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# WHY ARE CONSUMERS GOING GREEN? THE ROLE OF ENVIRONMENTAL CONCERNS IN PRIVATE GREEN-IS ADOPTION

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## Abstract

*Globally, efforts are undertaken to promote the diffusion of Green-IS. The aim is to mitigate negative environmental impacts of IS itself and to leverage IS' potential in the creation of environmentally sustainable societies. A particular Green-IS, essential for the intended modernization of energy systems, is the Smart Metering Technology (SMT). It facilitates demand-reduction and -shifting and is supposed to trigger behavioural and economic changes in households' energy consumption. While technology adoption in the workplace has been studied extensively, scientific evidence as to residential settings is limited. Likewise, the IS-community has hitherto been reluctant in addressing issues regarding environmental sustainability (Melville 2010). This study aims at bridging these gaps by investigating the factors influencing private consumers' intention to adopt Green-IS. We present a comprehensive research model which was empirically validated by employing data collected from 708 potential adopters. The model was found to explain a substantial proportion (.55) of the variance. The results implicate that apart from the major determinant attitude, intention is driven by environmental concerns and social influence. The study's outcomes will help refining researchers' understanding of private Green-IS adoption and will be useful for diverse stakeholders interested in encouraging SMT-adoption. Theoretical and practical implications are discussed.*

**Keywords:** *Green-IS, Technology Adoption, Energy Informatics, Environmental Sustainability.*

# 1 Introduction

Despite various EU-wide and national energy efficiency policies and programs, electricity consumption of households continues to grow within the EU-27 member states. According to the International Energy Agency (IEA) information and communication technologies (ICT) and consumer electronics now account for 15% of global residential power consumption and their share is increasing rapidly (IEA/OECD 2009). Consequently, policy is seeking to mitigate this trend of rising residential power demand. In the Directive 2009/125/EG the EU defined eco-design requirements for major energy-consuming products with respect to their entire life cycle. This could be interpreted as an attempt to define legally binding targets for a class of efforts and IT-products, industry refers to as “Green-IT”. However, as the term Green-IT typically solely focuses on technologies, scholars prefer the notion of “Green-IS” as used in this article. Researchers argue that beyond technology the term Green-IS also encompasses people, processes, and software (Melville 2010, Watson et al. 2010). Moreover the Directives on energy end-use efficiency and energy service (2006/32/EG) and on common rules for the internal market in electricity (2009/72/EG) require member states to ensure that end consumers are provided with new electricity meters that make information regarding current actual prices and energy consumption available until 2022. The goal of these regulatory provisions is to induce behavioural and economic changes on the demand side by reducing information asymmetry and increasing demand elasticity (Bilton et al. 2008). For achieving these targets the SMT is expected to play a key role. The technology enables advanced communication and coordination within the energy network which are not only essential features of the SMT, but also of an ICT-enhanced energy system which works more efficiently, reliably, and sustainably than today’s system, typically referred to as *smart grid* (ERGEG 2010). For entirely realizing the benefits of the technology and justifying the massive investments (Faruqui et al. 2010), it is required that the majority of private consumers adopt and use the SMT and its services according to its potential. However, to date technological considerations have occupied centre stage while consumer-related issues have been sidelined (Darby 2008, Faruqui et al. 2010) although the SMT noticeably impacts people’s home lives, consumption behaviours, and habits. This makes understanding the drivers that encourage or inhibit SMT-adoption crucial. Also the IS community has been reluctant in acknowledging and addressing environmental and sustainability issues (Melville 2010, Watson et al. 2010). Therefore, in a special issue of the MIS Quarterly, Watson et al. (2010) call for establishing *energy informatics* as a new subfield within IS research. Energy informatics “*enables and motivates economic and behaviourally driven solutions*” which help reducing energy consumption and thus, greenhouse gas (GHG) emissions by eliminating problems arising from a lack of information (Watson et al. 2010). Bringing together IS and environmental sustainability yields various new research possibilities at the individual, organizational, social, and environmental level. In our study we investigate how individual consumers’ beliefs translate into behavioural intention, i.e. adopting a particular residential Green-IS. Therefore, this paper aims to contribute to the limited body of literature in the areas of energy informatics and residential Green-IS adoption.

