An Evaluative Investigation into Employee Attitudes to Energy Management in the Food Retail Environment

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ABSTRACT

We present a case study of an evaluation process carried out in the UK business of an international food retailer. A qualitative evaluation designed to understand staff motivation around energy management provides the bulk of the original data. This data was subsequently used to develop an organisational change intended to support and motivate staff in operating stores to an optimal energy efficient design. Our first insight from the qualitative data is that energy is a non-primary goal in a multiple goal environment, making it vulnerable to goal conflict and consequently impaired performance . The hypothesis drawn from this insight is that multiple goal conflict will be reduced if the system is better aligned with existing organisational structures and routines. Our second insight is that energy management goals are perceived as difficult to achieve at an operational level. While difficulty is productive in most goal-setting situations , it can be counterproductive in multiple goal environments .The second hypothesis, based on existing literature, is that the perception of difficulty can be reduced by introducing easier proximal goals into the planned change. A quantitative evaluation methodology to measure the impact of change is also described. We conclude that quantitative and qualitative evaluations were crucial to both enable our original contributions to the literature, and to develop the organisational change programme to maximise energy efficiency in stores.

Introduction

Large non-energy intensive public and private sector organisations in the UK account for around 10% of the UK's overall consumption (Department of Trade and Industry; , 2007). Supermarkets alone are estimated to contribute 1% to total UK emissions (Ends Carbon, 2009). Following the Climate Change Act, 2008, and subsequent policies aimed at reducing UK carbon emissions to 80% below 1990 levels by 2050, UK organisations are increasingly setting energy efficiency and carbon education goals. This focus is compounded by commercial issues, with concerns over cost and availability of oil and expenses raised through the Climate Change Levy and Climate Reduction Commitments. Despite a burning platform for organisational action, most energy efficiency literature focuses on the domestic market rather than the workplace as a setting for behavioural change (Carrico and Riemer, 2011). The domestic and organisational settings are by no means interchangeable from a behavioural perspective, responding to interventions in different ways (Andersson et al., 2005), and exhibiting different drivers for pro-environmental behaviours (Carrico and Riemer, 2011).

The first approach to conserve energy in organisations is usually through technical or operational modifications (Carrico and Riemer, 2011). However, energy efficiency behavioural change is a crucially important aspect of mitigating energy consumption for three key reasons; user activities are key to moderating use (Gram-Hanssen, 2009), energy efficiencies are not enough to

keep up with increased energy usage (Hawcroft and Milfont, 2010) and because people need to interact effectively with technology to make it work to design (Steg and Vlek, 2009, Clegg, 2000).

Our case study of an evaluation within a large retail chain provides original data and insight into staff motivation to engage in energy management policies at a shop floor level. We propose that in this context energy management is a non-primary goal in a multiple goal environment, and observe that existing research indicates that this makes it vulnerable to goal conflict (Cheng et al., 2007). We then hypothesise that goal conflict will be reduced and performance improved if energy management policies are aligned with existing organisational structures (eg. operating procedures and performance management systems). Secondly, we find energy management goals are perceived as difficult to manage on the shop floor. Perception of difficulty is counter-productive in a multiple goal environment (Cheng et al., 2007, Emsley, 2003), so a task strategy approach is drawn from the literature to address this effect (Latham and Seijts, 1989). We describe how evaluation findings are applied within the context of the organisation to develop a new energy management process in stores. We propose a design to evaluate the impact of the planned change, using a control group structure to measure energy consumption and additional proxies. We conclude that evaluation is a crucial part of developing and assessing the new energy management process. Our contribution to the literature is identifying energy management as a non-primary multiple goal in the food retail industry, and to design an applied approach of alignment and task strategy based on this insight.

