encourage employees to develop and act pro-environmentally through their behaviour. Robertson and Barling [21] find that leadership behaviour and pro-environmental behaviour of employees are related. PEB by the managers of organisations can affect the intention of an employee to act pro-environmentally [75]. Thondhlana and Hlatshwayo [76] however find that leadership behaviour does not always affect the PEB of employees because of certain external factors. Leaders that show PEB in the area of recycling may not exhibit PEB in another area such as transportation. Blok et al. [77] describe leadership support in the context of sustainability as the activities that a leader or manager does to encourage employee PEB. Leaders support employees' PEB in many ways. These include encouraging employees' pro-environmental initiatives; communication about environmental issues; encouraging, appreciating, and helping employees to engage in pro-environmental behaviour; and appreciating employees PEB [78]. Leaders through their behaviour and support can influence attitude towards energy saving by employees [21,77]. It is hypothesised that:

Hypothesis 6. *Leader's electricity saving behaviour is positively related to employees' attitude towards electricity saving.*

Hypothesis 7. *Leadership support for electricity saving is positively related to employees' attitude towards electricity saving.*

2.6.7. Attitude and Intention

Attitude towards a behaviour is the extent to which an individual positively or negatively evaluates a behaviour. This influences the intention to perform a behaviour [23,78]. Reference [79] remarks that attitude can be conceptualised in two ways, namely, general and specific attitudes. General attitude focuses on the tendency of an individual to accomplish a certain behaviour whilst specific attitude can be used to predict a single behaviour. In the context of sustainability, general attitude represents judgement of an individual about environmental problem, whilst specific attitude evaluates a particular type of environmentally friendly behaviour or product [80,81]. Untaru et al. [82] remark that the findings of research that has focused on general attitude have not been very useful in sustainability-oriented behavioural changes compared to studies that have focused on specific attitude. The findings of the studies by [18,19,83] indicate that a positive attitude towards energy conservation can positively affect the intention to conserve energy. If an employee evaluates electricity saving behaviour to be beneficial, he/she can develop a positive attitude, and this can positively affect the intention to save electricity [23]. It is hypothesised that:

Hypothesis 8. *Attitude towards electricity saving is positively related to employees' intention to save electricity.*

2.6.8. Intention and Behaviour

Intention is a central factor in the TPB and describes as an individual's commitment to perform a given behaviour. Intention is the immediate antecedent of behaviour [23]. This suggests that the main predictor of a pro-environmental behaviour by an individual is the intention to behave in a pro-environmental manner. Macovei [84] finds that the intention to conserve energy and energy conservation behaviour are positively associated. Alshurideh et al. [85] in a study that used the TPB to investigate PEB in Jordan finds that

intention and behaviour are significantly positively related. The findings of the study on hotel guests' energy-saving behaviours by [86] indicate that that intention has a significant positive association with energy-saving behaviours. Canova and Manganelli [87] in a study that focused on energy-saving behaviours in the workplace in Italy and applying an extended TPB find that intention positively affects behaviour. It is hypothesised that:

Hypothesis 9. *intention to save electricity is positively related to employees' electricity saving behaviour.*

2.6.9. Moderating Role of Green Psychological Climate in the Relationship between Intention and Behaviour

Green psychological climate can be described as the perception and interpretation of employees about organisational practices, policies, and procedures and practices with respect to the environment [88,89]. Green psychological climate encourages and stimulates stakeholders to exhibit voluntary pro-environmental behaviour [90]. Tuan [91] finds that green psychological climate serves as a moderator in how green crafting affects employees' green performance. Norton et al. [89] remarks that in the context of PEB, employees' perception of green psychological climate can affect the association between intention and behaviour. It is hypothesised that:

Hypothesis 10. *Green psychological climate moderates the positive relationship between intention to save electricity and electricity saving behaviour.*

Figure 1 depicts the conceptual model of the study.