The remainder of the paper is structured in five sections. In the following paragraph, we review prior adoption research in nonwork settings and elaborate on Green-IS and the SMT. Upon this foundation the research model and hypotheses are presented (section 3). We then outline the methodology (section 4) and present the results (section 5). Finally, the paper concludes with a discussion of the results and provides implications for research, business practice, and policy (section 6).

## 2 Background

### 2.1 Prior Research on IS adoption in nonwork settings

In order to elaborate and identify determinants that influence technology adoption many different research models have been applied (see Venkatesh et al. 2003 for an overview). The majority of these models are based upon theories originating in behavioural science and social psychology such as the Theory of Planned Behavior (TPB) (Ajzen 1991) and the Technology Acceptance Model (TAM) (Davis 1989, Davis et al. 1989). The main focus of early adoption studies was on work-related technologies in organizational settings (see Venkatesh et al. 2003, Williams et al. 2009). It took until the beginning of the 1990's until IS research gradually extended its scope and began to examine technology adoption in private and residential settings (Brown 2008). Early studies in this field however (e.g., Venkatesh and Vitalari 1992, Venkatesh 1996), were still considerably influenced by the utility-performance contingency of organizational IT use. Many researchers argued that this unidimensional orientation restricted the ability to theorize richly about adoption behaviour because of disregarding important context-specific factors (e.g., Williams et al. 2009). In an effort to address these flaws and to take into account the differences between organizational and residential settings, Venkatesh and Brown (2001) developed the Model of Adoption of Technology in Households (MATH). Drawing upon the TPB, their model encompasses constructs from diverse research domains that have been largely omitted by the previous literature. Furthermore, their model considered the perceived pressure from one's social environment to perform a particular behaviour, separated in primary and secondary sources' influence, which for the most part was excluded by IS research. Similarly, further studies extended our understanding of private and household adoption by addressing various technology-related aspects and choosing different theoretical perspectives. A large body of adoption research deals with IS-artefacts which are ubiquitous in people's private lives, like the SMT is supposed to become. In addition to technology-specific features these studies typically incorporate determinants originating in the fields of marketing and social psychology (Hong and Tam 2006, Lee et al. 2009). Other studies extended theory on household adoption by analyzing the role of values. Zhang and Maruping (2008) examined the influence of espoused cultural values such as individualism and collectivism on adoption patterns. Similarly, Lee and Kozar (2008) incorporated moral and ethical values in their research model to analyze the factors influencing anti-spyware software adoption. Both studies found that adoption decisions are affected by people's values.

### 2.2 Green-IS and the smart metering technology

The focus of Green-IT which typically refers to making ICT more environmentally-friendly and resource-saving is broadening. This is reflected by the term Green-IS which explicitly incorporates IS-enhanced solutions that help to increase environmental sustainability in diverse areas (Climate Group 2008, Melville 2010, Watson et al. 2010). In general, the effects of Green-IS can be differentiated into three levels (OECD 2009):

- Reducing negative environmental impacts of IS itself (*direct effect*)
- Reducing negative environmental impacts of other economic sectors like industry, households, or agriculture by means of IS (*enabling effect*)
- Developing innovative IS-enhanced products and processes which profoundly change ways of living and result in reorganization of production and consumption towards more sustainability (*systemic effect*)

