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The Future of Packaging - A Collaborative Action Learning Approach

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Working Paper

Abstract

The retail packaging supply chain is experiencing intense scrutiny following increased public awareness of ocean plastic pollution and criticism of single use plastics. Industry must meet these challenges while maintaining standards in packaging functionality and food protection and remaining economically viable. Solutions are likely to require the input from all areas and levels, including manufacturers, retailers, government, consumers and campaign groups. The success of any innovation must take account of multiple future scenarios that could affect policy implementation and new product development. These complexities require collaboration between stakeholders and academic input is vital to evidence-based leadership and decision-making.

This paper describes early findings from a new collaborative group, led by Leeds Beckett University, which is using the Futures and Foresight approach to develop collective goals for tackling the environmental challenge. It seeks to answer the question of how action learning can be used to create a collaborative approach to considering the future of sustainable packaging. The approach focused on allowing groups of stakeholders to find actions to take and questions for their futures against which learning could take place. The early findings report some initial agreements on the challenges that the industry currently faces.

Keywords: packaging, environment, collaboration, Futures and Foresight, action learning

1. Introduction

The retail packaging supply chain is experiencing intense scrutiny following increased public awareness of ocean plastic pollution and criticism of single use plastics (Schnurr et al, 2018). Despite many years of pro-environmental innovation in packaging, there are calls from consumers, campaigners and government for better, more radical solutions for reducing waste, pollution, littering and energy consumption (Martin-Rios et al. 2018). Industry must meet these challenges while maintaining standards in packaging functionality and food protection and remaining economically viable. Retailers and manufacturers are still coming to terms with this new level of attention and expectation to change. The UK Government has already pledged to limit single use plastics and further legislation is expected that will compel businesses to use more recycled materials (HM Government, 2018a). Consumers are also more empowered through social media and the increasingly competitive retail environment to express what they want and share what they find frustrating.

Solutions are likely to require the input from all areas and levels, including manufacturers, retailers, government, consumers and campaign groups. The success of any innovation must take account of multiple future scenarios that could affect policy implementation and new product development. It requires an understanding of potential market and governmental change along with a wide variety of technological solutions relating to materials, distribution and the waste infrastructure. There are also numerous questions relating to public understanding of packaging and effective communication that will ensure correct understanding and implementation of solutions.

These complexities require collaboration between stakeholders and academic input is vital to evidence-based leadership and decision-making. This paper describes early findings from a collaborative group incorporating the retail packaging supply chain, which is using the Futures and Foresight approach to develop collective goals for tackling the environmental challenge. The question we seek to answer is:

> How can we create a collaborative approach to consider the future of sustainable packaging through action learning?

We begin with a brief consideration of key features of the literature concerning this problem.

2. Literature review

The problem of plastic packaging

The ubiquity of plastic comes from its usefulness. This means that solving the problems it has created is highly complex. Plastic's use as a food packaging material grew significantly from the 1950s onwards. It was not just an alternative material to paper, metal and glass. Innovations in plastics meant that previously unpackaged foods became wrapped in plastic and new food products and eating practices developed (Hawkins, 2018). Today, plastics still enables retailers to offer convenient solutions to consumers seeking ready-to-eat food or extended shelf

life. In charting the history of plastic food packaging, Hawkins describes how plastic "acquired the capacity to suggest changed norms of behaviour and new meanings for the biological life of food from 'sealing in freshness' to extending shelf life" (p.401). She suggests that we are 'governed by plastic' in the way it has changed daily habits.

When 14 million UK viewers watched the BBC's *Blue Planet II* series in late 2017, the problems generated by plastic's ubiquity were broadcast to a mass audience and "captured the public imagination as never before" (Wright et al, 2018, p.163). Environmentalists who have long campaigned for measures to tackle ocean plastic pollution took the opportunity to increase public scrutiny of businesses responsible for plastic production. Since then, there have been regular calls for better, more radical solutions for reducing plastic waste, pollution and littering (New Plastics Economy, 2017; Walker, 2017). Research continues to emerge that catalogues the problems caused by plastic pollution, which has an estimated global cost of $2.5 billion per year, with around 8 million tonnes of plastic entering the oceans annually (Beaumont, 2019; Martinko, 2019).