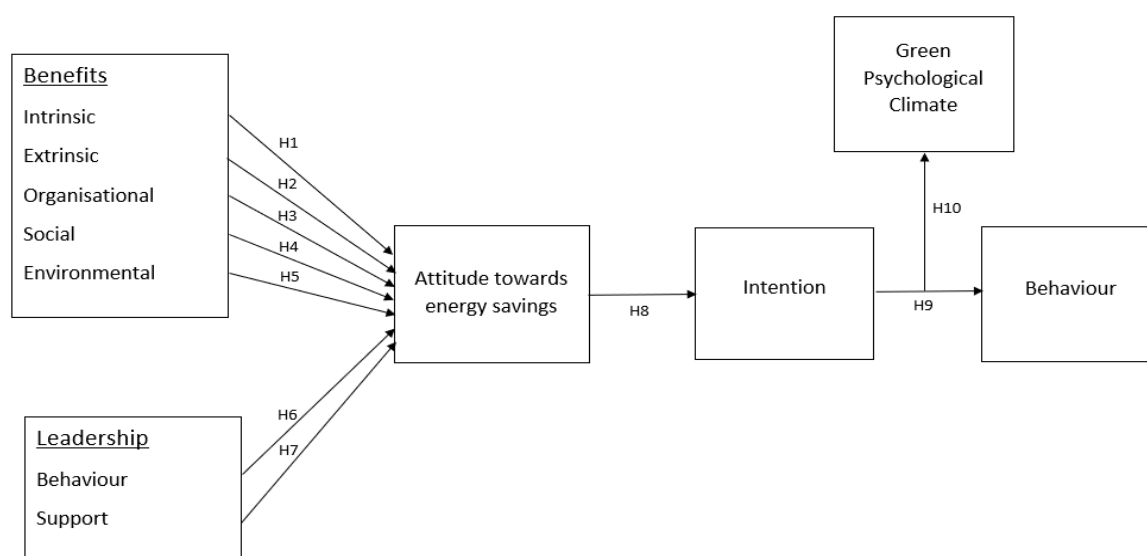


Figure 1. The conceptual model.

3. Materials and Methods

The study used the survey method and specifically the self-administered questionnaire method to collect data from the respondents. The survey was conducted in the Central Business Districts of Johannesburg and Pretoria of the Gauteng Province and Polokwane in the Limpopo province of South Africa. These areas contain a large number of small firms in the hospitality sector. The hotels that participated in the survey were sampled conveniently from the website of Trivago, a hotel search firm. A data collection agency assisted in the process. The study followed two processes. First the participating firms were identified. The owners and managers of the identified firms were contacted through personal meetings to explain the purpose of the research and seek the permission to contact their employees. One hundred and thirty firms and their owners and managers granted the permission to

conduct the survey out of one hundred and seventy contacted. The emails and telephone numbers of the owner/managers were obtained. The number of employees working in each firm was obtained from the owner/manager. This led to the identification of the class of small firms as follows: one hundred small firms (11–50 employees) and thirty medium sized firms (51–250 employees). Before actual data collection, a pilot study was carried out with ten small firms and thirty employees following the same process. The firms or the employees that participated in the pilot study were not involved in the actual survey. The pilot study led to slight modifications to the questionnaire. In addition, two leading researchers in the areas of sustainability and small firms examined the questionnaire, and their comments were incorporated in developing the final questionnaire. One hundred and twenty firms made up of ninety small firms and thirty large firms participated in the final survey. Six employees were contacted in each small enterprise and thirteen in each medium sized enterprise. Out of the one hundred and twenty firms that participated in the final survey, thirty-four were located in Polokwane and eighty-six in Pretoria. Polokwane is the capital of Limpopo province, and Pretoria is the administrative capital of South Africa. The participants were all office staff, and their cell phone numbers and or the emails were obtained after the delivery of the questionnaire. Each participant in the survey was given two weeks to complete the questionnaire. The participants were reminded every two weeks through phone calls or email messages to complete the questionnaire. This process was repeated for eight weeks. Questionnaires that are not completed after eight weeks are regarded as non-response. The Partial Least Square Structural Equation Modelling (PLS SEM) on the Smart software 3.0 was used to analyse the data collected in the survey. The question items were developed from previous studies and depicted in appendix one. The five-point Likert scale ranging from “1 strongly disagree” to “5 strongly agree” was used to anchor the questions. The participants in the survey were guaranteed anonymity and confidentiality. Table A1 Appendix A depicts the measures of the constructs of the study.