The SMT entails both enabling and systemic effects. First, the SMT helps to increase the energy efficiency of the residential and industrial sector and second, it facilitates a wide range of new applications and services which have the ability to radically alter the way energy is produced and consumed. Overall the SMT provides several advantages for consumers, utilities, and the society as a whole. It provides better information, increased operational and energy efficiency, and a more

effective integration of renewable energy sources which help reducing GHG emissions. For the sake of fully benefiting from the SMT consumers have to accept ceding some control over consumption to entitled parties. Also they have to agree with the continuous transfer of consumption data which has to be processed, stored, and analyzed for billing, grid and service management purposes by authorized actors. Like any other modern technology the SMT is evolving rapidly. Therefore, meaning different things to different people. As a result there is no widely accepted definition yet (Darby 2008). The present study conceives the SMT (which we use analogously to the term “Advanced Metering Infrastructure”), as an integrated multi-faceted platform consisting of numerous technologies and applications as depicted in Figure 1 (Haney et al. 2009).

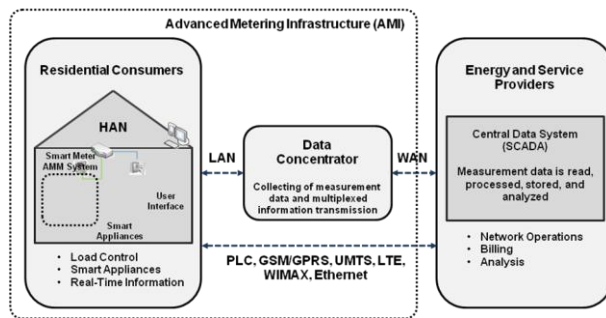


Figure 1: The smart metering technology

### 3 Research model and hypotheses development

The TPB contends that actual behaviour is a result of intentions to perform a particular behaviour and perceived behavioural control. Like numerous other studies, we rely on intention as dependent variable since “*intention is the most proximal influence on behaviour and mediates the effect of other determinants on behaviour*” (Venkatesh and Brown 2001). Intention can be regarded as the subjective probability that a person will perform a certain behaviour (Fishbein and Ajzen 1975, p. 12) and is found to be a strong predictor of actual usage (Armitage and Conner 2001, Venkatesh et al. 2003). Individual intention is predicted by three factors: attitude, subjective norms, and perceived behavioural control. In addition to these antecedents of intention which were originally included in the TPB, the variable environmental concern was incorporated in the research model. The variable reflects one’s environmental values. We posit that these values are important since the positive impact on the environment is an essential characteristic of Green-IS. Thus, different from conventional adoption studies, in which resources are private, studying Green-IS adoption entails a social welfare element since the environment is a common good (Picot et al. 2008, pp. 55). This facet is explicitly taken into account by this study.

#### 3.1 Attitude

Attitude is referred to as the degree to which an individual assesses a behaviour as (un-)favourable (Fishbein and Ajzen 1975). Concerning SMT-adoption, attitude reflects a person’s evaluative judgment about using SMT is either harmful or beneficial. In line with previous studies which found that attitude was a strong predictor of intention (Lee and Kozar 2008, Kranz et al. 2010), we suggest that one’s favourable attitude towards using the SMT is positively related to adoption intention. Hence, we contend:

*Hypothesis 1: Attitude positively influences the intention to adopt the SMT.*

### 3.2 Social influence

Human behaviours do not occur in a vacuum, but are embedded within a social context. Thus, they are highly susceptible to interactions with one's environment (e.g., Fishbein and Ajzen 1975). Several theories in social psychology (Fulk et al. 1987), behavioural research (Fishbein and Ajzen 1975), and innovation diffusion (Rogers 1983) highlight the impact of social influence. In adoption research, however, social influence only played a subordinate role because of its uncertain psychometric properties (Davis 1989) and contradicting results (e.g., Venkatesh and Morris 2000, Pavlou and Fygenon 2006). Following the TRA most of these studies measured subjective norm by a single item. Subjective norm is then defined as a "person's perception that most people who are important to him think he should or should not perform the behaviour in question" (Fishbein and Ajzen 1975, p. 302). This notion raises the question if a person really perceives any cumulative influence of others and further if the influence and its strength do not differ among groups (Ahtola 1976). Correspondingly, Armitage and Conner (2001) suggest that the poor performance of subjective norm is based on this single item measurement and deem multi-item scales more reliable. In order "to capture the nuances of the social environment" (Srite and Karahanna 2006), we follow recent research (e.g., Venkatesh and Brown 2001, Brown and Venkatesh 2005) which separates the group of influential others by distinguishing between primary sources' influence (e.g., family members, friends) and secondary sources' influence (e.g., media, inspirational public figures). We expect both influences to be important determinants of private Green-IS adoption because the diversity of potential interpersonal or impersonal influential sources in private contexts is greater than in workplace settings. Furthermore, performing eco-friendly behaviours often means conforming to social norms rather than distinct environmental concerns (Bamberg 2003, Haanpää 2007). Thus, we state:

