

Improving energy efficiency in the retail sector through job redesign: a sociotechnical systems approach

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Abstract. Over recent years, the UK retail sector has made a significant contribution to societal responses on carbon reduction. We examine how energy related technologies and strategies are incorporated into organisational life through a study on behavioural energy efficiency within one of the UK's leading retailers. Our qualitative data was gathered from a total of 61 participants gathered using phased interviews and focus groups. We introduce an adapted socio-technical framework approach to build on and enhance an existing behavioural strategy to support reductions in energy use. Our findings point to socio-technical and goal-setting factors which both impede and/or enable energy efficient behaviours, these include: tensions created by a lack of alignment between the store level perception of energy management goals, and the reality of the strategic approach; an emphasis on the importance of technology for underpinning change processes; and, the need for feedback and incentives to support the completion of energy-related tasks.

Keywords: Energy efficiency; Socio-technical Systems; Multiple Goal Conflict;

1. Introduction

Energy management is an important part of organisational life across all industries, and proving an area of increasing interest, with innovative energy management programmes reporting strong responses to carbon reduction targets (DEFRA, 2006). This interest is also reflected in the increase in Corporate Responsibility carbon commitments amongst UK retailers which detail far-reaching carbon reduction targets and strategies (Gouldson and Sullivan, 2012). Running alongside ethical considerations associated with climate change action is the strong economic argument that energy efficiency can result in financial savings for organisations. In this paper we explore the interaction of energy efficiency tasks with wider organisational strategy and discuss socio-technical implications of our findings.

1.1 Goal setting theory and socio-technical systems

Goal setting theory uses a range of moderators and mechanisms to explain levels of performance against a core goal, when that goal is difficult and specific (Locke and Latham, 2002). Most working individuals have more than one goal, but performance problems have been identified when multiple goals are in conflict (Slocum et al., 2002).

In this paper, we adapted a socio-technical framework (Davis et al., 2013) to explore the interaction between environmental behaviour, goals and buildings and infrastructure. The framework uses similar themes, but is developed to fit the nature of the organisation,

the research question and the novel use of using a socio-technical framework approach to address goal-setting issues. The natural tendency for most organisations is to begin looking at energy management from an engineering technology or maintenance perspective (Sweeney, 2013). Using a socio-technical systems approach to challenge existing systems in the energy space is useful to identify disconnects between technology and behaviours that are systemically supported by the organisational design. We explore a currently under-researched space of behavioural energy use in non-domestic environments through a sociotechnical lens. Environmental behaviour research has historically largely focused on domestic energy use (Greaves et al., 2012, Carrico and Riemer, 2011) with little work taking place in a workplace context to identify specific organisational barriers and enablers to pro-environmental behaviours as this paper attempts.

2. Method

2.1 Background and setting

The organisation is an important retailer in terms of size and turnover both in the UK and abroad. Consistent reduction in energy consumption has been observed as a result of the existing behavioural strategy; however, in order to further improve, it is recognised that some review and change could enhance existing practices.

2.2 Data collection and analysis

Ten Focus Groups were carried out, with 51 participants randomly selected from within stores. Seven Store Managers and three members of a central energy team were also interviewed. All interviews and focus groups were semi-structured to generate data that were not tied to existing hypotheses or theory (Yin, 2009). We recorded and transcribed all interviews, and then analysed them with reference to a set of initial *a priori* themes that were developed over time (King, 2004).

4. Findings

3.1 Interest in energy efficiency

Our data shows that most staff agree that energy efficiency is important for the organisation, and that certain individuals in stores show high levels of motivation to comply with energy efficiency tasks. However, focus group participants exhibited little personal intrinsic interest in carbon reduction either in or outside of the organisation. A typical statement from a focus group participant attests to this:

"you think about what's affecting you there and then, not what's going to affect the planet in years to come" (Staff focus group)

This suggests a lack of self-concordance (Unsworth et al., 2013) with energy efficiency on the part of some employees, despite the fact the organisation itself has a strong and overt strategic commitment to energy savings. These data suggest that motivation based on an intrinsic sympathy for energy efficiency is unlikely to be universally successful. Similarly, although an appreciation of the contribution of energy efficiency to organisational profitability may be motivating at certain management levels it is unlikely to extend to all staff. We found that in this context pro-environmental and pro-organisational concerns will only motivate a certain population, and not necessarily engage a broad staff base.

