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The Dysfunctional Nature of Packaging Development: An Exploratory Study in the UK Food industry.

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Abstract

Packaging has been identified as a critical part of the product offering in the Food industry that is vital to success (Rundh, 2005; Silayoi & Speece, 2004), indeed the success of some products and brands can be attributed to their innovative packaging. Yet there remains relatively little research into the development of new packaging in the marketing management literature (Saghir, 2002; Johnsson, 1998). Furthermore, the limited research that has been undertaken suggests that many firms fail to create a pipeline of new packaging ideas and concepts (Ahmed et al., 2005). This exploratory study explores new product development, and focuses on the management of packaging within the process. The study comprised thirty interviews with a range of companies, including packaging manufacturers, retailers, and Food brand owners. The paper finds that the Food industry has a low regard for packaging and tends to consider it late within the new product development process. Furthermore we find that the emphasis of packaging development activities are frequently on the label, whilst new packaging innovation is overlooked. This paper provides new insights into the management of this critical aspect of the Food product offering, and highlights a number of key issues for future research.

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Classification: Research paper

Key words: New product development; Packaging products; Product Management, Food.

1. Introduction

Within the Food sector packaging is an important marketing tool in a number of respects (Simms and Trott, 2010), and its importance is increasing (Mintel, 2006). With respect to the product, it is clear that packaging is a critical part of the product offering, inseparable from the product itself, and vital to success (Rundh, 2005; Silayoi & Speece, 2004). For example, the bottle forms a large part of consumers perceptions and the effectiveness of the product for roll-on deodorants, Guinness relies on its in-can 'widgets' to deliver a product of sufficiently quality, and microwave meals rely on their packaging for product heating. Likewise a great deal of success has been achieved by a few packaging innovations, for example innovations in the beverages sector such as Tetrapak, PET bottles, and in-can systems (e.g. Guinness 'Widget'), all of which have achieved high levels of success.

Whilst the literature has highlighted the potential value of packaging to Food firms, it has been found that many Food firms fail to create a pipeline of new packaging ideas and concepts in development (Ahmed *et al.*, 2005). However, the existing literature fails to provide insight into the reasons for this. Indeed when one looks to the marketing management literature it seems that the management of packaging has received little attention (Simms & Trott, 2010; Saghir, 2002; Johnsson, 1998). To compound the problem further, despite the importance of NPD within this sector (Nancarrow *et al.*, 1998; Francis, 2004), the NPD literature has largely overlooked Food (Francis *et al.*, 2006). Therefore whilst the literature is awash with models of how new products are developed in a variety of industries, the role and management of packaging seems to have been overlooked. Indeed, even the research that has been undertaken NPD in the Food sector focuses on the core product and largely overlooks the development of the product's packaging (e.g. Francis *et al.* 2008; Ernst & Young/ACNielsen, 1999a, 1999b; Rudder *et al.*, 2001; Rudolph, 1995; Morris, 1993).

Taking into account the existing gaps within the literature, this paper details the empirical findings from the first phase of an exploratory research project. Our research investigates the firms management of packaging within the NPD activities, particularly we investigate the following two questions:

- *How is packaging managed within NPD projects?*
- *How is the development of new packaging managed?*

In order to address these questions, the study examines not just the Food sector, but also includes evidence from the packaging industry itself, and specialist packaging design and marketing consultancy firms. The incorporation of this wider perspective is necessary to develop a full picture of the development process, as packaging is frequently not developed solely by the Food firms, but is instead outsourced. This approach to managing packaging arguably fits with dynamic capability theory (see Eisenhardt & Martin, 2000; Teece, Pisano, and Schuen, 1997; Ancona and Caldwell, 1992), and reflects the increasing use of outsourcing by firms, enabling them to focus on their core capabilities (Hoecht & Trott, 2005). In the case of packaging, this has frequently enabled Food firms to retain relatively small packaging departments or assign responsibility of packaging to more general members of their product or marketing teams. Indeed the degree to which packaging as a function has been outsourced, is partly reflected by the size of packaging industry, estimated at US\$470 billion in 2010 (PIRA & REXAM estimates, 2007).

The next section reviews the literature on NPD. The review of the literature then focuses on the limited NPD literature focusing on the Food sector, and then finally examines the food and drink sectors of the industry.