*Hypothesis 2: Primary sources' influence positively influences the intention to adopt the SMT.*

*Hypothesis 3: Secondary sources' influence positively influences the intention to adopt the SMT.*

### 3.3 Perceived behavioural control

Perceived behavioural control reflects the extent to which a person believes to control internal and external factors that either enable or confine performing a behaviour in question (Ajzen 1991). For the present study's context perceived behavioural control is related to the consumers' subjective degree of control over adopting and using the SMT. We suggest that the higher the level of perceived control the greater the intention to adopt the SMT (Lee and Kozar 2008). Hence, we contend:

*Hypothesis 4: Perceived behavioural control positively influences the intention to adopt the SMT.*

### 3.4 Environmental concern

In the domain of environmental psychology, constructs relating to one's environmental attitude, concern, or commitment are widely used as predictors of environmentally-friendly behaviours (e.g., Kaiser et al. 1999). Correspondingly, in the consumer behaviour literature these variables are used to identify and analyze the segment of green consumers (e.g., Fraj and Martinez 2006, Haanpää 2007). The most commonly employed construct for measuring environmental attitude or concern is the new environmental paradigm (NEP) as proposed by Dunlap and van Liere (1978). The measure reflects a person's evaluation of the relationship between humans and the environment by measuring egoistic, social-altruistic, and bio-centric values. Literature considers these values, norms, or world views as origins of any green consumer behaviour (McCarty and Shrum 2001). The construct also measures the degree to which a person thinks that the environment is vulnerable to human interference. Hence, in line with research in the field of environmental psychology we refer to the construct as "environmental concern" in the remainder of this paper (e.g., Poortinga et al. 2004). Previous studies on the acceptance of eco-innovations suggest that environmental concerns are positively linked to the

adoption of alternative fuel vehicles (Jansson 2009), domestic photovoltaic systems (Keirstead 2007), and the participation in green electricity programs (Clark et al. 2003). Accordingly we state that environmental concern is positively related to behaviours favouring the preservation of natural resources, i.e. adopting Green-IS. Further, we expect that for people with greater environmental concerns attitude has a greater effect on intention. Therefore, we posit that environmental concern moderates the relationship between attitude and intention. Hence, we contend:

*Hypothesis 5: Environmental concern positively influences the intention to adopt the SMT.*

*Hypothesis 6: Environmental concern moderates the relationship between attitude towards the SMT and intention to adopt the SMT, such that attitude increases in importance with increasing environmental concern.*

## 4 Research methodology

### 4.1 Sample and data-collection procedure

To validate the research model, we collected data from an online survey. The survey was run in March 2010. A pretest of the initial survey instrument was conducted in February 2010 with six scholars familiar with IS-adoption research and three energy-technology experts. Due to the feedback, the wording and the order of some items were revised. Also the initial multimedia presentation of the SMT's most important features and functions was modified. This additional information was included because of the public's low degree of familiarity with the technology which could potentially act as an interfering variable. Subjects were recruited by posting links on several websites (including Federal Ministry of Economics and Technology, universities, consumer portals). Additionally a direct link to the online questionnaire was embedded within energy- and technology-related newsletters of non-governmental organizations and private companies. Web-logs indicated that from an initial sample of 303 participants in this data collection round, 173 completed the survey (.57) over a period of three weeks. Additionally an e-mail was sent to 6000 randomly selected post- and undergraduate students of various majors soliciting participation in the survey. Within the e-mail, a direct link to the questionnaire was included. Within one week 728 students responded, 535 of which completed the survey (.12). In order to increase the response rate, participants of both samples were compensated by giving the chance to win MP3 players through a lucky draw.

