Developing a Circular Economy in the Retail Refrigeration Industry: The Influence of Financial Incentives, Quality Standards and Process-Supporting Tools on the Behavioural Intentions to Purchase and Produce Remanufactured Refrigeration Equipment

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The Circular Economy is an economic and industrial system in which resources are used for as long as possible. This typically involves businesses implementing a range of alternative business models, such as remanufacturing. With the manufacture of Refrigerated Display Cabinets (RDCs) being a material and energy intensive process, there is scope for remanufacturing to support a more resource-efficient production of RDCs. Despite the potential, the remanufacture of RDCs in the UK is uncommon. Many Retailers and Manufacturers typically have unfavourable attitudes towards the purchase and production of remanufactured RDCs. However, more favourable attitudes could increase their Behavioural Intentions towards the purchase and production of remanufactured RDCs, which could lead to the adoption of remanufacturing across the industry. This study uses structured surveys to measure the potential impact that Financial Incentives (the Enhanced Capital Allowance), Quality Standards and Process-Supporting Tools have on changing the Behavioural Intentions towards the purchase and production of remanufactured RDCs. Participants in this study are Retailers (who purchase RDCs for retail grocery stores in the UK) and Manufacturers (who produce and sell RDCs to UK retail grocery stores). The results show that the Financial Incentives (the Enhanced Capital Allowance), Quality Standards and Process-Supporting Tools had a positive and significant influence on the Behavioural Intentions towards the purchase and production of remanufactured RDCs. This supports the importance of further research into the development of the proposed interventions with the aim to positively influence stakeholder behaviour, that will in turn support the development of the Circular Economy in the Retail Refrigeration Industry.

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Background

DISPOSAL OF RDCs IN THE UK

In 2015 approximately 81,000 RDCs came to their end-of-life. Only 12,000 of these were remanufactured or refurbished, meaning 69,000 potentially remanufacturable RDCs entered the waste-stream 1).

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Methodology

BEHAVIOUR CHANGE INTERVENTIONS

Behaviour change interventions are methods used to change human behaviour. The three interventions discussed in this paper have the potential to encourage pro-circular behaviours and if adopted, they could drive the uptake of remanufacturing in this industry.

- Financial Incentives (ECA)
  - The ECA scheme provides 20% tax relief on the purchase of new energy-efficient products, including RDCs. The inclusion of remanufactured products in the ECA scheme would help to incentivise the purchase of remanufactured RDCs 2).

- Quality Standards
  - A recognised quality standard would provide Retailers with an assurance on the quality of remanufactured RDCs and positively impact their attitudes towards remanufacturing. The result being an increase in demand for remanufactured RDCs.

- Process-Supporting Tools
  - The presence of industry-specific supporting tools that provide best practice guidance on the processes of purchasing and producing remanufactured RDCs could be very encouraging. Retailers and Manufacturers to adopt remanufacturing.

PARTICIPANTS

Two groups of stakeholders participated in this study. The first group of stakeholders were Retailers (N=19); these include individuals who have RDCs for retail grocery stores in the UK. The second group of stakeholders were RDC Manufacturers (N=6); these include individuals who produce and sell RDCs to UK retail grocery stores.

DATA COLLECTION

The influence of the three behaviour change interventions on the Behavioural Intentions of the stakeholders to purchase and produce remanufactured RDCs was examined using the appropriate survey instruments, including carefully designed questions and 7-point Likert scales were used. The data was collected between January and September 2017.

RESULTS

STAKEHOLDERS' BEHAVIOURAL INTENTIONS

Currently, the Behavioural Intentions of Retailers to purchase remanufactured RDCs are NEUTRAL, with a mix of positive and negative responses (4.3/5, 84.2%; 3.4/5, 15.8%).

The influence of an ECA scheme that includes remanufactured RDCs would have a POSITIVE and significant 3) influence on Retailers’ Behavioural Intentions to purchase remanufactured RDCs (5.7/5, 87.8%; 4.8/5, 12.2%).

The influence of a Quality Standard for remanufactured RDCs would have a POSITIVE and significant 3) influence on Retailers’ Behavioural Intentions to purchase remanufactured RDCs (5.7/5, 87.8%; 4.8/5, 12.2%).

The influence of a Process-Supporting Tool for purchase of remanufactured RDCs would have a POSITIVE and significant 3) influence on Retailers’ Behavioural Intentions to purchase remanufactured RDCs (5.7/5, 87.8%; 4.8/5, 12.2%).

BENEFITS OF REMANUFACTURING RDCs

RDCs are fully disassembled, remanufactured, upgraded and fitted with new parts. Remanufactured RDCs are brought to a ‘good-as-new’ date to remain in use for an additional life-span (5+ years).

TEXTUAL CONTENT

MANAGEMENT

REMANUFACTURE

SUSTAINABLE

CIRCULAR ECONOMY

REMANUFACTURE

ECONOMY

ENVIRONMENT

SOCIETY

BARRIERS TO REMANUFACTURING

The Retailers and Manufacturers have little or no intention to purchase and produce remanufactured RDCs. An explanation for this can be attributed to concerns over price certainty, lack of guidance on how to adopt remanufacturing into business models and absence of recognised industry quality standards for remanufactured RDCs.

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Conclusion

The development of the proposed Behaviour Change Interventions could help the transition towards a more resource-efficient practices.

This paper encourages further research and dialogue between Retailers, Manufacturers and Policy-makers on the development of the proposed behavioural change interventions. Their collective engagement is pivotal in encouraging the industry to become more resource-efficient.