

Rational or emotional? Failing to attract home owners in Germany to conduct energy-efficient renovation measures from a marketing perspective.



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Abstract

Purpose / Context – Energy efficiency measures/ private home-owners/ decision process

Methodology / Approach –Explorative research/ qualitative interviews/ content analysis

Results – Decisions towards energetic renovation measures can be characterized as a strategic consumer decision rather than the often assumed purely investment decision. Emotionally shaped motives seem to displace rational determinants such as financial savings and amortization.

Key Findings / Implications – The argumentation should focus more specifically on the advantages of the measures that are non-financial. This primarily includes the improvement of the indoor climate and the accentuated well-being that goes with it hand in hand. To sustainably activate potential renovators the supply of out-reach consulting through energy advisors and local craftsmen should be enforced.

Originality – The study makes an attempt to reconsider the decision-making process from the perspective of consumer research in order to understand home-owners reluctance to conduct energy efficiency measures to their homes.

Keywords - Energy efficiency measures, private home owners, consumer behavior, qualitative research



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1. Introduction

1.1 Research Problem

The energy transition is one of the main challenges Germany currently faces and will be confronted with in the long term. To meet the energy efficiency aims and climate protection goals, there is a strong need for action in the present building stock. To utilize unused energy efficiency potentials, the annual renovation rate of 0.8 per cent has to be at least doubled (Blazejczak, Edler, & Schill, 2014; Kleemann & Hansen, 2005). For the implementation of these aims, a number of funding and financing programs was launched particularly for the owners of private homes to facilitate the carry out of energy-efficient renovation measures as they argue with economic-rational parameters such as the amortisation period. Retrospectively, the success of those measures lag behind all expectations as the renovation rate still stagnates below one per cent per year. It seems that the purely economic-rational parameters do not generate any added value in activating and in motivating home-owners to carry out energy efficiency measures. Further, these parameters seem to be inefficient to diminish barriers towards energetic renovation measures (Claudy & O'Driscoll, 2008). Moreover, it appears to be surprising if it is considered that the funding and financing programs promise short and medium-term amortisation times as well as substantial financial savings in reduced energy consumption (Lübben, 2015).

Besides these economic-financial parameters, other relevant factors which home-owners rely on in their decision-making should exist. The current debate in the scientific literature criticises that the supporting programs suggest that the energetic renovation decision is purely shaped by economic factors alone (Albrecht & Zundel, 2010; Novikova, Vieider, Neuhoff, & Amecke, 2011; Stockburger-Sauer & Hoyer, 2009; Zundel & Stieß, 2011). However, because of the static renovation rate despite evident advantages it is inevitable to reconsider the assumption of the decision to be purely economically driven.

The aim of this study is to obtain a new gain of knowledge about the decision-making processes in the discourse of energy-efficient refurbishments of owner-occupiers of single family-homes. Therefore, the status of the economic-rational factors needs to be explored and thus the importance and status of further potential factors have to be evaluated by comparing them in terms of mental ranking. In this way, hidden and not yet considered emotional factors that shape the energetic renovation decision could be revealed. Against the backdrop of the empirical findings of this study, a more critical appraisal of recent activation measures to attract home-owners to conduct energetic renovation measures can be conducted.

1.2 Literature Review

The motives to conduct energy efficiency measures have been subject to several research streams over the past decades. As a starting point, the energy efficiency gap (Jaffe & Stavins, 1994; Sorell, 2004) or the energy paradox (Gates, 1983) define the most basic assumptions. Both phenomena suggest that an energy efficiency measure will be conducted if the return in investment is sufficiently high enough. From the deciders' perspective, this decision is perceived as a strict investment decision. Because of the prolonged gap between possible and actually conducted measures, the existence of other relevant criteria was supposed. These include information deficits, risk, and uncertainty as well as irreversible costs (Jaffe & Stavins, 1994; Jochem & Gruber, 1990; Zundel & Stieß, 2011). Notably, Hasset and Metcalf (1993) and Awerbuch and Deehan (1995) assume that uncertainty in the decision-making process and the irreversible costs should explain the energy efficiency gap. However, it is criticised that the decision towards an energy efficiency measure like energetic renovation on single family-homes cannot be determined by economic factors alone but by emotional factors. For that reason, the involvement and the emotional bond towards the building as a home seem to have a significant effect on the decision (Gram-Hanssen, Bartiaux, Jensen, & Cantaert, 2007; Jakob, 2007). Thus, a broader understanding of the cost-benefit calculus than before is assumed.