Anti-plastic campaigners state that the damage to marine wildlife and eco-system, along with the potential health implications for people ingesting micro-plastics, means that radical change is necessary. They argue waste collection will never be sufficient as plastic tends to end up in the environment and call for a shift from the onus on recycling towards putting an end to plastic production. There has been scrutiny of supermarkets with, for example, the consumer group *Which* announcing that 29 per cent of supermarket packaging is not recyclable (Simmonds, 2018) and a survey for campaign group *A Plastic Planet* which found that nine out of ten people want supermarkets to have a plastic free aisle (Johnston, 2017). In the UK, there are signs of government responding to the problem by pledging to limit single use plastics (HM Government, 2018a) and creating tax incentives for businesses to use more recycled materials (HM Government, 2018b). This has left industry – specifically businesses working in the retail packaging supply chain – faced with a challenge of changing current practices without there being ready-made alternative solutions.

The packaging industry appears frustrated at the prevalence of simplistic, emotional arguments to the detriment of evidence that demonstrates the benefits of plastic and ignores the protective function of plastic packaging (Wohner et al, 2019). Plastics may be the only viable option for providing some foods conveniently and safely and eliminating plastic could cause a huge increase in food waste, a fact not always acknowledged in the environmental assessment of packaging (Heller et al, 2018). As 30 per cent of food produced around the world is wasted, reduction in the use of plastics could increase that figure and remove potential solutions to the problem.

Potential solutions

Solutions are likely to require the input from manufacturers, retailers, government, consumers and campaign groups. The success of any innovation must take account of multiple future scenarios that could affect policy implementation and new product development. It requires an understanding of potential market and governmental change along with a wide variety of technological solutions relating to materials, distribution and the waste

infrastructure. There are also numerous questions relating to public understanding of packaging and effective communication that will ensure correct understanding and implementation of solutions. While there is evidence of extensive efforts by industry to maximise the sustainability of manufacturing operations (Mathiyazhagan et al, 2019), adoption of environmentally friendly processes is challenging. Barriers to adoption of Green Supply Chain Management include a need for adequate training, lack of progress monitoring and poor customer awareness (Wang et al, 2016).

Other solutions relate to improved communications between industry and the public so that consumers understand the environmental credentials of packaging and increase recycling rates. A WRAP (Waste & Resources Action Programme) survey looking into UK consumer attitudes to food waste and food packaging (Plumb et al, 2013) found that many consumers did not recognise that packaging protects food in the home and actually took the contrary view that products will spoil more quickly if they are kept in the packaging.

Companies need dialogue with consumers on the packaging functions and conveniences they are prepared to give up in the name of the environment. Lindh et al (2016) found a tendency to favour the convenience attributes of packaging over others (including environmental), although *convenience* is partly concerned with ease of recycling. They also note that lack of awareness among consumers of the environmental status of certain packaging, meaning, "Consumer choices can unintendedly counteract environmentally sustainable intentions". Other research suggests that even the most environment-friendly consumers make their choices as a trade-off with various product attributes (Rokka and Uusitalo (2008).

Eco-friendly products often have an associated cost, at least in the minds of consumers. Moral reasoning may only occur in choice of product packaging when environmental impacts are perceived considerable and no other characteristics (e.g. a high price) are seen as equally important (Thogersen, 1999). Sirieix et al (2013) observe that consumer awareness of an issue, followed by a belief in its relevance to society and themselves personally, are prerequisites of intentions and then actions. There is also the challenge of overcoming scepticism. For example, people might not trust claims on packaging labels seen as too general, such as 'climate friendly'.

3. Theoretical Base

The term collaboration simply stated, and based on Latin terms, implies working together for some agreed purpose. Wood and Grey (1991) expand on this to suggest that "collaboration occurs when a group of autonomous stakeholders of a problem dome engage in an interactive process, using shared rules, norms, and structures, to act or decide on issues related to that domain" (p.146). Such a definition would suggest that collaboration is unlikely to occur without a degree of facilitation, particularly where stakeholders are likely, initially at least, to have differing concerns and interests with a preference for autonomous decision-making. Gray (1989) argued for the need for organisations involved in collaboration to adjust their focus to interdependence and inter-organisation

interests and this requires convenors with sufficient authority to act but also an ability to help create a mutually appreciated direction among different interests.