Research Context

Existing Literature Three bodies of literature are referenced during the thematic data analysis. Firstly, environmental literature looks at personal and social norms that impact attitude determinants around pro-environmental behaviours, (Freestone and McGoldrick, 2007; McCalley and Midden, 2002; Bamberg et al., 2007). A commonly used framework to understand how environmental concerns are moderated by other individual factors is Value Belief Norm Theory (VBN) (Stern, 2000). Pro-environmental values and actions are posited to be moderated by one's belief in the prospect of adverse consequences (AC) and the perception of one's personal capacity to alleviate these threats (AR). These are further moderated by personal norms towards the sense of obligation to take pro-environmental action. This theory is widely accepted, with successful correlation between these variables as a casual chain (Steg et al., 2005).

The second referenced literature is Goal-Setting Theory; initially developed in the 1960s by Locke and colleagues (Latham, 2000). Goal-setting is a widely accepted motivational theory (Mento et al.,1987), recognised as consistent across contexts and cultures (Cameron and Duff, 2007). Commitment, ability, feedback and task strategy are important performance moderators in the model (Locke and Latham, 2002). Task strategy is used in goal-setting theory as a cognitive moderator for performance success, and is manipulated through tools such as training (Locke et al., 1984). The setting of achievable (proximal) goals to break down the overall (distal) goal is an important task strategy to improve performance (Latham and Seijts, 1989). However, while it is widely accepted that specific, difficult goals lead to a better performance than 'do your best' goals for individual goals; research into goal-setting as part of a 'balanced score-card' approach to performance management highlights some problems with a multiple goal environment (Cheng et al., 2007). Conflict around multiple goals is observed to reverse the impact of goal difficulty on a task to become negative instead of positive, in both managerial and non-managerial contexts (Cheng et al., 2007, Emsley, 2003). This raises concerns about goal performance where goals in a multiple environment may be overlooked and under-worked. Lastly, the literature on socio-technical systems is referenced. The principles of socio-technical design state that technical

systems will only work effectively if the work undertaken by technology and humans are considered as part of the same integrated organisational system (Clegg, 2000). The goal of the planned organisational change is to maximise the staff capacity to use store equipment and technology to its optimum energy efficiency standard. Socio-technical systems theory is mobilised to support the evaluation approach.

Organisational context A strong energy strategy is already in place in this organisation. Energy data is used to set and assess energy performance goals for stores. Store managers are set annual energy targets which links with other organisational goals to form the store's Key Performance Indicators (KPI). These KPIs are the basis of the store manager's performance review, which contributes to annual reward and development opportunities. Energy data is generated by sub-meters that provide half-hourly data in key areas such as refrigeration, heating and lighting. These data are monitored and analysed by the Energy Team. Regular feedback on energy performance is provided through a weekly manager's report and through Energy Smart boards in stores which provide current consumption information (see Fig 1). Over 700 Energy Smart Boards are in place in stores, providing 24 hour updated information to all staff. Appointed Energy Champions have been in place for over 5 years and are responsible for carrying out Energy Checks to ensure that store equipment is working to design.

Fifty-two Energy Checks are completed by the Energy Champions, covering energy use across the store, including Bakery, Back Door and Deli counters. The checks have been validated by the Energy Team as the best way for the store staff to ensure that the equipment is running to the designed efficiency standard.
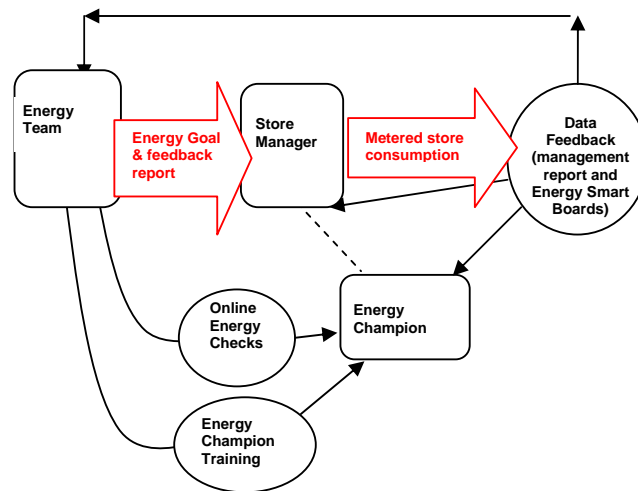