2. New Product Development in Food Industry: Literature Review

The existing literature on NPD is vast (Wolf, 1994). The Brown and Eisenhardt (1995) review provides a comprehensive overview of the literature, and an illustration of its diversity, largely adopting an organisational perspective, which is arguably the main focus of the existing literature. However, other key perspectives on NPD are evident, particularly engineering (Finger and Dixon, 1989a; 1989b), and marketing (Green and Srinivasan, 1990; Mahajan and Wind, 1992). Arguably the paper by Krishnan and Uldrich (2001) remains one of very few papers that attempt to pull this vast literature together. This review is particularly relevant to this study as it focused on the development of physical goods within single firms and examines product development as a series of decisions. Within the NPD project they divide the decisions into four categories: concept development; supply chain design; product design; and production ramp-up/launch. This exploratory paper attempts to explore the role of packaging within Food product development, and therefore it can be placed largely within the first three categories of new product research, as packaging can create new product concepts, as well as influencing product design, and the supply chain (Ahmed *et al.*, 2005).

Focusing on the study of Krishnan and Uldrich (2001), within concept development there are five basic decisions to be made; (i) What are the target values of the product attributes? (ii) What will the product concept be? (iii) What variants of the product will be offered? (iv) What is the product architecture?, and (v) What will be the overall physical form and industrial design of the product? It seems the packaging of a Food product can make a contribution to all of these, for example influencing the product's physical shape, size/quantity variations offered, and consumers perceived values of the product (e.g. recycled packaging positioning towards a more environmentally conscious market). Thus packaging plays a critical role in product development in the sector.

Within the decisions surrounding supply chain design Krishnan and Uldrich (2001) argue that the following questions are key; (i) Which components will be designed specifically for the product? (ii) Who will design and produce the product? (iii) What is the configuration of the physical supply chain? (iv) What type of process will be used to assemble the product? and (v) Who will develop and supply the process equipment? Once again packaging needs to be addressed here, as for example decisions need to be made with regard to who will package the product, what type of supply chain will be required (e.g. refrigeration), and how the packaging needs to be designed to account for distribution of the product and its use.

Finally, when it comes to product design it is axiomatic that packaging is a vital consideration for Food, hence this is where we now turn our attention.

Whilst NPD has received a high level of attention within the literature, only a limited number of studies have been undertaken within the FMCG industry or Food sector. Indeed, only two can truly be considered to have provided detailed insights (Francis, 2009). These are the studies of Ernst and Young (1999) and Francis (2008; 2009). Ernst & Young's (1999) study was a consultancy led project involving AC Nielsen and the Product Development Management Association (PDMA). The study developed a model to facilitate collaborative development, but does not provide any detail on packaging development. Francis (2008) also presents a model of NPD developed from a study with the UK supermarket Asda. The model that emerges largely focuses on the issues within Asda's process, as well as identifying suppliers key role. This study clearly identifies packaging as a significant activity within NPD, although it does seem to be considered relatively late and focused on design and artwork. However, it is difficult to draw definitive conclusions from the study, as it still

fails to provide sufficient insights; hence there is a need for greater research into this key aspect of FMCG NPD.

Whilst the literature on NPD in the FMCG industry, as a whole, is limited, it is worth noting that the food and drink sectors of the industry have received greater attention. Within the food sector research has recognised the value of NPD, most particularly to meeting changing market needs and taking advantage of new opportunities (Anselmsson and Johansson, 2009; Rudder et al., 2001). These studies again provide little insight into packaging development, despite its importance. However, some general insights are worth noting, in particular Rudolph's (1995) observations are worthy of note, despite the dated data. He suggests that the NPD models and processes being utilised in the food sector are flawed and ineffective. In making these suggestions Rudolph (1995) sights two key issues: i) the low number of innovative products and ii) the high rate of product failures (further supported by Rudder et al., 2001).

With regards to the first of the issues, Ernst & Young/ACNielsen (1999a) provide an indication of the significance of this issue, highlighting that the single most strongly correlated factor with regards to new product commercial success is the development of highly innovative products. However, the process innovation literature provides insight into the reason for low numbers of innovative products; according to Utterback and Abbernathy (1975) as an industry matures price competition becomes more intense and production systems, designed for efficiency, become more mechanistic and rigid. These characteristics are clearly evident and recognisable in the food processing industry.