Notwithstanding, this new approach in understanding the paradigm appears to be unsatisfying (Zundel & Stieß, 2011). The scientific debate suggests that psychologic and socio-psychologic factors should be taken into much closer consideration (Yates & Aronson, 1983). Tan (2008) remarks, that the motivation to conduct energy efficiency measures depends on the personal attitude towards the predicted outcome of the measure. The motivation can be perceived as one of the main triggers for measures in this context (Organ, Proverbs, & Squires, 2013). Both the motivation towards and the perception of the measure is closely linked to the deciders socio-cultural background as Aune (2007) suggests. Here, the family household can be considered as a significant peer group (Darby, 2006; Gram-Hanssen et al., 2007). Relevant information that is crucial for the decision-making will be discussed and deliberated within the household or the family (Guy & Shove, 2007). The decider will relate and compare this information with his closest social peers (Bartiaux, 2008; Desmedt, Vekemans, & Maes, 2009). If the social reconciliation is successful, the crucial information will be appreciated and worshiped. Beyond social motivations, several studies found evidence for environmental-related motives that could explain the decision to conduct energy efficiency measures (DCLG, 2011; Herring, Caird, & Roy, 2007). Based on the work of Stieß et al. (Stieß, Birzle-Harder, & Deffner, 2009), Stieß and Dunkel (2013) made an attempt to bring most of the previous findings together and to merge them into one conceptual model. The model especially unites attitudinal components of the deciders like the attitude towards energy efficiency measures and the outcome of those measures. The latter includes motives such as comfort, energy efficiency, and energy savings. Legal and technical restrictions, monetary and non-monetary resources, the socio-demographic situation, and the occasion to conduct energy efficiency measures form the paling framework for the model. This model appears to comprise most of the relevant aspects; however, the status of the non-economic parameters and their relation to the purely economic factors remain unclear.

Numerous conceptual and empirical studies to analyse the decision-making, the motivation as well as drivers and barriers towards energy efficiency measures, especially energetic renovation measures to private homes, can be found. However, the new gain of knowledge did not contribute to the understanding why and how private home-owners seem to be reluctant to conduct energetic renovation measures to their buildings. Furthermore, the initially mentioned energy efficiency gap (Jaffe & Stavins, 1994) remains unexplained. Although very few studies try understand the home-owner as a consumer, a solid and comprehensible transfer of previous findings to the context of consumer behavior is still lacking (Meester, Marique, Herde, & Reiter, 2013; Zundel & Stieß, 2011). That transfer might represent a significant step to fully understand the decision-making process to conduct energy efficiency measures to private homes and to carry-out energetic renovation measures. Additionally it is of special interest to explore why financial and funding programs permanently fail to attract and to motivate home-owners to conduct such measures.

2. Methodology

To gain a thorough understanding of the decision-making process and the motives to conduct energy efficiency measures, we chose a qualitative-explorative research approach as its objective is to understand the experiences and actions of the participants and to identify their underlying reasons (Maxwell, 2005). In detail, we executed two studies. Study 1 serves for the exploration of the decision of owners of single-family homes to carry-out energetic renovation measures. We conducted 14 semi-standardized in-depth interviews to draw conclusions on conscious and unconscious motives (Craig & Douglas, 2001; Lamnek, 2010; Schub von Bossiazky, 1992). For all interviews we used a guide to guarantee a certain degree of comparability and standardisation. Each interview partner was selected based on a purposeful sampling (Patton, 2009) under the condition that they all executed energetic renovation measures to their homes within the last five years. Our interview partners were selected and acquired personally between October and December 2015 within a suburban area of a large city in western Germany, based on pervious field-trips. We continued with the acquisition of new interview partners until no substantially new insights were generated. The interviews in study 1 took 51 minutes in average. Occasionally, the

interviews were carried out as a pair interview with the respective spouse. The participant's age varied between 32 and 71 years. In total, study 1 consists of eleven male and six female participants.