Fig 1. Existing Energy Management system

Research Design and Methods

Evaluation Stage One The first stage of evaluation (see Fig 2) was to understand the effectiveness of the current Energy Champion system in stores. As outlined above, it is hard to rely on energy consumption data to assess the behavioural impact. Other indicators were therefore employed. Firstly, a preliminary randomised survey of 200 Store Managers indicated that at least 30% of stores have not appointed an Energy Champion. Secondly, completion rates for energy checks were found to be very low, at just over 30% on average. Based on these indicators a Stage

Two evaluation of the energy management system was agreed. This report provides the results of the second stage and indicates how these results were incorporated in the design of the program/initiative.
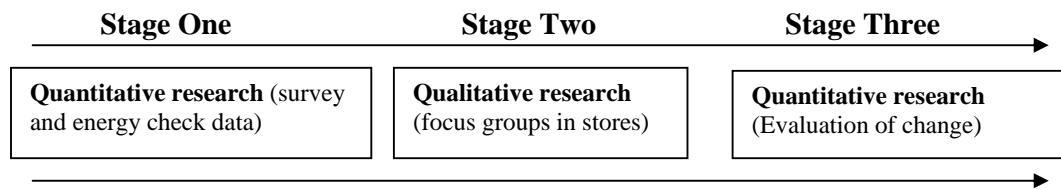
Stage One	Stage Two	Stage Three
Quantitative research (survey and energy check data)	**Qualitative research** (focus groups in stores)	**Quantitative research** (Evaluation of change)

Fig 2 Evaluation processes

Evaluation Stage Two A qualitative approach was designed for several reasons. As noted above, there is a strong energy strategy already in place. This meant that gaining new insights would require a fresh evaluation approach, with little potential for quick wins. While the organisation already had strong strategic data around energy management, operational data on store behaviours was less refined. Operational behaviours in this case are the shop-level staff that use the ovens, shut the back doors and de-frost the fridges. It was felt important to get their first-hand views. This collaboration with end users in systems design (or redesign) is a key principle in the socio-technical literature (Waterson et al., 2002), as a means of ensuring optimal systems are established. Lastly, as it was likely that an outcome from the research would involve staff communication it was important for the researcher to experience and record the kinds of language and expression that are commonly used amongst staff.

Ten focus groups were conducted in ten different stores. Fifty-one participants took part, aged between 19 and 73. The average age was thirty two. Eighty-one percent of participants had 5 years employment service or over, with the maximum length recorded at 43 years. 55% were customer assistants, 45% were departmental managers or team leaders. The work was designed to comply with reliability and validity standards in qualitative research; with the random selection ensuring representation of store locations and sizes. An inductive approach was used, using questioning phrases that relate to actual behaviours and attitudes (Cresswell, 2009). Sessions were transcribed and analysed. A thematic analysis approach was used, by constructing a framework of themes and subthemes. The motifs that were particularly sought out were; repetitions, indigenous categories that are particular to the organisation, theory based material and missing data (Bryman, 2003).

Evaluation Stage Three Based on the results of the Stage Two research, evaluative methods were established for a two-part change programme. Firstly a pilot will be conducted for 12 weeks amongst approximately 30 stores and control groups. If the pilot is successful, the changes will then be rolled out further, again using a test/control design. Three baseline quantitative proxies will be used to assess success:
1) Distal Goal. Baseline energy performance of stores through electricity meters. A control group design maximises the detail around the potential impact of the intervention allowing control for changes in weather, buildings, personnel, staffing levels, equipment, trade and other uncontrollable variables.
2) Proximal Goal. Energy Check Completion. Completion rates are measured and re-measured after the intervention, again using control stores as comparators.
3) Work Order Generation. Completing Energy Checks frequently result in reporting damaged equipment. A work order rate to the maintenance department will further indicate action being taken to improve efficiency in stores.

Focus Group findings: Identifying Barriers

Energy in a Multiple Goal Context. A striking theme in the data was around the busy nature of the stores, with a perception that other goals could act as barriers to prioritised concern over energy issues;
"We are tasked too much, that's why people don't care about energy, they're given too much to care about anyway."