4. Results

4.1. Response Rate and Biographical Detail

Nine hundred and thirty questionnaires were distributed, and four hundred and four hundred and fifty-five returned. Eleven questionnaires were discarded because of the failure of the respondents to complete vital parts. Four hundred and forty-four questionnaires were usable. In determining the appropriate sample size, the study utilised the 10 times rule which assumes that when PLS SEM is used, the sample size should be greater than ten times the maximum number of inner or outer model links that point to a given latent variable in a model [92]. The biographical details of the respondents are as follows: gender, 229 females and 215 males; age, 21–30 years (135 respondents), 31–40 years (185), 41–50 years (98), 51–60 years (26); educational qualifications, 256 with Matric (high school) qualification and 188 with post matric (post high school, i.e., diploma and university degree) qualification.

4.2. PLS SEM

References [92,93] remark that the PLS SEM consists of two sub- models which are the measurement and the structural.

4.2.1. The Measurement Model

Table 1 depicts the measurement model. The following factors should be considered in the evaluation of the measurement model: factor loadings (>0.708), average variance explained (>0.500), Cronbach’s alpha (>0.700), and composite reliability. Table 1 shows that all these requirements are met, and convergent validity is established

Table 1. Measurement model.

Construct	Measurement Items	Loading	Cronbach's Alpha	Composite Reliability	AVE
Intrinsic benefits (INT) (enjoyment) (Mean 3.35 Standard deviation 1.03)	INT1	0.771	0.802	0.811	0.589
	INT2	0.802			
	INT3	0.729			
Extrinsic benefits (EXT) (reward) (Mean 1.82 Standard deviation 0.99)	EXT 1	0.732	0.790	0.855	0.595
	EXT2	0.746			
	EXT3	0.779			
	EXT4	0.411 D			
	EXT5	0.826			
Organisational benefits (ORG) (Mean 3.70, standard deviation 1.01)	ORG1	0.827	0.755	0.833	0.631
	ORG2	0.801			
	ORG3	0.742			
Environmental benefits (ENV) (Mean 3.46 Standard deviation 1.06)	ENV1	0.818	0.814	0.790	0.654
	ENV2	0.799			
Social benefits (SOC) Mean 4.10 Standard deviation 1.02	SOC1	0.741	0.726	0.864	0.613
	SOC2	0.782			
	SOC3	0.808			
	SOC4	0.799			
Leadership behaviour (LEB) Mean 4.02 standard deviation 1.05)	LEB1	0.901	0.800	0.842	0.662
	LEB2	0.803			
	LEB3	0.729			
Leadership support (LES) (Mean 3.88 standard deviation 1.03)	LES1	0.820	0.733	0.860	0.606
	LES2	0.761			
	LES3	0.728			
	LES4	0.802			
Green Psychological climate (GPC) (Mean 3.55 standard deviation 1.06)	GPC1	0.816	0.808	0.892	0.623
	GPC2	0.800			
	GPC3	0.779			
	GPC4	0.736			
	GPC5	0.816			
Attitude to energy conservation (ATT) Mean 4.35 standard deviation 1.01	Att1	0.813	0.860	0.852	0.591
	ATT2	0.782			
	ATT3	0.749			
	ATT4	0.727			

Table 1. Cont.

Construct	Measurement Items	Loading	Cronbach's Alpha	Composite Reliability	AVE
Intention (INTE) Mean 4.18 standard deviation 1.03	INTE1	0.844	0.841	0.839	0.635
	INTE2	0.804			
	INTE3	0.739			
Behaviour Mean (BEH) 4.26 standard deviation 1.03	BEH1	0.819	0.762	0.901	0.564
	BEH2	0.729			
	BEH3	0.808			
	BEH4	0.731			
	BEH5	0.747			
	BEH6	0.726			
	BEH7	0.759			

4.2.2. Discriminant Validity

To assess discriminant validity, the study used the Fornell–Larcker criterion and the heterotrait–monotrait ratio (HTMT). Table 2 depicts the results of the the Fornell–Larcker criterion for discriminant validity [92]. In addition, all the values of the HTMT ratio were below the conservative threshold of 0.850. These two tests confirm an adequate discriminant validity of all latent variables.