With regards to the second issue highlighted by Rudolph (1995), there is significant evidence of the high failure rates of new products in the sector (see Ernst & Young/ACNielsen, 1999; Mintel, 2007; Francis, 2008; Francis, 2009). In fact during one year only a handful of 10,000 new products introduced are likely survive (Rudolph, 1995). The failure cost to the food industry is substantial (Urban and Hauser, 1993), indeed the last estimates in 1993 roughly calculated these costs at \$20 billion (Morris, 1993). Furthermore the chances of new product success are decreasing (Buisson, 1993; Rudder *et al.* 2001; Simms & Trott, 2010). With regards to this study, if one considers the importance of packaging to products and their success and the fact that virtually every product within the Food sector has a packaging cost of at least 10% of its wholesale price (Chesapeake, 2009; Coles and Beharrell, 2007; Paine and Paine, 1992), it is arguably surprising that understanding

the role and management of packaging has not received greater attention within the literature. This further informs the rationale for this exploratory study.

3. Research Methodology

Sample Design

An interpretive approach to the data collection was adopted, with qualitative methods of enquiry utilised to collect the data and explore the research question of the study. The basis of this qualitative enquiry was formed by thirty interviews with senior managers, technologists, consultants, and directors, within both the packaging and Food industries in 2008/10. The sampling method employed was expert sampling, a form of purposive sampling which is useful for in-depth investigation and for difficult to reach specialised populations (Neuman, 2003). This method involved the assembling of a sample of persons with known or demonstrable experience and expertise in the area (Huan Liu; Motoda, Hiroshi, 2001).

The managers interviewed for the study were selected as 'key informants' (Churchill and Iacobucci, 2005; Kumar et al., 1993; Seidler, 1974) based on having expert knowledge of product/packaging development within the Food sector or the packaging industry. Therefore although the sample size may be small, it was not intended that the research should provide results to be generalised, rather the aims was to provide preliminary insights based on participants expertise (Denzin and Lincoln, 1994).

The research design sample was developed to incorporate a range of organisations (Table 1) that effectively formed the 'population' of those involved in the packaging development process for Food goods. This range of organisations would therefore provide insights into each aspect of the development, as well as gaining insights into each individual type of organisation from the other parties involved (e.g. packaging manufacturers can provide some insights into FMCG and food firms' practices). Thus the following sample was adopted:

1. FMCG/Food retailers (R1-6)- including both private label retailers, and those offering both branded and own/private label products (Dewsnap and Jobber, 2009)
2. FMCG/Food brand owners/product manufacturers (P 7-10)
3. Specialist packaging design & marketing consultancy firms (C11-18)
4. Industry bodies (I19-22)

5. Packaging manufacturers (M23-30)

The incorporation of industry bodies aimed to provide an overview of the overall product/packaging development process, as well as providing expertise.

Table 1: Interviewees, their job role, type of organisation, and its relative size

	Interviewee	Type of organisation	Primary types of product sold	Turnover or No. of employees (based on information accessible)	Length of time org. in existence
R1	Packaging buyer & reduction manager	Retailer [within Top 4 food retailers]	Food & drinks Non-food (inc. non-FMCG items)	£46.6 billion	89
R2	Buyer	Retailer [within top 4 food retailers]	Food & drinks	Subdivision of a larger org. £6billion	104
R3	Packaging manager	Retailer [within top 6 food retailers]	Food & drinks Non-food (inc. non-FMCG items)	£16.9billion	Over 90 years
R4	Marketing director Marketing manager	Retailer [within Top 6 UK food retailers]	Food & drinks	£9m	124
R5	Long-term planning	Retailer [within Top 6 UK food retailers]	Food & Drinks	Sub-division of a larger org £6billion	104
R6	Long-term planning Long-term planning	Retailer [within top 4 UK food retailers]	Food & drinks Non food	£46.6 billion	89
P7	Corporate development	FMCG product manufacturer/brand owner [top world supplier of many food ingredients]	Food & ingredients	£3.7bn	88
P8	Product manager	Food manufacturer/producer [supplier of own-brand products to leading food retailers]	Fresh produce	Not available	50
P9	Marketing manager	FMCG Cosmetics manufacturer & retailer	Cosmetics	Subdivision of a larger org £14.5bn	32
P10	Packaging designer	Confectionary manufacturer [International leading world foods product supplier]	Confectionary and drinks	£1.8bn in UK (international organization)	143 years
C11	Marketing manager Designer	Marketing consultancy firm [global marketing agency]	Marketing and packaging design consultancy	Not available	22 in UK
C12	Divisional director	Global consultancy	Consultancy	£7,000,000 250	Not available