"You're so busy all the time, you are running from one task to another, and you don't think about switching off the lights or anything"

The sense of crowded priorities in a busy store led us to explore the literature on multiple goals. Focus group data affirms this concern with examples of how energy management can be perceived as contradictory to other expected everyday behaviours;
"we are always told to put the customers first, that can make them wait when you have to open chiller doors, shut them again and all of that, we just do things as quick as we can, and we don't really think about the energy I suppose"

"Sometimes customers ask why the lights go off and they are shopping in the dim light. I'm not sure they like that one too much"

A perception of conflict between energy management and other organisational goals is implied; although neither of these examples is reflective of true energy management objectives in the organisation. A second point to note is that energy goals will very rarely be the primary organisational imperative in any organisation, and subsequently unlikely to be perceived as such by staff. Again the focus group data back up this perception;

"managers make us feel that energy is not an important thing, as much as payroll waste (where goods are damaged or bad) and shrink (where goods are lost or stolen), it's a minor detail, it's a detail, but minor in comparison to some of the other ones"

Managing energy efficiency can be perceived as being difficult when commercial factors, such as sales, take precedence in priority decision-making;

"if you ask the area manager about electricity he's going to say what are you talking about, what's the figures for sales?"

The perception is that energy is only a priority when it is a real problem, and unless things go very wrong, other goals would naturally take precedence;

"if in three weeks time our energy level is through the roof, and store managers going to be on at everyone about it, but when it goes back down he's not going to care"

This analysis suggests that energy management should be considered as one of multiple, non-primary, organisational goals, with associated problems of goal conflict. As perceived goal conflict is directly linked with reduced performance (Cheng et al., 2007) this is a key insight with direct implications on how to shape support for energy management goals.

Goal Complexity. Goal-setting theory shows goal difficulty and goal specificity to have a strong inter-dependent relationship (Locke and Latham, 2002). The role of specificity is to reduce ambiguity around the goal, as a difficult but over-complex or unclear goal will impair performance. Conversely, a specific goal alone will not impact the outcome, as there must be a level of difficulty in the goal to lead to high performance. However, very importantly in this context, conflicts around multiple goals are observed to reverse the impact of goal difficulty on a task. For instance, goal difficulty has been found to become negative instead of positive, meaning that the goal-setting model of a difficult goal can be counter-productive in a multiple goal context (Cheng et al., 2007, Emsley, 2003).

The nature of energy management is observed to have characteristics that make performance goals appear operationally complex and difficult to achieve. Firstly, as most employees interact daily in some way with energy, energy targets are inter-dependent goals amongst the majority of employees (Mitchell and Silver, 1990). Secondly, although most workers have touch points, in most organisations they are unlikely to be able to personally control a significant amount of consumption (Carrico and Riemer, 2011). These issues mean that potential for impacting energy efficiency is widely and thinly spread in the organisation, making it potentially appear difficult for store managers to manage effectively. In this organisation, goals for energy consumption are transparently set with clear accountabilities, tasks and measures. However the unusual nature of the goal is likely to increase perceptions of complexity at a store level of analysis. This idea is backed up by focus group data that reveal confusion around energy issues, when from an operational point of view there is no need for a deep understanding of the subject in order to contribute to the energy efficiency effort;

"CO2 what does that look like anyway? and what does it really do? you know its greenhouse gas or something. More needs to be done to teach people, most people don't understand."

Introduced to stores over the last few years, Energy Smart Boards are generally recognised to have been successful in engaging staff in energy efficiency. However, the focus groups reveal a perception that they can be seen as over-complicated:

"they had that energy board put up there, it just appeared one day and I looked it at and thought, ooh and walked off, and I've never seen anyone look at it cos they don't know what its on about. Just numbers, figures whatever, some people like it some don't"

"we do have the thingy, the dooberry, the computer thing outside, it would be good if you knew what it actually means."