Table 2. Discriminant validity.

CON	INT	EXT	ORG	ENV	SOC	LEB	LES	GPC	ATT	INTE	BEH
INT	0.767										
EXT	0.629	0.771									
ORG	0.503	0.565	0.794								
ENV	0.552	0.448	0.507	0.809							
SOC	0.417	0.602	0.583	0.422	0.783						
LEB	0.508	0.575	0.488	0.429	0.577	0.814					
LES	0.612	0.408	0.422	0.529	0.627	0.705	0.778				
GPC	0.558	0.614	0.449	0.506	0.609	0.582	0.602	0.789			
ATT	0.446	0.513	0.411	0.671	0.507	0.522	0.561	0.492	0.769		
INTE	0.693	0.581	0.538	0.499	0.605	0.622	0.585	0.660	0.513	0.797	
BEH	0.425	0.399	0.482	0.571	0.599	0.608	0.661	0.482	0.533	0.597	0.751

Diagonals in bold signify the square root of the AVE while the other figures depict the correlations.

4.2.3. Structural Model

Hair et al. [93] points out that the following factors should be considered in the assessment of the structural model. The common method bias (CMB), the R^2 , the Q^2 , and the evaluation of the path coefficients. The variance inflation factor (VIF) that helps to identify the existence of CMB should be equal or lower than 3.3. The model (R^2) explained 54.8% of the variance of attitude towards electricity saving [94]. The GOF obtained by the study is 0.337, suggesting that the empirical data satisfactorily fits the significant predictive power of the model. A $Q^2 > 0.5$ is considered a predictive model. The Q^2 obtained in the study is 0.406. The effect sizes obtained in the study range from 0.284 to 0.296, and the standardised root mean square residual (SRMR) obtained in the study is 0.02. Table 3 depicts the structural model.

Table 3. Path coefficient and T-statistics.

Hypothesised Path	Path Coefficient	T-Statistics	Decision
H1 INT→ATT	0.293	5.039 **	Supported
H2 EXT→ATT	0.042	0.099	Rejected
H3 ORG-ATT	0.206	7.071 *	Supported
H4 ENV-ATT	0.193	2.998 *	Supported
H5 SOC-ATT	0.306	5.008 *	Supported
H6 LEB→ATT	0.220	4.126 **	Supported
H7 LES→ATT	0.149	3.335 **	Supported
H8 ATT→INTE	0.276	3.902 *	Supported
H9 INT→BEH	0.195	3.664 **	Supported
H10 Moderation effect green psychological climate → intention on energy saving behaviour	0.108	2.804 *	Supported

* $p < 0.01$; ** < 0.05 .

Table 3 and Figure 2 depict the summary results of the structural model. The results (β 0.293, T 5.039, $p < 0.05$) show that INT and ATT are significantly positively related supporting hypothesis one is supported. The results (β 0.042, T 0.099, $p > 0.05$) depict an insignificant relationship between EXT and ATT. Hypothesis two is rejected. The results (β 0.181, T 7.071, $p < 0.01$) indicate an ORG and ATT are significantly positively associated, supporting hypothesis three. The results (β 0.193, T 2.998, $p < 0.01$) show that ENV and ATT are positively linked, supporting hypothesis four. The results (β 0.306, T 5.008, $p < 0.01$) show that SOC and ATT are significantly related, supporting hypothesis five. The results (β 0.220, T 4.126, $p < 0.05$) show LEB and ATT are significantly positively related, supporting hypothesis six. The results (β 0.149, T 3.335, $p < 0.05$) show a significant positive association between LES and ATT, supporting hypothesis five seven. The results (β 0.276, T 3.902, $p < 0.01$) show ATT and INTE are positively linked, supporting hypothesis eight. The results (β 0.195, T 3.664, $p < 0.05$) show INTE and BEH are significantly positively associated, supporting hypothesis nine. The product-indicator method was used to evaluate if green psychological climate moderates the relationship between intention and energy saving behaviour because the construct is continuous. The results of the interaction terms ((β 0.108 T 2.804, $p < 0.01$) are significant, and hypothesis ten is supported. In addition, the slope of the link between intention and behaviour as moderated by green psychological climate indicates that the relationship becomes stronger when green psychological climate is high as evidenced by Table 3. This shows that when green psychological climate is high, the relationship between intention and behaviour tends to be stronger.