Key features of this process include identifying patterns of complexity (Majchrzak et al, 2015), nurturing and developing trust (Vangen and Huxham, 2003) and embeddedness and involvement (Hardy et al, 2003). One problem may be an uneven distribution of power between stakeholders (Hardy and Phillips, 1998), manifest in dominant voices and suppression of others, resulting in some stakeholder initiating action in a way that suits them but not others (Levy, 1982).

Some of the literature defines collaboration according to a continuum of increasing integration and complexity. Majchrzak et al (2015) identify patterns of more or less increasing complexity. Greater complexity came from increases in the number of programme characteristics, including actors in the process, differences between partners, organisational structure and decision-making control. Majchrzak et al's analysis of inter-organisational collaborations found that the more successful ones tended to exhibit greater complexity. Specifically, they experienced change in more characteristics. Differences between partners often led to proactive initiation of change and feedback loops, which involved initial effects leading to further changes in characteristics.

Similarly, Gajda (2004) outlines a strategic alliance formative assessment rubric (SAFAR) that notes how features evolve as collaborators integrate further. She states that 'collaboration is a journey, not a destination', as partners move from sharing information and mutual support towards greater integration through collective goals and strategies. Gajda also notes Truckman's (1965) stages of group development (form, storm, norm perform) as a useful reminder of likely collaboration dynamics. In addition to integration levels, the SAFAR rubric identifies four other areas of change as collaboration develops:
- There is increasingly shared purpose of activity.
- Strategy and tasks become more formal and structured.
- Leadership and decision making evolves from autonomous, to shared and then increasingly hierarchical.
- Communication becomes more frequent and formal and then both formal and informal. Meanwhile, the possibility of interpersonal conflict increases (Gajda, 2004, p.71).

These features of collaboration are a guide for describing and analysing a collaborative group formed to develop strategic responses within the context of the Future of Packaging. This will provide insight into how action-learning approaches can generate joint understanding and mutual appreciation against the complex but vital problem of environmental protection.

4. Method

To respond to the need for stakeholder in the packaging sector to find a way of collaboration around a joint interest for their futures, whilst also seeking engender a spirit of together and comradeship, we designed a model of collaboration using a future search process to create a direction for action learning. Future Search (Weisbord and Sandra, 2000) is well-established framework to promote trust and

democratic values for whole system improvement in an identified domain of activity. Our approach allowed 16 participants, all with an interest in the future of packaging, to surface key issues and questions from which action learning groups could formed. With an online support infrastructure, the groups could then seek to respond to questions and report back on findings leading to recommendation for action. We envisaged that the groups would meet together every two months for 10 months, and to date, three meetings have been held.

5. Findings

Session 1

The objectives for the first session were to identify the main issues that group members expected to face in the next few years and form some initial group actions. This involved the use of 'ask the oracle' question formation to set out what members most would like to know about the future of the retail packaging supply chain. All of the mutually agreed questions related to the environmental issues surrounding retail packaging or factors that could influence the issue such as governmental and regulatory change.

For example, the first question in table 1 is about the potential availability of alternative packaging materials that could provide a viable pro-environmental alternative to plastics. Other questions concerned the recycling system and approaches for increasing recycling rates. There were also questions tackling conflicting evidence and opinions on which is the most environmentally friendly option. This reflects the plastics 'debate' and the claims of manufacturers that plastic offers many environmental benefits including lighter weight, energy efficiency and minimising food waste compared with other materials. Although life cycle analysis and circular economy definitions offer answers to this question, the components of that analysis are also debatable. Therefore, the group sought greater clarity on this issue. Finally, the role of consumers in the design and use of packaging was a key area of interest. This concerns both the lack of consumer understanding of the environmental features of packaging and methods for communicating those features, along with encouraging improvements in recycling behaviour.

The agreed actions that followed these discussions aimed mostly at finding more information on the various topics. Some were to find existing knowledge on a particular topic or to assess what kind of information is available. A prominent task was to map the diversity of regional recycling systems and to identify good waste management practice within and outside the United Kingdom. Moreover, the group wished to gather statistics on the recycling of different materials. Other actions, such as gaining insights on how to influence consumer perceptions and agreeing a common industry message on plastic packaging were more general and effectively recorded as common interests rather than definable tasks. This reflects the fact that the collaboration process was still at a very early stage and firm priorities were not yet agreed. However, there was a sense of common agreement between group members on the kinds of issues faced by the industry.