3.2 Technical Control and support

The organisation centrally manages an operating standard that maintains control over operational assets, while delivering optimal energy usage for staff as well as customer comfort and convenience over a wide estate. The standard operating system in this organisation guarantees that lighting and heating controls minimise waste by ensuring the efficient use of equipment, whilst maintaining full provision for store activities. Despite this our research shows that energy savings are frequently referenced in store when problems are observed. Our researchers observed the use of the term ‘energy savings’ being referenced as a wrongful explanation for things going wrong with timings or equipment that has failed. As this energy team member describes, energy-saving innovations are also sometimes viewed with some concern, as they can be misguidedly held responsible for other things going wrong in the stores:

“in their world, ‘everything was alright until he came along, and then he did something and now it’s not, so I’m going to blame him” (Interviews with Energy team)

We observed a sense of distance in the relationship between store staff and energy strategy staff that can additionally impact response to energy efficient technology, and posed a potential risk for the successful roll out of future behavioural strategy.

3.3 Conflicting goals: energy reduction vs. other operational priorities

Our data also highlight a sense of competing priorities around energy tasks, to the extent that energy tasks can be misguidedly perceived as in conflict with other goals in stores. Key organisational objectives and focal goals such as sales or customer service were cited by some staff as a better use of their time than calling attention to energy efficiency issues;

“If I walked past and said ‘look how much electricity we use for lights, ooh let me go and bring that to someone’s attention’, they would say, ‘Oh go and do something useful’. That’s just the way it is!” (Staff focus group)

Goal-setting theory emphasises a difficult goal as a key factor for a successful performance (Locke and Latham, 2002). However, in multiple goal situations this can be counter-productive, and a simpler goal is recommended (Cheng et al, 2005). Some managers confided that they felt confused as to how to deliver on targets based on kilowatt hour and carbon weight, even in some cases risking counter-productive behaviours:

“I can talk to you about a store I was in three years ago about a deputy manager going out and taking out a light bulb thinking it’s going to help to deliver the measure!” (Store Manager interviews)

We therefore find that to have the full support of staff, energy directives need to be simple and task-orientated, presenting no ambiguity on their fit with other organisational priorities.

5. Discussion

Our findings highlight a distinct inter-relationship between the areas of **Shop staff - Energy Strategy - Practices and Processes** that provides a preliminary framework to discuss challenges to energy task performance in this retail organisation, and the implication for job design. A central theme in our research is to question the motivating power of pro-environmental attitudes, as used in existing scales (Stern, 2000). Job design research has previously shown employees to be intrinsically motivated to make a pro-social

difference (Grant, 2007), and meaningfulness is a commonly used mediator between motivational characteristics and work outcomes (Morgeson, 2007). Despite the value-action gap between attitude and behaviours (Kollmuss and Agyeman, 2002), a pro-environmental attitude has been found to be able to predict behavioural outcomes, with ambivalence towards the environment negatively correlating with pro-environmental behaviours (Costarelli, 2004). Similarly, self-concordance with pro-environmental behaviour is identified as a determinant to affect the extent to which employees support an intervention (Unsworth et al, 2013, Bissing-Olsen et al., 2012). However, our study is part of a growing body of research to suggest that motivation through pro-environmental/ pro-social commitment is not always sufficient, as the threat of climate change is not consistently strong enough to impact everyday behaviours (Einsiedel, 2013). Our in-depth discussions with store staff and managers revealed limited interest in their role as being pro-social in an environmental sense, or indeed in combating climate change as a social objective either at home or at work. Based on our findings, we would suggest that a job design that relies on intrinsic pro-environmental motivation in this context may struggle to succeed. Our systems research has also highlighted the perceived problem of multiple goal conflict in reconciling energy and customer goals. Based on the multiple goal literature (Cheng et al., 2005), we suggest that job design that reflects on existing organisational and cultural norms in the business to better understand and anticipate other agendas that may be perceived to be in conflict with energy management would be helpful. In this organisation an agreed operating standard maintains a balance between energy consumption and optimal energy usage. Despite this, our findings suggest that the perception of disconnection between the two is a fundamental socio-technical issue to address to lessen the risk of disengagement or negative behaviours. We additionally suggest that using job design to clearly outline how and where busy staff should take action, is a means to reduce perceptions of complexity and conflict with primary sales goals.

4. Conclusions and future work

Our research has established the novel methodology of using a socio-technical framework approach to address goal-setting issues, particularly where multiple goal conflict is present. This original approach contributes to existing goal-setting, socio-technical frameworks, and job design literatures where a common theme is around the profound alignment of organisational objectives and practices. We suggest a practical solution of managing energy tasks as a secondary goal as a means to reduce multiple goal conflict. Our analysis concludes that alignment with primary organisational goals, clear task strategies and simple processes and practices are crucial to adapt to the challenges of perceptions of multiple goal conflict. Future work is planned to create a job design intervention to test this approach.

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