				employees	
C13	R&D Manager/Consultant	Packaging Technology Consultancy Firm	Consultancy	Not available	Not available
C14	Consultancy, research & design	Consultancy-incorporating research and design	Consultancy	Two employees	Not available
C15	Designer and director	Structure packaging design agency	Packaging design consultancy	2 employees	Not available
C16	Partner	Design agency/firm	Packaging design consultancy	Not available	Not available
C17	Confectionary consultant	Specialist confectionary sales and marketing consultancy	Consultancy	Not available	Over 10 years
C18	Partner	Design agency/consultant	Packaging design & development consultancy	10 employees	15 years
I19	Senior figure in industry body	Industry body: packaging	Industry body	N/A	15 years
I20	Packaging industry body senior representative	Industry body & consultant: packaging	Industry body	N/A	15 years
I21	Representative for a packaging materials/supplies federation	Industry body: packaging	Industry body	N/A	20 years
I22	Head of industry body	Packaging industry body	Industry body	N/A	Not available
M23	Salesperson	One of top four paperboard packaging manufacturers in Europe	Packaging	\$1,059 million	90
M24	Designer & developer	Packaging designer & manufacturer	Secondary & Tertiary packaging	Not available	New division of larger org (New division 3yrs)
M25	Marketing manager	One of top four paperboard packaging manufacturers in Europe	Packaging	\$1,059 million	90
M26	R&D Manager	Packaging Manufacturer	Packaging	£250million	Not available
M27	Marketing manager Marketing director	POS & packaging: design, development & manufacturer	Point of sale display & packaging	Not available	Not available
M28	R&D Manager	One of top four paperboard packaging manufacturers in Europe	Packaging	\$1,059 million	90
M29	R&D Manager	One of top four metal packaging manufacturers in Europe	Packaging	\$7 billion (aprox.)	117
M30	Director of marketing	Packaging manufacturer	Packaging	Not available	162

Research Instrument

The exploratory aim of the research required data collection utilising a semi-structured in-depth interviewing technique, provided richness and depth of information. The interview questions were drafted for the analysis of the key research questions. The aim was to get the participants to talk as freely as possible and to discuss the area in their own terms. This technique aims to gain the perspectives of informants so that the research topics could be explored (Daymon and Holloway 2004), and allowed interviewees to express their perceptions and feelings at length in their own words, leading the dialogue, thereby obtaining insight and understanding. Interviews in general lasted around one hour, and were conducted either face-to-face or by telephone. It should be noted that a few interviews were undertaken with more than one interviewee, where appropriate or where the circumstances made this necessary.

Analytical Procedure

The interviews were expanded on and transcribed shortly after each interview was conducted. The analysis of the interviews followed the subsequent steps described by Miles and Huberman (1994). Analysis was undertaken both within and across each of the interviews, thus providing insights into each firm and perspective, as well as a comparison of these insights across each of the interviews, thus providing insights into the differences between firms. Thus much time was spent analysing and interpreting the data, and a rigorous approach was adopted to ensure “credible, dependable, and replicable” methods in qualitative terms (Miles and Huberman, 1994: p2). With regards to the maps of the supply chain, detailed in the findings, a process was used to develop these that was based on the method described by Nadkarni and Nah (2003).

4. Findings and Analysis

Our finding revealed that it was common for packaging to be “...*considered once the product is specified*” [R6], and whilst “[*packaging*] *falls in new product development, [it] doesn't really get considered as a central opportunity or task...*” [P9].

There were two key consequences of this late consideration. Firstly, the current management of packaging within NPD was typically not systematic and lacked focus, leading to lost opportunities. Secondly it resulted in firms not being able to explore ideal product-packaging combinations in NPD, as the core product was “*already developed*” [I20] and possible changes were ruled out by the time packaging was considered. Therefore the packaging typically had to be formed around the existing product, and in some cases key compromises were made in order to avoid product redesign. This resulted in the lack of a holistic view on product and packaging, and also meant that whilst “*[NPD] techniques can be applied to packaging, few firms do... packaging doesn't get the same attention [as the core product]*” [C14].