To gain external validity of the results of study 1, we conducted a second study (study 2) and carried-out six semi-standardized in-depth interviews with experts for energy-efficient renovations, particularly energy advisors and architects. We identified and selected the experts based on the criteria of their long-time experience with energy-efficient renovation measures. In these six interviews, we asked the experts to describe occasions and motives of the home-owners based on their day-to-day experience. Here, the interviews took 50 minutes in average. In total, study 2 consists of four male and two female participants.

All interviews of study 1 and study 2 were recorded and transcribed. Subsequently, we used qualitative content analysis (Mayring, 2005) and inductive coding (Kuckartz, 2009) with the software MAXQDA to structure the high complexity and specificity of the individual statements. The empirical work fulfils central validity criteria (Patton, 2002) for qualitative research. As all interviews were semi-standardized, the participants were able to explain all aspects and points relevant to them. Hereby the criterion for comprehensiveness is fulfilled. The empirical method is described in detail (transparency criteria). Finally, the material was reviewed, analysed and interpreted by two researchers and their results compared to arrive at the findings of this study (multipersonal discourse). All participants live in Germany.

3. Results and Discussion

3.1 Overall Results

For comprehensiveness we brought together the results of both our studies as the findings of study 2 do show a great amount of reflection and confirmation on the results of study 1. In total we were able to develop nine categories inductively from the data. Our results reveal two major categories of motives towards the carry-out decision of energy efficiency measures. Those motives can be divided in **(1) rational** and **(2) emotional** motives. First we address the rational motives.

The first group of motives depicts the rational motives. Amongst the participants we found broad agreement for the importance of financial and monetary aspects as they seem to be perceived as the factor with the highest priority. The perspective to save energy and thus money is of core interest. Rising prices for energy costs during the past years is a determinant that is mentioned by most of the interviewees: *"Well, first of all to curb the energy expenditure and then of course to pay less money for hot water and electricity. At that time, the energy prices didn't bring me into laughing mood"*. Home-owners possess financial capital that is strictly determined to undergo renovation measures and improvements to their homes as well as accurately calculated beforehand. Infrequently, some of the home-owners decided not to conduct the most efficient measures in terms of monetary savings, if the calculated budget were to have been exceeded. Energetic renovation measures are perceived as an instrument for the long-term maintenance of value of the family-home. The owners do want to hedge the building for the future. In most cases, the interviewees remarked that they would like to increase the building's market value for the case they have to sell it in old age. Other reasons can be found in the strategic planning to hand the house down to the next generation. Consequently, energetic renovation can be grasped as a store of value for the future because the revenue, even if it is noticeable for the next generation, might be higher than leaving the money in the bank: *"Actually it was about bringing the house in top condition from an energetic point of view. Maybe for a sell in the future to make sure that my children could get some kind of benefit"*. All of the interview persons stated that one should invest the financial means that are at the disposal continuously to increase the quality and the value of the building.

In comparison, less consent between the interview persons can be observed when it comes to the amortization of the executed energy saving measures. They agree in principle that a roughly estimated amortization period would be helpful. But it only serves as a broadly shaped guideline for the decision process and is used to estimate the trade-off between particular measures. Despite the inclusion of the amortization period in the energetic renovation decision this, determinant rapidly loose its importance: *"I didn't come up with the idea to calculate things like that or to scrutinize the single measures if they are truly worth it"*. Surprisingly, the majority of the interview persons do not monitor the level of amortization attainment nor the return on investment. They mainly rely on their intuition that the measures they carried out are efficient and have a sustainable effect on monetary savings. Only very few interviewees state that they look on their bill of energy costs from time to time. In summary, the amortization period does not represent a weightily determinant within and after an energetic reconstruction decision. The degree of independence towards energy suppliers seems to be more important for the home-owners. This applies most for those of the interview persons that installed photovoltaic and solar arrays on their buildings' roof. Especially against the backdrop of the increasing development of the local energy prices they aimed to remain mostly autarkic. The combination of autarky and energy cost reduction was the most important aspect for these persons: *"For me and my husband it was our main objective to reach independence from the energy suppliers. That was the prime cause why we started to think about it"*.