### 4.2 Measures

Each of the employed scale items was derived from previously suggested and validated measures which are widely used in their respective research domains. We restated each item carefully to reflect the special characteristics of the research context. All items, apart from environmental concerns (four-point) were rated on a seven-point Likert scale with the anchors "strongly agree" (1) and "strongly disagree" (7). For environmental concern the "strongly disagree"-anchor was 4. Prior to entering in the analyses some reversed items were recoded. Additionally data for the control variables age (coded as 1 = < 21, 2 = 21-30, 3 = 31-40, 4 = 41-50, 5 = 51-60, 6 = > 60) and gender (coded as 0 = female and 1 = male) was obtained from the survey. As shown in table 1, the constructs showed good internal consistency.

Variable	Abbreviation	Number of Items	Measure Source	Cronbach's $\alpha$
Intention to Use	INT	3	Davis (1989)	.93
Attitude toward Use	ATT	4	Davis (1989)	.92
Perceived Behavioral Control	PBC	3	Taylor and Todd (1995b)	.72
Primary Sources' Influence	PSI	3	Mathieson (1991)	.93
Secondary Sources' Influence	SSI	3	Brown and Venkatesh (2005)	.89
Environmental Concern	ECO	4	Dunlap and van Liere (1978)	.74

Table 1: Constructs and items

## 5 Results

We conducted multiple regression analyses to test the hypothesized relationships. This approach is a commonly used technique when both independent and dependent variables are ordinal or scale (e.g., Oh et al. 2003). Further, regression analysis was chosen because of its comprehensibility and its superior applicability for studying interaction effects (Goodhue et al. 2007). SPSS version 17 was used to analyze the data. Table 2 provides the descriptive statistics and correlation coefficients.

	Mean	STD	1	2	3	4	5	6	7
1 INT	3.53	1.72							
2 ATT	2.36	1.39	.59*						
3 PBC	2.45	1.16	.34*	.42*					
4 PSI	5.28	1.74	.33*	.26*	.11*				
5 SSI	4.21	1.84	.39*	.25*	.18*	.49*			
6 ECO	1.77	.54	.14*	.10*	.08*	.01	.04		
7 AGE	2.37	1.08	-.04	.13*	.03	.15*	.01	-.12*	
8 GEN	.59	.50	-.13*	.08*	-.17*	.07	-.09*	-.06	.31*

Note. N = 708. \* p < .05.

Table 2: Mean, standard deviations and correlations for study variables

As shown in the table above, some of the variables of interest are correlated. Hence, in order to assess construct validity, a confirmatory factor analysis was conducted employing principal component analysis with varimax rotation and Kaiser normalization. All items loaded appropriately and above the threshold of .40 (Straub et al. 2004). Moreover, the eigenvalues of all constructs were greater than 1.0. Thus, the results of the factor analysis fulfil the criteria for both convergent and discriminant validity (Straub et al. 2004). We also tested for multicollinearity as presented in Table 3. The results gave no indication for multicollinearity contaminating the results (Myers 1990, Neter et al. 1996). Further, the means of the variance inflation factors (VIF) were not significantly greater than 1 in any of the models. Table 3 also shows that the tolerance values give no indication of multicollinearity being problematic (Brace et al. 2003). The results of the regression analysis are given in Table 3.