The following sections discuss differences in management between own brand and branded organizations, we then focus on packaging decision making, and finally the extent to which packaging activities were outsourced. Finally we draw these new insights together to develop a framework and typology that provide new insights into the management of packaging in NPD.

Characterising Packaging Development: Branded and Own Brand Food Firms

Within retailers NPD projects were either initiated by the retailers themselves or by their suppliers identifying potential new opportunities. In the case of the former the retailer would evaluate the desirability of a project, and projects with suitable potential would then be passed to suppliers for development. This was concisely summarized by one interviewee: “*the [retailers] focus is on the product, . . . [with a] technical manager creating a product development brief, and the supplier comes back with a product and standard packaging. The process works by suppliers and commercial teams buying and developing products and packaging [together], [whilst] a separate team handles the design and artwork*” [R1]. In the case of projects initiated by suppliers, it was not unusual for almost the entire process to be carried out by the supplier, with only minimal input from the retailer as a project progressed.

This impacted on the management of packaging, as the retailers were further from both decisions and activities. Thus they “*...are one step away as we buy the product from someone else, we are traditionally interested in the label.... And have little influence on the packaging itself*” [R1], which was largely the responsibility of the supplier.

This situation can be contrasted to the chain of decision making for branded manufacturers, who had a much closer control of the NPD process and undertook the majority or all of the activities [discussed by P7,8,C18, I22, M28 & M29], notwithstanding this many outsource the manufacturing and filling of packaging itself. Thus their NPD teams had more control of decisions as to the type of packaging to be used (Figure 2). However, this is not necessarily associated with higher levels of focus on packaging, as the following sections reveal.

Packaging Decision Making: Narrow emphasis on packaging development within the NPD team

The interview results revealed that few retailers or branded manufacturers had either a department focused on packaging or its development, or NPD team members specifically focused on this aspect of the product, although it should be noted that a number of firms had teams of packaging buyers. Indeed in the case of all but one of the supermarkets interviewed, the only members of personnel whose job role was focused on packaging were a small team of buyers.

As a result packaging decision-making was widely distributed amongst NPD team members. Decisions often fell between a number of staff, and typically only formed a (sometimes small) part of the responsibility of these key individuals. This resulted in an emphasis on a particular perspective on packaging based on the key decision maker in the NPD team assigned with responsibility:

- Marketing members- primary interested in the label and something to put their message on;
- Design- is focused on packaging graphics and aesthetics;
- Buyers have a clear focus on cost, and are often responsible for contacting packaging suppliers and arranging supplies at minimal cost;
- Category/product managers are key to packaging format decisions and specifications, and are thus important. However, their level of interest in packaging varies, and their focus remains on the core product. It is also notable that many are risk averse to packaging changes;
- NPD and R&D staff- focus on the core product and technical issues (e.g. regulations and food science issues).

The combination of these factors impact on decision making in a number of respects, as detailed later in the following sections.

The interviews highlighted two inputs of particular importance, which frequently dominated the focus of development. The key roles of marketing and design members of the team resulted in a focus on the visual appeal and marketing communications aspects of packaging in development, which was particularly evident in firms using external design agencies. This focus was illustrated in an interview with a marketing manager within a leading UK premium grocery retailer stated that their interest was on “...*something to put our message on.*” [R4]. Further interview extracts illustrate this:

1. “*Our focus is on the label, not so much the packaging.*” [R6].
2. “*Packaging is considered as a marketing communications tool*”, the focus is on “*carrying copy*” [C11].
3. “. . . *often the design specs are based on the preferences of marketing managers*” [P10].

Thus packaging was largely regarded as a vehicle simply to hold graphic design and marketing communications messages, or as one interviewee put it they had “*forgotten about packaging, [and were] more interested in graphic design*” (I20). This would seem to suggest a myopic view of packaging especially with regards to how it can contribute to product innovation.

Buyers were also frequently found to have a significant influence, and many of the decisions on the sourcing of packaging were “*dominated by the buyer*” [I22]. This resulted in the second key focus in development, which was a “*focus on cost cutting*” [R4, M27, I22]. This focus meant that “*little significant changes*” were considered [M29] and changes typically focused on “*shape & packaging decoration*”.