Figure 2 depicts the results of the structural modelling results of the conceptual model.

Figure 3 depicts the moderation plot for green psychological climate.

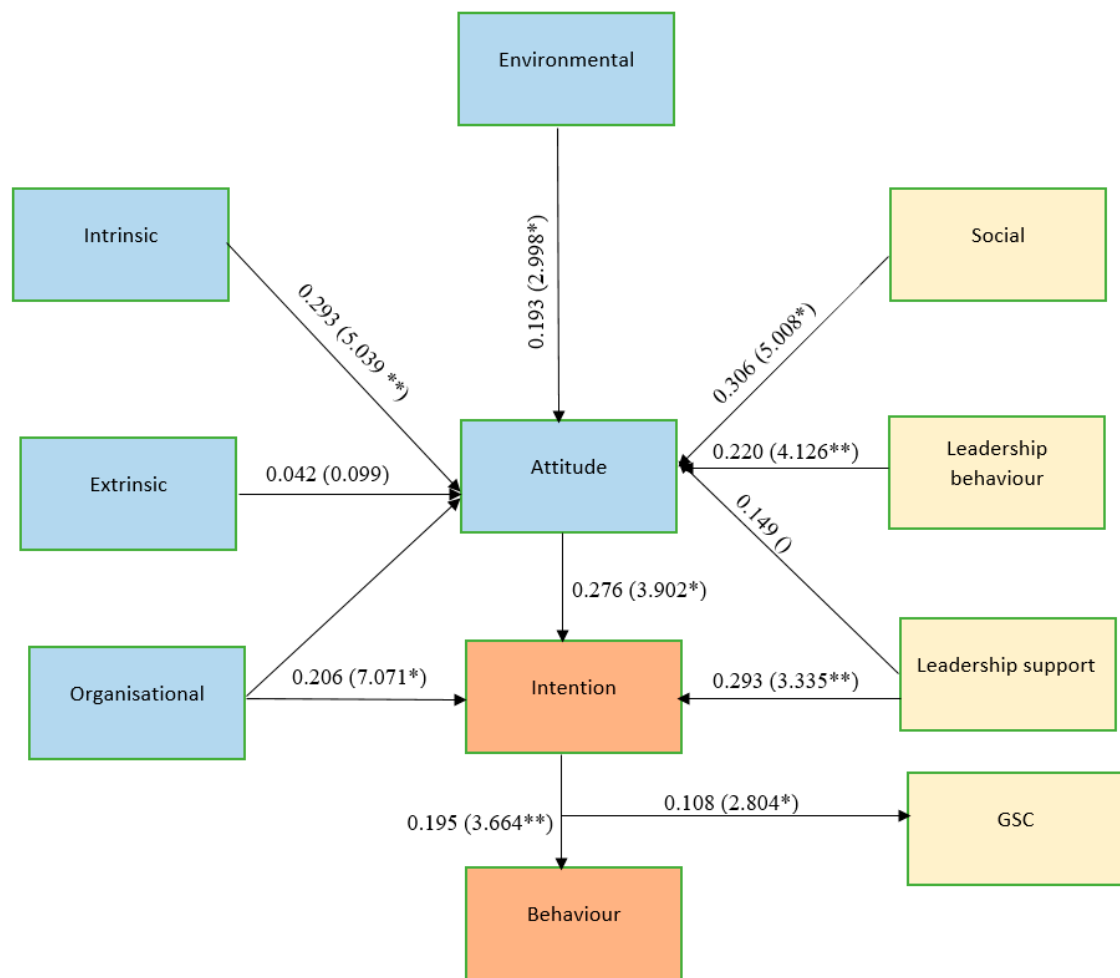


Figure 2. Structural modelling results of the conceptual model * $p < 0.01$; ** $p < 0.05$.