Variable					
Dependent	Independent	$\beta$	t	Tolerance	VIF
INT	AGE	-.14	-3.06 *	.87	1.16
	GEN	-.46	-4.73 *	.85	1.18
	ATT	.76	20.54 *	.74	1.35
	PBC	.03	.71	.78	1.29
	PSI	.10	3.28 *	.71	1.40
	SSI	.16	5.69 *	.72	1.40
	ECO	.20	2.34 *	.97	1.03

Note. N = 708. \* p < .05.

Table 3: Multiple regression results

The regression results indicate ample support for the hypothesized positive relationships of attitude ( $\beta = .76$ ,  $p < .05$ ), primary sources' influence ( $\beta = .10$ ,  $p < .05$ ), secondary sources' influence ( $\beta = .16$ ,  $p < .05$ ), and environmental concern ( $\beta = .20$ ,  $p < .05$ ) on behavioural intention. No support was found for hypothesis 4 stating that perceived behavioural control positively influences intention. Overall the variables accounted for a significant proportion of the variance in intention ( $R^2_{adj} = .55$ ).



Before computing the interaction term to test the mediation hypothesis, we centered all continuous variables according to Aiken and West (1991) to eliminate potential problems arising from multicollinearity. We tested for multicollinearity, but again did not find any evidence. Subsequently, we structured hierarchical multiple regression equations for the moderating effect (hypothesis 6) by first entering the centered variables representing predictor and moderator variable. In a second step the interaction term was included (cf. Aiken and West 1991). The results did not support the hypothesized interaction effect ( $\beta = -.11, p > .05$ ) which for interpretative reasons is illustrated with simple slopes one s.d. above and below the mean in Figure 2.

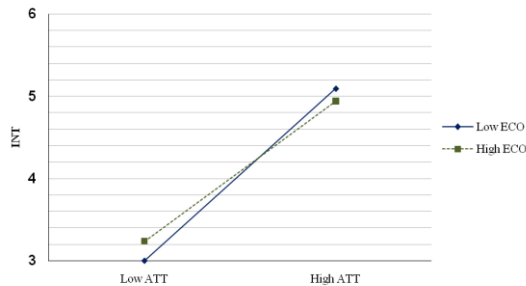


Figure 2: Interaction effect

## 6 Discussion and Implications

Private consumers' adoption of Green-IS is essential to limit the negative consequences of the rapid global growth of domestic energy demand. Hence, understanding the factors influencing Green-IS adoption decisions is both a business asset and a societal imperative. This study aimed at examining how attitude, subjective norms, perceived behavioural control, and environmental concern affect the intention to adopt a particular Green-IS artefact. Thereby the paper contributed to research in energy informatics and IS adoption in residential settings.

Overall the model could successfully account for a high amount of the variance in intention. Consistent with previous findings in the private adoption literature, attitude proved to be the most influential determinant of intention (e.g., Kranz et al. 2010). Also both measures of subjective norms, primary and secondary sources' influence, were found to significantly influence adoption intention. These results underscore the vital role of normative beliefs in private adoption decisions (Venkatesh and Brown 2001). Analogous to innovation diffusion theory which posits that the more novel a technology the more important the influence of mass media, secondary sources' influence was found to have a greater impact on intention (Rogers 1983, Bhattacharjee and Sanford 2006). The results also imply that people do not perceive any cumulative influence, but rather different ones from different sources. Therefore especially in private settings, future adoption research should distinguish between different conduits of influence. Furthermore the communicated content and the importance of the respective sources within each channel should be investigated in greater detail (cf. Bhattacharjee and Sanford 2006) to understand by whom and how consumers' adoption decisions are influenced. The results may also be a reflection of increasing environmental awareness in Western societies (Poortinga et al. 2006) which make people act in an environmentally-friendly way. An intriguing finding of the study is that environmental concern had the second strongest impact on the intention to adopt Green-IS. People with greater concerns regarding economy's incessant growth and nature's vulnerability to human behaviours are found to be more likely to adopt Green-IS. The approach used to measure environmental concern operationalized the decision to act environmentally-friendly as a trade-off between one's self-interest and that of others since the environment is a common good. Therefore, the findings suggest that social-altruistic and bio-centric values and motives positively affect Green-IS adoption. Similar results concerning the impact of values are reported for other environmentally-friendly behaviours (e.g., Grankvist and Biel 2001). Contrastingly, higher levels of environmental