The Extent of Packaging Outsourcing: The role of suppliers and design agencies

The interviews identified that firms differed in the extent to which they outsourced packaging activities. A number of firms [particularly evident in firms R1, R2, R3] created their own packaging specifications, and developed packaging ideas, concepts and basic specifications based on these. These firms utilised their own internal resources, with one of the key decision makers in the NPD team largely taking responsibility for packaging. However, this approach had three important implications. Firstly, it resulted in different levels of attention and involvement with

regards to packaging, depending on the level of interest that staff member took in packaging. Secondly, depending on the member of the NPD team taking responsibility for this development it would result in a narrow view and focus on packaging (based on the key decision maker, as discussed in the prior section). The final implication of this approach was that the team member assigned with responsibility for packaging would commonly base their ideas on existing concepts they were already familiar with. Therefore suppliers were not commonly involved to assess potential new technologies.

Whilst some firms developed or specified packaging internally, others were found to select an outsourced provider to develop new packaging for them. The choice of provider had significant implications on development:

- Outsourcing to packaging manufacturers [evident in R3, P10] was largely managed by buyers, with specifications for the packaging being produced by the NPD team and then handed to the buyer for packaging manufacturers to be contacted. This approach resulted in a focus on packaging that was easy to manufacture (as production staff played a key role in defining the specifications). In addition, with buyers acting as the key interface, a heavy focus on costs and low levels of cooperation were also evident. Therefore packaging manufacturers had little involvement in the NPD of the Food firms, and often had little room for creativity in the briefs (due to the focus on production and technical specifications). Thus their role was confined to producing samples, a costing or plan, and making changes as required.
- The outsourcing to design agencies [firms R1, R2] was by contrast more closely managed by marketing and NPD staff. These partners were frequently given a brief with more room for creativity. This approach allowed Food firms to retain relatively limited internal packaging expertise, indeed firms adopting this approach commonly only employed packaging buyers. Decisions were largely left to the agency, with the Food firm restricting their role to setting basic safety and production requirements, and selecting the packaging from the options presented by them. Design agencies were frequently found to generate "*ideas internally..... using the designers' creative minds*" [C18]. This meant that utilizing new technology was not a driver in the development, and this further minimised the input of packaging manufacturers. Thus within this approach it was suggested that as a result more significant technology changes were being overlooked in packaging development [I20].

The interviews revealed that the above findings have significant implications, with regards to firms abilities to develop and incorporate new packaging into their products. In particular we found that packaging manufacturers were frequently contacted late in the development process, even in the case of those firms outsourcing development to these suppliers. This meant that the suppliers commonly had little involvement. Furthermore there “...*main interface is with purchasing....*” [M29], this meant that they could not contact the people for whom they could add the most value. This buyer interface gets “*in the way of effective communications*” [M28], and further compounds the cost focus, particularly as “*buyers get bonuses for getting packaging cheap*” [M29]. The combination of these factors mean that they do not develop a meaningful long-term relationship, have little interaction with the NPD team, and this in turn impacts on their ability to develop optimal packaging.

5. Identifying the Critical Aspects of Packaging Development

The above findings reveal the dysfunctional nature of packaging development within Food firms. From these findings, we propose that the emphasis of Food firms’ packaging activities can be at one of three levels (Table 2). To better understand these levels and their implications, we relate them to the established scale of penetrating properties of radiation, i.e. alpha radiation (label changes) that travels only a few centimetres in air, beta radiation (design changes) that travels tens of centimetres in air, and gamma radiation (technological change) that travels many metres. We use this scale to construct a simple classification for levels of packaging change. Alpha or label packaging changes have the least penetration. Some firms consider this level of change to be a development of new packaging, but it frequently involves little more than alteration of reprographics, such as creating new labels for a can of soup. Beta (designn) packaging changes penetrate further into the product, but do not alter the format (e.g. can, bag, pouch). Here, the emphasis is on changes to the existing format, for example, to make a bag easier to open or redesigning its shape. Gamma (technological) changes represent innovations and a fundamental change to the format itself, for example moving from a can to a pouch or from a polythene bag to a cardboard tube. The former two levels of change were particularly evident in firms working with specialist design agencies.

Table 2: Classification of Food firms emphasis of packaging activities.