Table 1: questions and agreed actions from session 1

Oracle questions (selected)	Actions
Will we make significant change in spread of packaging materials on our move from plastic to alternative materials? Will we have an effective and well-working collection scheme for packaging in place? Will we have a definite answer to what is environmentally friendly? Will the government situation be significantly different? Will retailers still be looking to remove or reduce plastics? Will consumers care sufficiently to drive change? Will consumers better understand packaging? Will there be nationwide standards for recycling/recyclability	Identify ways of ensuring that technology for innovative materials has a positive environmental impact. Create a UK infrastructure map of what is and what is not accepted for recycling by regions in the UK and in different countries. Identify good practice in waste collection schemes in Europe, e.g. Germany vs UK comparison and comparison between incineration and landfill. Find out what percentage of packaging waste is flexible plastic and whether there is data on the composition of these materials. Get a common understanding of the working of the retail packaging supply chain. Gain brand & retailers insights on how to influence consumer perceptions. Agree on common message to communicate affectively to create step change in how we deal with plastic packaging.

Session 2

In the second collaborative session, participants provided fuel to the discussion by presenting information gathered in advance of the meeting. The presentations covered topics such as data on packaging waste, individual member businesses' pro-environmental products, circular economy definitions and design for the circular economy. The presentations generated further discussion on the details behind the facts. This included the strengths and weaknesses of a potential deposit return scheme and the likely intentions of politicians with regard to waste collection. There was also exploration of the difficulties of producing food-grade packaging materials from recycled waste. The discussion involved members sharing knowledge and perspectives on the issues, anecdotal examples of good practice, questions about the reliability of some information and news of relevant business developments.

The group then developed a new set of questions and actions to take forward to following session. These were gathered into the five topic areas in table 2.

Table 2: Session 2 topics and objectives

Group	Topic	Key questions/objectives
A	Chemical recycling	Understanding how chemical recycling can help plastic recycling
B	Waste Management	Looking at best infrastructure practice in the UK and abroad
C	Consumer Behaviour	How can consumer behaviour change? What are the most effective ways of influencing consumer behaviour?
D	Government Goals & Expectations	Do we have the infrastructure to meet the government expectations for recycling? What investments are needed to meet recycling goals?
E	Circular Economy	How do we make a circular economy financially viable?

Each participant chose a group in which to work. This meant that some groups (specifically the government goals and expectations topic) had no participants due to the popularity of others. This effectively focused the project's parameters further while acknowledging that other topics were still of interest.

Session 3

At the third session, the purpose was to convert the priority topics and questions into actions for the group. This involved further reporting on the agreed topics and discussion leading to agreed actions. The session focused on three of the five topics: chemical recycling, waste management and consumer behaviour.

Chemical recycling

Reporting on the chemical recycling topic identified it as a potential solution for recycling flexible plastics and other packaging that is currently difficult to recycle. Other benefits include the production of high quality virgin material, which could help to limit the use of fossil fuels, and no compromise in product performance. However, the technology is still at the prototype and testing stage, requires acceptance from both the market and regulators, and the waste collection infrastructure is not yet sufficient to supply the appropriate materials for recycling.

The group discussed implications including the potential degradation of the feedstock and consequences for food safety. Another issue raised was how to communicate the environmental benefits of chemical recycling. For instance, does it count as 'recycling' or 'renewing'? The group agreed that clear and consistent communication is essential to justify investments. This should involve evidence to support claims and emphasis on a process of gradual improvement and learning rather than an immediate solution to the waste problem. Potential unintended consequences could include the encouragement of even more plastic products onto the market and difficulties forecasting the availability of chemically recycled plastics due to the tendency for some industries to take control of most of the feedstock.