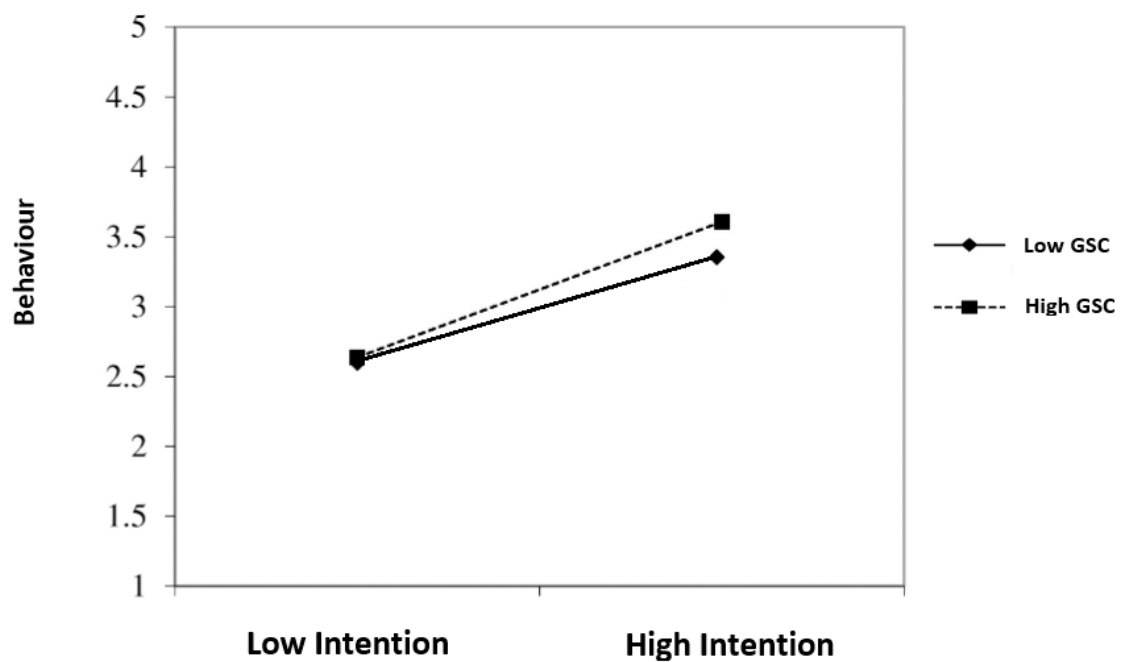


Figure 3. Moderation plot GSC (green psychological climate).

5. Discussion

Electricity saving is one of the ways to achieve a cleaner, healthier environment and ensuring climate change. Grounded on the TPB, the study examined the effects of perceived benefits and leadership on attitude towards energy conservation by the employees of SMMEs in South Africa. Five benefits (intrinsic, extrinsic, organisational, social, and environmental) and two leadership factors (leadership behaviour and leadership support) were examined. In addition, the moderating effect of green psychological climate in the relationship between intention and electricity saving behaviour was investigated. The findings indicated that the perception of intrinsic benefit positively affects the attitude towards electricity saving, these being significantly positively related. The results suggest that intrinsic benefits as measured by enjoyment can positively affect attitude toward electricity saving. The results are consistent with the findings of [19,58] that enjoyment leads to fulfilment and an inner feeling of satisfaction and positively impact on attitude toward electricity saving. The results indicate that extrinsic benefits do not affect attitudes towards energy saving. The results suggest that external motivations to engage in electricity saving may not lead to electricity saving. The results are consistent with the findings of [61] that external rewards such as individual incentives or reward programmes do not significantly influence employees' pro-environmental behaviour.

The findings indicated that organisational, social, and environmental benefits positively affect attitudes towards electricity saving. The knowledge by employees of the social and environmental benefits of electricity saving can affect their attitude towards electricity saving. The results are consistent with the findings of previous empirical studies. Energy conservation can reduce a firm's operational costs and improve financial and environmental performance [19]. Environmentally oriented firms can derive benefits in cost savings, improved environmental performance, and competitive advantage [64]. In South Africa, the electricity supply is constrained and does not match the demand leading to regular load shedding [65]. Electricity saving can lead to reduction of load shedding and blackouts and improved access to electricity by the people of the country [65].