Level of packaging change	Penetration of packaging change	Absorptive capacity	Technology capability	Evident in firms
Alpha	1. Reprographics and artwork	Low	Low, little technical or general packaging capability Largely marketing and reprographics	Evident in firms allocating responsibility to marketing staff or marketing agencies. Firms in which evident: R1 and 6, R3, P9, P8, P11
Beta	2. Plus Design and styling/aesthetics	Limited/medium	Medium, based on understanding of non-technical specialists Technical capability largely graphic and aesthetic design	Evident in firms allocating responsibility to design staff, and with respect to design agency collaboration Evident in firms: P10, R4
Gamma	3. Technological change and new formats of packaging	Extensive	High, industrial design and technological capabilities	Evident in firms where technological packaging staff are incorporated into the development process. Evident in firms: R5, P12 ¹

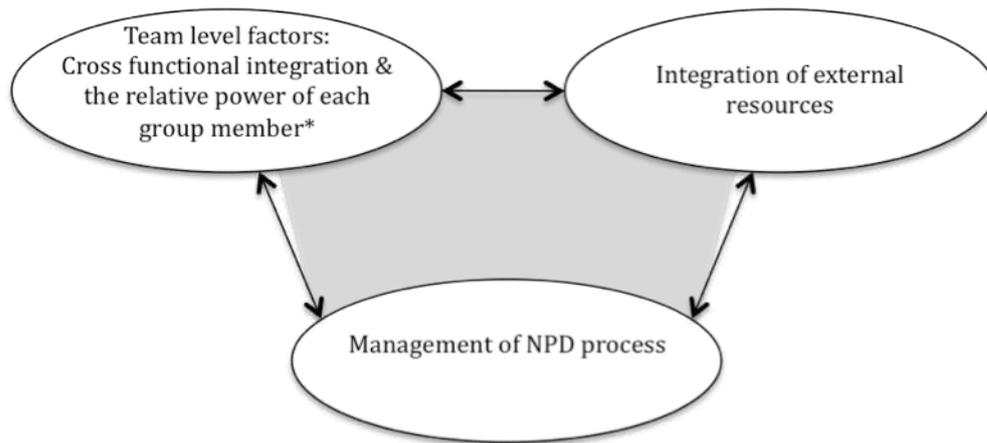
The key findings were drawn together to develop a framework presented (Figure 1). This framework provides insight into the key issues with regards to the management of packaging within NPD, through the identification of the key factors affecting the process, the critical inputs, and the relationships between these factors. To summarise the framework shows that the management of packaging within new

¹ Firm going through a period of change and recently hired technical specialists, findings suggested moving into this level of focus at time of research.

product development is crucially affected by:

1. Team level factors: Particularly the integration of each of the functions (or 'stakeholders' as identified in the conceptual model), and the relative power of each in decision-making. This also includes:
 - a. The allocation of responsibility for packaging development, and the role and relative power of each member of the team with regards to packaging decisions. This also includes the role of buyers, and the effect of this on a cost emphasis.
 - b. Packaging staff- their focus whether it be operational or strategic, the technical capabilities of these staff, the relative number of staff, and the degree to which they are integrated into the process.
2. Management of the NPD process: Particularly with regards to- whether a process exists for packaging development, the degree to which the product and packaging are developed holistically and together within the process, and the level of focus on packaging.
3. The integration of external resources: This refers to the extent of outsourcing and the need for the relevant external capabilities being inputted into the process, including: the role of both suppliers and design agencies and their incorporation into the process, the extent to which the parties work together (as opposed to a transaction cost relationship), and the role of buyers with regards to communications between suppliers and the Food firms themselves. Hence these factors impact on the relationships between the firms.

Figure 1: Framework portraying the key factors influencing the management of packaging



**This includes the existence & incorporation of packaging staff into the process, and their role.*

As the preceding discussions have revealed, these elements critically impact on firms management of packaging. Where effectively managed they are likely to facilitate an environment in which the product and its packaging are viewed holistically. We argue that if Food firms carefully manage these aspects this will result in a greater ability to exploit the opportunities presented by new packaging developments.

6. Conclusions

The extant NPD literature provides limited detail on the management of packaging or its role in NPD, despite its importance to FMCG and Food products (Silayoi & Speece, 2004). The purpose of this study was to develop greater understanding of how Food firms manage packaging in their NPD. The study has built on the findings from Francis (2009) and shown that within the Food sector packaging is overlooked and considered late in the NPD process, as well as highlighting the key factors contributing to this situation.

