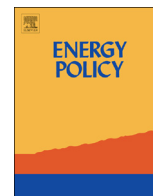




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Contents lists available at ScienceDirect

Energy Policy

journal homepage: www.elsevier.com/locate/enpol

Influencing the central heating technologies installed in homes: The role of social capital in supply chain networks



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HIGHLIGHTS

- Ethnography is used to investigate the relationships in heating supply chains.
- Social capital is seen to be an important part of these relationships.
- These relationships could help in the promotion of low carbon technologies.

ARTICLE INFO

Article history:

Received 10 December 2015

Received in revised form

19 April 2016

Accepted 20 April 2016

Keywords:

Ethnography

Low carbon heating technologies

Social capital

Qualitative research

Intermediaries

Built environment

ABSTRACT

The likely installation of, and potential energy savings from, low carbon technologies in domestic buildings is not only dependent on those who fit them, but also the broader supply chains of which they are part. Despite this, the role of supply chain actors has been largely overlooked in strategies seeking to encourage the installation of more sustainable domestic heating technologies. With reference to central heating, this paper responds through an ethnographic analysis of how plumbers' merchants and sales representatives can influence the work of heating installers in the United Kingdom. It applies two dimensions of the concept of 'social capital': relational and structural. Relational social capital focuses on the trust, loyalty and reciprocity at play in relations, whilst structural social capital considers how the strength of tie can influence those to whom people turn for advice and support. Together, these ideas demonstrate how relationships amongst these groups can serve to influence product choice and facilitate information exchange. The paper concludes by discussing how these supply chains might be engaged with as a means of encouraging the installation of low carbon domestic technologies.

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1. Introduction

The European Union (EU) has set a long-term goal of reducing its greenhouse gas emissions by 80–95% when compared with 1990 levels by 2050 (EC, 2011). Though hitting this target will require a concerted effort across a range of sectors, the existing building stock represents the biggest potential sector for energy savings. The energy consumed in buildings is responsible for approximately 40% of total EU consumption, with space heating being particularly significant (EC, 2012). In the UK, for example, space heating is the largest single contributor to domestic energy consumption, accounting for approximately 60% of this in 2011 (Palmer and Cooper, 2013). This value has also remained

persistently high over the last 40 years. This leads Palmer and Cooper (2013 p. 35) to argue that, if we are to “make serious inroads in cutting CO₂ from housing, reducing heating energy has to be part of any solution”. Since 98% of homes in England and Wales were using gas central heating in 2011 (ONS 2011), this technology (or its replacement) should be a key focus.

In the UK, the Government's Low Carbon Plan aims for the installation of between 1.6 million and 8.6 million low carbon heat technologies by 2030 (HM Government, 2011 p. 40). To this end, the installation of alternative heating technologies is encouraged via Part L of the Building Regulations (HM Government 2013a). The Domestic Building Services Guide, written to assist compliance with this, includes heat pumps and micro-combined heat and power units as two such technologies (HM Government 2013b). Meanwhile, new forms of training and accreditation have been developed in the hope that a new workforce of low carbon technology installers should start to assemble as a consequence.

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For example, the Microgeneration Certification Scheme (MCS) seeks to ensure that those installing low carbon heating technologies are trained and certified to do so (MCS, 2016). It has been suggested that this should ‘not be unachievable assuming the development of a robust supply chain and trained installers’ (Rhodes, 2011 p. 8). However, a recent paper in this journal highlighted that installers and advisors involved in low carbon retrofit appear to be ‘outside the influence’ of policy interventions, which tend to focus instead on environmental performance and environmental accreditation schemes (Owen et al., 2014 p. 172).

Both policy makers and researchers have begun to acknowledge the role of installers. In particular, policy makers have outlined the provision of financial incentives, and the development of training and apprenticeship schemes for installing low carbon technologies (DECC, 2013). Meanwhile, academic research has recognised the role of technology installers in influencing household practices in both UK (Darby and Liddell, 2015; Wade et al., 2016a) and international contexts (Gram-Hanssen et al., 2016). However, the role of supply chains has been largely neglected in both circles. This is despite the fact that Janda and Killip (2010 p. 121) position manufacturers and suppliers as ‘key stakeholders’ in meeting the low-carbon refurbishment agenda. Indeed, it has been suggested that in order to identify and define appropriate policy interventions to get low carbon technologies into homes, we need to more thoroughly consider the networks that influence micro-enterprise activity (Owen and Mitchell, 2015), namely the work of construction professionals, operating on a self-employed basis or in organisations of fewer than ten people (EC 2003). However, there is a current blind spot in terms of the interactions that take place in these networks and how they might feasibly be incorporated into policy.