Besides rational motives we found evidence for emotionally shaped motives as well. Improving the living quality and the indoor living environment was one of the driving intentions to undertake energy efficiency measures. All participants of the studies reported that consentaneously. They described this aspect as equally important as the financial and monetary aspects. Justification is given in the insufficient thermal output and the unsatisfactory sense of well-being to decide to conduct renovation measures: *"I wanted to make sure that our house is packed up in the way that the warmth has no chance to leak out of the house. So as a result we would have a better indoor climate condition, and that's what we were looking for."* Whereas this aspect was one of the driving motives, other interviewees only realized an improvement of the thermal output and well-being after the finalization of the renovation process. Especially these persons did not expect such an amount of improvement. For that reason they perceive the success of the measures as even more positive. Another emotionally shaped motive can be found in the aspect of the outward appearance and aesthetics of the building. Here, we can subdivide our sample in two groups. The first group conducted energy efficiency measures, aiming to improve the outward appearance. However, the improvements concerning the aesthetics of the house came first: *"If you paste those insulation panels on the wall, the original style of the house is completely ruined"*. This relation is shown within the second group vice versa. Here, the aim to execute energy efficiency measures was the primary motivation. During the deliberating process the home-owners decided to combine the renovation measures with aesthetical improvements. Although according to this aspect, we could separate the sample in two groups, the interviewees showed broad consent that they aimed at lifting their social status through these efficiency measures and regarded energetic renovation as a way to express their personal fulfilment and to show their neighbours and peers their prosperity and situation in life: *"You know, at a certain point in life you would like to change a few things. For me it was the thing that I wanted everything a little bit better, bigger, and smarter"*. Nevertheless, very few of our interview persons stated that they cancel to conduct an efficiency measure in particular because the carry-out would have affected the outward appearance of the house in an undesirable way, like facade insulation for instance. The motive to conduct energy saving measures in order to protect the environment and the reduce greenhouse gas emissions was mentioned by a few interviewees but it was described as an aspect of minor importance.

3.2 Discussion

Our empirical results show evidence for the existence of two particular groups of motives of home-owners. These motives are supposed to shape the decision to conduct energy efficiency measures. Moreover, owners of single-family homes do not align their decision on a single motive

but more on a whole set of different motives that can be described as rational as well as emotional. We support the assumption that monetary and financial determinants are one of the most important ones in the decision making. But in comparison with other motives, the status as the most important determinant and thus motive has to be relativized. In fact, financially shaped motives are the motives that were stated directly when we asked for the actual reason for the renovation measures. The more we discussed the topic and other reasons, a greater amount of further, non-financial aspects was revealed. With a closer look on the interviewee's chain of argumentation, it becomes obvious that the financial motives are being used to justify the emotionally shaped motives such as the improvement of the outward appearance. Therefore, we conclude that the status of emotional motives (improvement of the well-being, the indoor climate, the social status etc.) seems to be much higher than expected before. Figure 1 shows a first schematic recapitulation of the status of the emotional and rational motives. For a better comprehension we decided to merge the motives into an iceberg-related model.

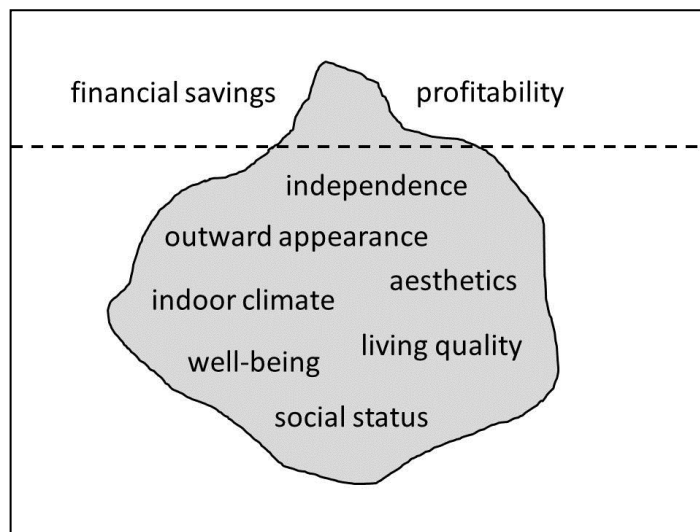


Figure 1: Iceberg-model of motives towards energy efficiency measures. (Source: own illustration)