The emerging actions on chemical recycling were:

1. To push for a collection infrastructure

2. To gather more information about the costs of chemical cycling vs conventional recycling
3. To visit a chemical recycling plant
4. To investigate ways of increasing the collection of packaging materials such as confectionery wrappers

Waste management

Participants reporting on waste management focused on examples of good practice from Germany and Wales. The German model, which has an international reputation for efficiency, has made it easy for consumers by marking all recyclable packaging with a green dot. Until relatively recently, a single company has been responsible for collecting the recycling waste with smaller companies tendering to that business for the processing contracts. Industry prefers this system as it has control over costs and recycling performance has improved. However, some in the group challenged to claims of the German system, noting reporting differences to the UK (what is collected, rather than what is actually recycled) and lack of responsibility placed on the public to consume less.

Wales has much higher recycling rates compared with England and could overtake Germany in the near future. A notable difference with England is that Wales has a unified process, rather than differing between each local authority area. Good practices evident in Wales but not in England include collection of bio-waste, statutory collection targets and pay-as-you-throw charges. Further discussion considered challenges for local councils as their low budgets limit change or investment. There was uncertainty about the commercial value of recycled waste market perversities can affect the price of recycled plastic in relation to virgin plastic. Subsidies in some areas make waste more commercially viable than in others. Participants anticipated that the proposed new packaging taxation system could change the funding structure.

The impact of varying demographics and political structures were also areas of interest along with ideas to change the mind-set of consumers with regard to recycling. More needs to be done to normalise certain behaviours so that failure to recycle become more unacceptable socially.

The emerging actions on waste management were:
1. Understand barriers to collection
2. Check the funding situation
3. Use the Welsh model?
4. Find out what works for consumers

Consumer behaviour

The discussion on consumer behaviour highlighted that organisations need consumers to change and to learn how to communicate with them effectively. The group considered the problems generated by making inaccurate environmental claims and the loss of trust in companies due to high profile scandals. This can undermine efforts to raise awareness to true environmental benefits of products and processes. Potential areas of research interest included the attitudes and behaviour of young people and the gradual growth of the pro-environmental

consumer market. The latter includes overcoming the perception that pro-environment products are inferior to others.

Adding depth to this discussion, a presentation from one group member considered questions on consumer behaviour, willingness to pay and methods for encouraging behaviour change. He suggested that the are lessons to learn from behaviour change ('nudge') theory, which involves identifying small actions or changes in context that make it easier (or harder) to make certain decisions. The challenge is to work out how governments and large institutions can spur 'wise' decisions at scale and consequently, make life better for everyone. On willingness to pay, consumers often state in response to surveys that they would pay extra for sustainability and this is especially true for millennials (Nielsen, 2015). However, the group acknowledged that transferring such attitudes into behaviour remains a challenge.

The group was also encouraged to look at the communications of organisations such as WWF, which gives advice to potential activists on how to promote change. There was also consideration of the viability of policies to influence consumer behaviour, such as deposit return schemes (DRS). This highlighted the problem of businesses having the responsibility for implementation but needing support from government to make it financial workable. Making recycling easier requires improvements to recycling infrastructure.

The actions emerging from this discussion were:
1. Learn more about the communication of environmental claims to consumers
2. Consider consumer emotions and values in decision making

Priorities and feasibility

Having identified actions from the three topic areas, the group undertook the task of prioritising the actions according to relative importance and feasibility. There was general agreement that most actions were important. Some, such as pushing for infrastructure and getting materials back had low feasibility but very high importance. Therefore, working out options for moving towards these were tasks for further consideration. Other actions required clarification. For example, definitions of 'costs' relating to chemical recycling to include circular economy, efficiency and carbon/energy use. Overall, the actions reflect the group's continuing need for information and understanding to inform the development of collective strategies which, at this stage, were still to emerge.

Summary

At the time of writing, this project is still developing. The early findings reported here show that convening the group and the techniques used at each session have helped the group members to identify several areas of mutual interest. While most of the actions so far have focused on gathering knowledge, there is a clear intention to use that information in some kind of collective action yet to be defined. There is enthusiasm, especially among a core of group members, for the process to create some positive responses to the situation faced by their industry. However, they face many complexities within their own businesses as well as the social, economic and political context that call for a cross-industry collaborative approach. Those complexities have been the focus of discussion, enabled and

given structure by the Future Search method. It has successfully established shared rules and norms. The greater integration and relationship complexity associated with successful collaborative outcomes is still emerging.

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