The findings provide insight into the dynamics of process and product innovation within the Food industry. It seems that the pursuit of efficiency in this process industry (see Abernathy & Utterback, 1975; Utterback, 1994), in terms of seeking high productivity, has led to decreased flexibility and innovative capacity. The findings suggest significant packaging product developments are struggling for attention while minor aesthetic design changes and cost focused changes are more readily accepted, which are led by the brand owners. The findings also suggest that

firms desire to focus on their core capabilities (e.g. Eisenhardt & Martin, 2000), and outsource packaging, has resulted in packaging becoming overlooked within the NPD process. This highlights the critical importance of the effective management this outsourcing, and the need to develop more effective capabilities in external communications within Food firms (see Ancona and Caldwell, 1992).

One of the more significant findings to emerge from this study is that Food firms have a myopic view of packaging and consequently do not seem to exploit its full potential within their NPD process. Taken together, these results show that the NPD process of Food firms is market-orientated and focused on the development of the core product; hence packaging receives little attention and any that it does is largely focused on incremental graphic design changes (label) and cost savings. It seems more significant technology changes, and new product opportunities that may result from the development of new packaging, were being overlooked. The result is a NPD process that can be characterised as risk averse, incrementally focused with relatively minor technical input. Furthermore, it seems that the structure of the supply chain for own brand products in some respects further exacerbates these issues. When one considers the variety of roles that packaging performs (see Table 1) this is of concern.

The present study has succeeded in delivering new insights on the management of packaging development, an under-researched area. However, the study is not without limitations. The small number of firms used in this qualitative study is a limiting factor in being able to conclude whether the results are replicable and generalisable. Therefore a key next step for future research is to conduct large-scale quantitative research. In this context, the present study can be used as a foundation in order to address and quantifying the issues that have been highlighted, and develop understanding of how packaging can be effectively managed in NPD.

7. Managerial Implications

The study highlights a number of key management and firm implications. Firstly, the responsibility for the development of new packaging within Food firms varied widely, and included designers, product managers, brand managers, and buyers, and thus it is not typically their central focus. This partly explains why packaging is considered so late in the NPD process. This problem is compounded still further when the responsibility for packaging is given to buyers. In such situations the buyers simply source a package without any evaluation other than cost. Where packaging

departments do exist they lack influence and are not well connected to the NPD process.

The findings within this paper offer specific characteristics of the Food industry, and their impact on packaging development. For firms operating in this industry are fighting for shelf space in supermarkets and it is a constant struggle to know which products to offer the final consumer. Significant investments are made in advertising and consumer research to try to initiate a customer pull effect at the retailers. In addition attention needs to be given to supplier relationships, which can lead to new product and packaging ideas. Responding to consumer buying patterns requires food companies to be nimble and fleet of foot in their product development activities. Retailers will quickly reallocate shelf space to a competitors' product if it wins the choice of the consumer. Yet the marketing literature shows that few newly launched products are successful in terms of acceptance by the market. Indeed, 80-90% of new products failed within one year, resulting in missed sales targets, lost revenues and delayed profits in addition to wasted development resources (refs). Few food companies are able to face these demands by themselves and will inevitably rely on key players in their supply chain. Suppliers of packaging technologies, specialist ingredients and machine tools can make a valuable contribution to efficient and effective product innovation. Furthermore, many firms are outsourcing many of the activities that were previously undertaken in house such as packaging, filling and distribution. Many packaged food companies make use of design agencies that make a ready final product to satisfy their production needs. However, our findings highlight that this must be carefully managed in order to ensure that opportunities are not overlooked. In general the industry has become more reliant on external suppliers and this has led to an increasing significant role for purchasing and supply management (Anderson & Woolley, 2002; Van der Valk & Wynstra, 2005). However, Food firms must ensure they effectively utilise the technological knowledge held within the packaging R&D centres.

Furthermore, our findings illustrate that while there may be lots of exciting technology available, big brand food companies reluctant to adopt new technologies. This reflects a fiercely competitive industry that is extremely risk averse. High-growth companies frequently become low growth ones. Many firms accept this as an inevitable sign that their business has matured. Their response is to turn to acquisitions of smaller companies such as Coca Cola's purchase of Innocent drinks. This acquisition of smaller companies is an expensive way of delivering growth and

value, whilst the internal management of product and packaging development is arguably a more cost effective strategy.

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