concern were not significantly associated with a stronger attitude-intention relationship. Moreover, the direction of the moderating effect was somewhat puzzling as the negative slope implies that the influence of attitude on intention is lower for consumers whose environmental concerns are high. A potential interpretation is that for more environmentally concerned consumers, attitude plays a minor role as they do whatever it takes to protect the environment which attenuates the impact of attitude. Similarly, the non-significant effect of perceived behavioural control on intention was unexpected. This finding implies that consumer's adoption decisions are independent from one's perceived control to adopt and use the SMT. In other words, respondents assume that adopting the SMT is under their complete volitional control. The lack of significance may be explained by the strong impact of attitude and social influence which is likely to attenuate the effect of perceived behavioural control (Ajzen 1991). Given that an individual is disposed to perform a behaviour, inhibiting factors seem to play a subordinate role (Bandura 1997).

As with any other empirical study, this paper has limitations that should be considered when interpreting the results. One limitation originates from collecting data online from a student and self-selected sample. This approach resulted in that the sample included a disproportionately high number of young participants with higher education which may cause selection bias. However, this limitation should not undermine the findings, since early adopters of innovative IS-artefacts tend to be young and educated (Rogers 1983). Moreover the study had to rely on intention rather than on actual adoption or usage as the deployment of the SMT is still in its infancy. Further, by using a survey as research method the ability to imply causality from establishing relationships is restricted. Another limitation frequently found in the environmental domain is that measures are potentially biased by social desirability (cf. Dunlap and van Liere 1978, Newhouse 1990). However, since the survey was conducted online and anonymity was guaranteed to respondents, we assume that social desirability did not severely affect the measures. We analyzed the adoption of an environmentally-friendly and multipurpose Green-IS artefact that possesses some unique characteristics by a single-study design. Hence, it is not clear to what extent the results and implications could be generalized to other Green-IS. Therefore, further research is necessary to verify the results of the current study and to further develop our understanding of Green-IS adoption in both household and organizational settings by examining other IS artefacts. Generalizability may be further limited because data collection was geographically confined. With respect to the SMT, more research investigating actual usage based on longitudinal data is needed.

Despite these limitations the study presents some encouraging and useful findings on which future research might build upon in numerous ways: As found by our study a promising area of IS research in environmental sustainability is to scrutinize the role of moral values and motives. These factors can considerably increase explanatory power of research models. Thus, we encourage researchers to investigate the influence of environmental and psychographic variables relating to personality, values, attitudes, interests, or lifestyles on Green-IS adoption and usage behaviour. For policy makers and practitioners the findings implicate that marketing and information campaigns should particularly highlight the positive environmental impact associated with using the SMT. With regard to the debate about how to give consumers feedback (Darby 2008), we conclude that information provided to users either directly (e.g., home display) or indirectly (e.g., bill) should reflect information about carbon emissions or a household's carbon footprint in comparison to other households (comparative feedback). This may additionally increase people's intrinsic motivation to use the SMT. Thereby, the risk of crowding out intrinsic motivation could be minimized and the feedback may help to bridge the often observed gap between concerns and actual behaviour (Kaiser et al. 1999). Also consumers' perceived effectiveness increases (Darby 2008) which was found to have a greater effect on behaviour than an abstract perception of moral obligation (e.g., Eden 1993). In sum, this paper offers an important first step in augmenting our understanding of factors influencing residential Green-IS adoption and may serve as a starting point for further studies on energy informatics and private IS-adoption.

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