The environmental literature similarly identifies over-complexity of message as a potential barrier. From a socio-technical design perspective the current system reflects a technology-led perspective (Clegg, 2000) with attendant problems in how staff engages with the system.
Having identified the theoretically linked problems of perceived goal conflict and goal complexity as potential barriers to optimal performance in energy tasks, the next question is around how processes can mitigate for these issues. Two key directions in the literature recommended to alleviate conflict in multiple goal contexts are through task strategy and organisational alignment. These themes are echoed in the data.

Focus Group findings: Conceptualising solutions

Task Strategy. Task strategy is a cognitive moderator to performance goals, manipulated through tools such as training (Locke et al., 1984). Setting difficult and specific 'learning' goals in complex

situations are often used rather than performance goals, thus enabling individuals to approach the situation systematically building task strategies (Locke and Latham, 2002). As outlined above, the setting of proximal goals can be an effective task strategy by breaking down more complex distal goals (Latham and Seijts, 1989). Currently the de-facto proximal energy goal in this organisation is completing the 52 Energy Checks managed by the Energy Champions. However, the focus groups indicate that having to influence others complicates achieving the proximal goal, making it more difficult:

"As an energy champion it was hard to get people to do things that they were supposed to………. it was hard to get people on board"

This is particularly true when the Energy Champions are more junior than the departmental managers they were trying to influence:

"biggest fight at all is to stand up to the higher ones, to make them stop and listen, just getting someone to take note"

The task strategy of training is found to have room for improvement. The comments suggest that despite training, energy tasks are not embedded into everyday routines;

"They tell you what to do, don't they, Nick (Store Manager) *tells us what to do and why we need to do it, but then its easy to forget, and we just do other things and forget the energy things, easily done"*

The evaluation data suggests that more cognitive support is needed to maintain focus on the energy tasks. The comments suggest that although the current programme may deliver the right messages, there is limited sustained impact over time:

"People slip back into their old routines after a while, when they come to retrain we'll do it again for a couple of weeks and then it will go."

The focus group participants began suggesting ways to sustain the training. This discussion naturally emerged in the group, again indicating that a need was felt to further embed energy issues into everyday awareness:

"it would be good if you could sticker the equipment, the individual equipment"

These insights point to establishing an easier and more integrated task strategy within the process change design. This strategy would mean creating a proximal goal that is easier to attain in stores than the current system that relies on Energy Champions coaxing their peers into action. The new task strategy would also mean making processes that are more sustainable over the long-term.

Goal Alignment. Multiple goal research highlights alignment and goal norming as remedial strategies to reduce goal conflict (Locke and Latham, 2002, Cheng et al., 2007). Alignment with context is current in environmental literature that looks at domestic segmentation. For example, VBN Theory conceptualises environmentally friendly behaviour being sparked in different people by different stimuli (Stern, 2000). Analysis of the focus group data reveals similar ideas around population segmentation naturally emerging in reference to improving energy management, with consistent observations that people should be motivated by appealing in a more personal manner, in a way that was more aligned to their own frame of reference:

"you need a varied message, 18 year olds working on the checkout 2 days a week, and if you start talking to them about share impact they wouldn't be that interested as they don't see this as long term, whereas there are people who have been working here for 30, 40 years who would be really interested."

"if you are talking to someone with kids you would say certain things about their everyday life that they can understand to get the message across."

Similarly, in the context of a work environment, focus group comments bring the idea of personalisation into an organisational context by advocating a more individually structured approach to energy management, building on affiliations, departments and job roles rather than using a blanket approach:

"should make it personal to someone's own job and to an area they can actually affect, so don't tell Nathan how much it costs to run a check out belt because it doesn't personally affect him"

Norming difficult goals is hypothesised to lower the perception of goal difficulty, meaning that additional effort does not need to be diverted to achieve more than one goal with the same type of action (Cheng et al., 2007). The focus group comments suggest a means of norming the goal through making its execution more in keeping with existing operational structures and staff responsibilities. Whereas previous research has suggested aligning to organisational goals (Locke and Latham, 2002), this insight gained by the focus groups indicates an opportunity to build on this with original research by using alignment with organisational structures to combat multiple goal conflict. This discussion around organisational alignment leads to the insight that the energy champion structure does not build on the normal store structures. This is further supported by the frustration with the additional work load expressed by the Energy Champions, where the energy responsibilities are perceived as not naturally falling into their job role;

"The energy champion role was foisted on me, you haven't got time to do your own job without taking on extra responsibilities, and we do so much over and above our own jobs, which then when the time comes for our own jobs to be reviewed our manager will say why haven't you done your job?"