The results indicated that leadership behaviour and leadership support are significantly positively related to attitude towards electricity saving. The findings indicated that owners/managers of SMMEs through their behaviour and support can influence attitude towards electricity saving by employees. Robertson and Barling [21] finds that leadership behaviour influences the PEB of employees. Blok et al. [77] remark that leadership support through the building of environmental competencies, encouraging pro-environmental initiatives, and encouraging pro-environmental action can improve employees PEB. The results showed that attitude is positively related to electricity saving intention. This suggests that if an employee evaluates electricity saving in the workplace to be beneficial, he/she will develop a positive attitude, and this can positively affect the intention to save electricity. The findings of the study by [18,19] also showed that a positive attitude towards energy conservation is positively linked to intention to conserve energy. The results showed that intention is positively related to electricity saving behaviour. The findings are consistent with the results of [84–87] that intention has a significant positive association with energy-saving behaviours. The findings showed that green psychological climate moderates the link between intention and energy saving behaviour. The relationship between intention and actual behaviour can be positive if there is a perception of a positive green psychological climate by employees [88,89].

6. Research Implications

6.1. Theoretical Implication

The study makes a contribution to the workplace electricity saving behaviour of employees. Studies have primarily focused on household electricity saving behaviour with scant research on employees in the workplace. However, businesses consume a vast amount of electricity and energy saving at work is more complex than energy saving at home because employees do not pay for electricity at work. In addition, while the

majority of studies that used the TPB or the extended versions have focused on how the TPB constructs affect intention, this study examined the antecedents of attitude towards electricity saving in the context of small firms in the hospitality sector. The study developed a unique theoretical model that shows how benefits and leadership can affect employees' attitude towards electricity saving and how green psychological climate can moderate the relationship between intention and behaviour. The findings of the study provide an important insight into how benefits and leadership can affect the electricity saving behaviour of employees. In addition, while the direct effect of intention on pro-environmental behaviour has stimulated many studies, this study provides insight into how green psychological climate can intervene in the relationship. This is a novel contribution especially in the context of electricity saving behaviour of employees in small hospitality firms.

6.2. Practical Implication

The findings of the study have practical implications for the management of electricity saving in small hospitality firms. The findings indicate how perceived benefits and leadership behaviour and support can affect attitude towards electricity saving. To improve attitude towards electricity saving, employees must be able to obtain both the intrinsic and extrinsic benefits of electricity saving behaviour. To improve intrinsic motivation, hospitality firms should focus on enhancing the warm glow derived from electricity saving. This can be done through an increase in the level of environmental concern and knowledge that high energy consumption significantly contributes to climate change. Hotel managers can enhance the self of enjoyment by acknowledging the contribution of employees to electricity saving. In addition, employees should be made aware of the social, environmental, and organisational benefits of electricity saving. This can be realised through training about the environmental impact of energy conservation. Leaders through their behaviour and support can also improve attitudes towards electricity saving. Leaders should make sure that they save electricity at work and also encourage employees to do so.

6.3. Limitations and Areas for Further Study

The study has some limitations. First data were collected from employees of small firms in three cities in South Africa, and this restricts the generalisability of the results. Other studies can improve the generalizability of the findings by including additional employees in large hotels in other provinces of South Africa. An international comparative study will assist in improving the generalizability of the findings. Second, the study depended on self-reported data of employees rather than objective observations. This may lead to social desirability bias. Other studies can obtain responses from managers of hotels about the electricity saving behaviour of employees. Third, the study did not include the effect of demographic factors such as age, level of education, and gender. Socio-demographic factors can also affect employees' electricity saving behaviour. Other studies can explore the moderating role of demographic factors. Fourth, the study did not include mediating variables which can be useful in understanding the intervention mechanism between benefits and leadership and intention. Attitude towards energy saving can be used as a mediator in the link between benefits and leadership and intention to save energy by the employees of small firms. Fifth, the study focuses only on the antecedents of attitude. The two other TPB constructs (subjective norms and perceived behavioural control) also have antecedents, and these were not examined by the study. Other studies could examine the antecedents of subjective norms and perceived behavioural control in the context of employee electricity saving behaviour in small firms. Sixth, the study used a cross-sectional research design, and this limits cause and effect relationship. Other studies can adopt a longitudinal research design to improve cause and effect.