Financial savings and the profitability of the energy efficiency measures form the visible top of the iceberg. These are the most prominent arguments that are stated by the interview persons. If you ask for deeper motivations and reasons, another bunch of motives can be detected. These are the emotionally shaped motives. In most of our interview cases, these emotional motives are being considered as the main decision criteria.

With reference to the existing literature, our results are partially in line with the findings of Stieß and Dunkel (2013), Tan (2008), and Stieß et al. (2009) as we found evidence for attitudinal decision criteria. Further, motives such as comfort, energy efficiency, and energy savings can be confirmed with the results of our studies. However, we need to renounce the assumptions made in previous studies that the decision of private home-owners to conduct energy efficiency to their occupied buildings is a pure investment decision and driven by rational motives alone. Based on our findings, we perceive this decision more as a so-called strategic consumer decision (Bodenstein, Spiller, & Elbers, 1997). A strategic consumer decision is characterized by four components: a long-range planning horizon, specific financial investments, high personal and emotional involvement, and an ongoing usage of the object. Typical examples for a strategic consumer decision are the purchase of a new car or a house. These purchases are limited to only few occasions in the lifetime of a customer and come along with considerable financial efforts. But on the other hand, the consumer shows a strong emotional bond towards this object. More importantly, the consumer actually uses the object, like driving the car or living in the house. This perception of the consumer decision can be transferred to the context of energy efficiency measures and energetic renovation of single-family homes. Here, home-owners commonly only

conduct such measures one or two times in their life and, of course, need to raise a certain amount of financial means. But like in the case of the car purchase, the home-owner has strong emotional feelings and involvement towards his home as a building that he occupies, because the outcome of his decision will have a lasting effect in the outward appearance and energetic performance.

4. Conclusion

In summary, we found empirical evidence for rationally and emotionally shaped motives of home-owners to conduct energy efficiency measures to their occupied single-family homes. Within the decision-making the deciders follow a bundle of rational as well as emotional motives. We proved that emotional motives seem to have a higher level of importance than the rational and thus financial motives.

Our findings include implications for practitioners as well as for the elaboration of public policies. As mentioned above, funding and financing programs to support home-owners regard the decision to carry-out energy efficiency measures as a pure investment decision. They are misled to attract home-owners as they ignore emotional motives in the decision-making. Therefore, a strong need to reconsider the activation and argumentation strategy can be detected. To date, the estimated amortization period was the most important argument to activate the home-owners for renovation measures. As the annual renovation rate stagnates as 0.8 per cent, this argument appears as unconvincing and rather unimportant compared to more emotionally shaped motives. At first glance, the argumentation should focus more specifically on the advantages of the measures that are non-financial. This primarily includes the improvement of the indoor climate and the accentuated well-being that goes with it hand in hand. To sustainably activate potential renovators, the supply of out-reach consulting through energy advisors and local craftsmen should be enforced. These experts could give a better understanding of the non-financial benefits and create a lasting awareness for the topic.

Like most studies, our study has several limitations that need to be addressed in further research. Though this qualitative study disposes a sample of 20 interviews and uses analysis triangulation to enhance the depth of the analysis, the findings cannot be generalized. For more detailed insights into the decision making process of home-owners, a quantitative study should be conducted to trace the correlation between attitudinal constructs and the willingness to carry out energetic renovation measures. Furthermore, to gain a better understanding on the further framing aspects of the energetic renovation decision, the focus should be set on the influence of socio-demographic aspects and the social environment.

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Vom Hofe, M

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