It was also felt that there was no recognition for the additional work that was being put in by being an Energy Champion:

"there's so much to do that's not our job, you have to do it, but when it comes to the review they'll say its not an excuse"

An analysis of missing data in the focus groups highlighted the lack of reference to the Energy Champions. Only four comments were noted in all ten groups, perhaps surprising considering they are the main 'face' of energy efficiency in stores, adding weight to the idea that the system is not thoroughly embedded in the store structure. Leading on from this, the focus group data provides some insight and direction on what a solution that is more aligned to existing goals and structures norms might look like;

"if it was the department, that generally take pride in the department so if you did it this way alongside sales and waste and shrink (goods that are unaccounted for) *and you've also got energy it would be better."*

In this organisation most task segmentation is organised through departments (e.g., communications, budgeting and cost management issues). It is perhaps unsurprising therefore that staff should see the department as a meaningful organisational unit.

"Everything apart from energy is measured by department, not by store"

This sense of pride and ownership within the departmental structure was emphasised not just through articulation of this point, but also through the way that emergent solutions were already being referenced through a departmental perspective.

"every store should go to every department and see what ten things you could do, then the company can start working on ways... there's a lot we could do"

"we all have a part to play in our own department"

This is a strong indication from the evaluation data that the required change in stores was not so much a change in what is being done, but a change in who is doing it; meaning a significant change to the way that energy is being managed in stores. This leaning towards alignment has interesting links with organisational literature that recognises consistency of culture to be conducive to success (Kotrba et al., 2012). It also echoes socio-technical design principles that favour control. It suggests that energy responsibilities would be better placed as a departmental responsibility in order to better align to the organisational structure in response to perceived multiple goal conflict.

Communication The data revealed an interesting balance of motivation for considering energy use. Most people were more interested in talking about financial benefits of energy savings, than any environmental issues;

"it's hard to understand how we impact on the environment, you can't measure it personally, boils down to what comes out of my wallet"

"I do it for money - I could say I'm doing for the environment but I'm not, I'm doing it for my back pocket. I do recycle though!"

Staff showed a clear preference for discussing energy in financial rather than carbon terms, showing interest and enthusiasm for the subject when talking about their home energy management:

"People like to say that that think about it about the environment, but its when it starts to hit the pocket is when they take more notice, definitely"

This commentary over finance as the main domestic concern, compared to the relatively few comments around the environmental impact of energy consumption, underlines the theoretical stance that economic self interest is the most common motivator to pro-environmental behaviour (Whitmarsh et al, 2009). While few participants professed to be actively interested in the environmental aspect of energy savings, there was little actual disinterest. The attitude to the environment was a secondary issue, worth thinking about, but not something to base decisions around;

"the environment is a benefit, that's how people think about it, its just a plus that it helps the environment"

Of those who said they were concerned about energy costs at home, most could refer to some pro-active steps that they had taken to minimise consumption. The most common were using timers, energy saving light bulbs and feedback systems;

"I've just got an EON meter, I didn't really think about it, then he bought one of these and I nearly died, I nearly died"

Pro-activity around home energy consumption was a strong indication of base-level knowledge around the subject. Although by no means conclusive, these data suggest that general energy knowledge in the organisation is reasonably sophisticated. This insight is useful for pitching communication strategy around the process change. As well as their personal energy management at home, staff were interested in the organisation taking a lead in energy management with the majority of comments showed a deep connection between the organisation saving money and an eventual benefit coming through to staff;

"Anything that (the organisation) *do impacts on our jobs, if they lose a lot of money and end up in financial trouble then we have to think about that too."*

"I would be cross if (the organisation) *spends too much on energy, that's our shares and that's our overtimes"*

While the matter of economic self-interest as a motivator point is widely recognised in a domestic context (Whitmarsh et al., 2009) it has previously not been seen as important in organisations (Carrico and Riemer, 2011), so this is an interesting insight, and a potentially valuable for building future communication and intervention strategies.