It is with this in mind that this paper considers the plumbers’ merchants and sales representatives with whom domestic heating installers¹ work. As an example of such ‘micro-enterprise activity’, heating installers are tasked with the selection, installation, and explanation of domestic central heating systems. Plumbers’ merchants act as a supplier for heating installers, they stock the products and tools required for the installer’s everyday work. Meanwhile, sales representatives are transient actors who are employed by manufacturers to encourage and manage the sales of their products. In this role, they move between plumbers’ merchants and communicate regularly with heating installers. This paper proceeds by noting the limited academic attention that supply chains have thus far received by those hoping to understand and influence the potential uptake of low carbon heating technologies, before detailing the relational and structural social capital approaches that are used here to investigate them. This reveals a series of ways in which trust and loyalty inherent in relationships, along with weak and strong ties between different supply chain actors can influence heating installers’ actions and the central heating technologies they install. The paper concludes by making suggestions about further research in this area, and outlining a series of policy recommendations about how supply chains might feasibly be harnessed in the promotion of low carbon domestic heating technologies.

¹ In the UK context, those tasked with the installation of heating systems are known as heating installers or heating engineers. Heating engineers is a specific title allocated by Gas Safe Register to identify those that have the qualifications and training required to perform the installation of central heating systems (GSR 2011). Gas Safe Register are the organisation tasked with maintaining a database of those qualified and registered to work on domestic gas central heating systems. Their role is elaborated in Wade et al. (2016b).

2. Background

There has been very little investigation of construction supply chains, and how they influence energy consuming technologies in domestic buildings. The only research to have investigated heating installers’ supply chains in any capacity was undertaken by Banks (2000a) (2000b). There are a handful of other studies looking at the role of construction industry supply chains in the low carbon building agenda, as detailed in the following section. Together, these suggest that supply chains have a role in influencing the products installed and the provision of information on which installers might draw when deciding what products to fit.

2.1. Supply chains influencing product selection

The construction professionals tasked with selecting and installing domestic technologies have been suggested to use an “informal but multi-faceted risk assessment” when determining what to fit in homes including, the cost, the potential for disruption if the technology went wrong, and their knowledge of the technology (Killip, 2013 p. 526). However, beyond operating “according to their own heuristics of risk and acceptability” (Owen et al., 2014 p. 176), it is likely that these actors might also be influenced by the broader supply chains through which these technologies are acquired. Killip (2013) has highlighted the ‘self-perpetuating logic of conservatism within supply chains’ whereby “conservatism tends to reinforce the strong position of established products and suppliers in product supply chains, and the difficulty of sourcing new products in turn becomes a barrier to greater uptake of new ideas” (p. 527). In this way, he (2013) suggests that the impetus for construction intermediaries to try installing new products loses momentum if it is not accompanied by a structural shift in the supply chain. Furthermore, the continued use of tried and tested products is also sustained by strong brand loyalties (Killip, 2013).

Banks (2000a, 2000b) used interviews with heating installers, manufacturers, housing developers and end users in the United Kingdom to make suggestions about the role of manufacturers and plumbers’ merchants. Through this, he identified that boiler and controls manufacturers encourage loyalty through the use of “points schemes, sophisticated websites, [and] helplines offering advice and promotions [...] at builders and plumbers merchants” (2000b p. C24). However, this is based on interview data alone and does not reveal how brand loyalties are established and sustained in reality, to influence the central heating technologies installed in homes. It is important to consider how these conservative practices and loyalties might limit the deployment of new or alternative technologies in buildings.

2.2. Supply chains as information sources

In addition to their influence on product selection, there is evidence that supply chains can act as avenues of information for those involved in the specification and installation of domestic technologies. In particular, Owen et al. highlight that supply chain networks may “provide a route to reach and influence individual practitioners where the dispersed nature of the [construction] trades makes finding effective communication channels difficult for policy makers” (2014 p. 178). A study of plumbers as potential water efficiency advocates highlighted that staff in the plumbers’ merchant “communicate with plumbers, who in turn communicate to the public” making them important avenues for informing plumbers’ actions (Bowden et al., 2012 p. 5). In this study, the plumbers’ merchant was also identified as a location where plumbers spent time, which presented the opportunity for engaging them in information about water-saving products or advice

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