7. Conclusions

The study examined the relationship between perceived benefits and leadership and attitude towards energy saving by the employees of small firms. Data were collected from

444 employees of small hotels. The PLS SEM using Smart software was used to analyse the data. The findings indicated that benefits (intrinsic, organisational, social, and environmental) and leadership (leadership behaviour and support) are positively associated with attitude toward electricity saving in the context of small firms. The study makes theoretical, empirical, and policy contributions to the research on employee electricity saving from the perspective of small hospitality firms.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of the University of Limpopo (protocol code TREC/289/2021:IR and dated 30 March 2021) for studies involving humans.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The research results were obtained from the questionnaire constructed by the Author of this publication.

Conflicts of Interest: The author of the paper confirms that there is conflict of interest.

Appendix A

Table A1. Measures of the constructs of the study.

Construct	Questions	Adapted from (Source)
Personal Intrinsic benefits (enjoyment)	<ol style="list-style-type: none"> 1. I enjoy saving electricity in my firm 2. It gives me pleasure to save electricity for my firm 3. I am delighted saving electricity in my firm 	[19]
Extrinsic benefits (workplace reward)	<ol style="list-style-type: none"> 1. I will be rewarded with improved salary by my firm for my electricity saving behaviour 2. I will be rewarded with promotion by my firm for my electricity saving behaviour 3. I will be rewarded with job security by my firm for my electricity saving behaviour 4. I will be rewarded with a better job assignment by my firm for my electricity saving behaviour 5. My firm has rewards employee electricity saving behaviours. 	[19,55]
Environmental benefits	<ol style="list-style-type: none"> 1. Saving electricity in my firm helps to prevent global warming and climate change 2. Saving electricity in my firm helps to reduce my country’s ecological damage 	[19]
Social benefits	<ol style="list-style-type: none"> 1. Saving electricity in my firm helps to reduce electricity demand in the country 2. Saving electricity in my firm helps to reduce electricity load shedding and blackouts in the country 3. Saving electricity in my firm helps to improve access to electricity by people and business in the country 4. Saving electricity in my firm help to improve energy security of the country 	[60,61]
Organisational benefits	<ol style="list-style-type: none"> 1. Saving electricity reduces the cost of electricity incurred by my firm 2. Saving electricity will help my firm save money 3. Saving electricity is beneficial to my firm 	[19,56,57]
Attitude towards electricity saving	<ol style="list-style-type: none"> 1. For me, saving electricity in my firm is positive 2. For me, saving electricity in my firm is good 3. For me, saving electricity in my firm is positive wise 4. For me, saving electricity in my firm is positive is desirable 	[19,56]
Leadership behaviour	<ol style="list-style-type: none"> 1. ‘I save electricity because my manager/owner saves electricity at work 2. It is important to me that my manager/owner displays electricity saving at work 3. Seeing my manager/owner save electricity at work influences my own electricity saving behaviour at work. 	[63–68]

Table A1. Cont.

Construct	Questions	Adapted from (Source)
Leadership support	<ol style="list-style-type: none"> 1. My manager/owner supports me in electricity saving behaviour at work 2. I learn electricity saving behaviour at work. 3. My manager/owner encourages employees to save electricity at work 4. There is the support of manger/owner for the electricity saving effort of employees. 	[63–68]
Intention to save electricity	<ol style="list-style-type: none"> 1. I intend to save electricity in my firm 2. I plan to save electricity in my firm 3. I am willing to save electricity in my firm 	[23,55]
Electricity saving behaviour	<ol style="list-style-type: none"> 1. When I am at work in my firm: I turn off the lights when going out even for a short time. 2. I reduce the use of the fan/air conditioner by opening the windows 3. I switch off the computer when it is not used. 4. I limit the duration that the refrigerator door is kept open 5. I turn off the lights when the sunshine is bright enough. 6. I properly close the room when I use the air-conditioner 7. I switch off all lights when leaving work as the last person 	[23,55]
Green psychological climate	<ol style="list-style-type: none"> 1. My firm is worried about its environmental impact 2. My firm is interested in supporting environmental causes 3. My firm believes it is important to protect the environment 4. My firm is concerned with becoming more environmentally friendly. 5. My firm would like to be seen as environmentally friendly 	[80]

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