Using Evaluation Findings to Design Process Change:

Clear insights were provided through the evaluating qualitative data and through supporting literature. These provided the building blocks to develop an operational process change to the way that energy is managed in stores. The following findings were used as key concepts to plan the energy management process change:

The original insight that energy should be classified as a non-primary goal in a multiple goal environment emerged from the focus group data. The literature indicates that multiple goal environments are vulnerable to goal conflicts and consequently impaired performance (Cheng et al., 2007). Aligning with organisational goals is suggested as a remedial action (Locke and Latham, 2002). Building on this, an original hypothesis suggested by focus group data is that multiple goal conflict will reduce if the system is better aligned with existing organisational structures. The second original focus group finding is that energy management goals are perceived as difficult. The literature suggests that goal difficulty can be counterproductive in multiple goal environments (Cheng et al., 2007) as it can increase perception of goal conflict. Focus group data implies that the perception of difficulty is associated with the inherent problems of managing a task that is impacted by a small amount by most staff. Based on previous research, proximal goals and clearer training processes can help to frame more difficult distal goals (Latham and Seijts, 1989). The second hypothesis to be tested by the change therefore is that the perception of difficulty can be reduced by establishing easier proximal goals.

Departmental changes: *Alignment to structure:* Responsibilities for fifty two energy checks are re-distributed to the departmental managers, therefore aligning better with the organisational structure.
Task strategy: By simplifying the energy checks and distributing them directly through the department, this proximal goal is made clearer and less complicated.

Training changes: *Alignment to structure:* Energy Check training is now integrated with job training and delivered by store personnel in line with all other store training.
Task strategy: Energy Champions had a day training, 100 page energy manual and 52 Energy Checks to perform; instead the new Department managers have job-related basic task training, with a 5 page manual and less than 10 Energy Checks each.

Communication changes: The training documents and roll out communications were designed to be simple and clear, with a strong message over the organisation being able to add to share price through energy savings. Regular communications will support change sustainability.

Discussion and Conclusions

Evaluation methods have played a crucial part in this organisational process change. Stage one provided essential quantitative data to understand how effectively energy management policies were working in stores. This led to a second stage qualitative evaluation designed to identify underlying issues. Analysing the data in the context of the literature on multiple goals (Cheng et al., 2007) gave rise to the key finding that energy should be classified as a non-primary multiple goal within the food retail environment. Although goal difficulty is an essential component of successful goal-setting (Locke and Latham, 2002) the multiple goal literature suggests that goal difficulty in that context is ineffective. Our second key finding therefore was the insight that energy management is indeed viewed as a difficult goal to achieve from a shop-floor perspective. In line with the multiple goal literature (Cheng et al., 2007) the data suggests that this perceived difficulty leads to goal conflict and reduced performance levels. These findings informed a change strategy for improving staff motivation towards store energy performance. The change strategy has two parts. Firstly, we developed an original approach of aligning closely with existing organisational structures to counter multiple goal conflict. Secondly, we adopted a task strategy approach of using proximal goals to break down a complex distal goal (Locke and Latham, 2002). In a third evaluation stage, quantitative methods have been integrated into the design to measure change effectiveness as it is rolled out. This last evaluation stage will be an important part of validating the above hypotheses if findings are significant. In conclusion, the findings highlight the effectiveness of the evaluation strategy. Whereas management research has looked at energy policy from a high level system viewpoint, the shop-floor based qualitative evaluation provided a new perspective that was crucial to arriving at the key findings. Further research may establish whether the finding (that energy management is a non-primary multiple goal that is perceived as operationally difficult to achieve) is applicable in other business areas. Most data that led to these conclusions make instinctive general sense, rather than being obviously particular to this industry, and are perhaps likely to be consistent in other commercial fields.

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