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Title	Exploring the factors influencing consumers' motivation to use food product labels in their purchase decisions
Authors	Tanner, Sean Anthony
Publication date	2019
Original Citation	Tanner, S. A. 2019. Exploring the factors influencing consumers' motivation to use food product labels in their purchase decisions. PhD Thesis, University College Cork.
Type of publication	Doctoral thesis
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Exploring the Factors Influencing Consumers' Motivation to Use Food Product Labels in Their Purchase Decisions

Thesis presented by

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for the degree of

Doctor of Philosophy

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A thesis on research undertaken at the Department of Food Business and Development, National University of Ireland, Cork in complete fulfilment of the requirements for the degree of Ph.D. from the National University of Ireland, Cork

May 2019

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Declaration of Originality

This is to certify that the work I am submitting is my own and has not been submitted for another degree, either at University College Cork or elsewhere. All external references and sources are clearly acknowledged and identified within the contents. I have read and understood the regulations of University College Cork concerning plagiarism.

An abridged version of the findings presented in Chapter 5 has been published as an article in the journal *Appetite*. This is detailed in the Research Dissemination section and is available online at: https://doi.org/10.1016/j.appet.2018.11.015

An abridged version of the discussion presented in Chapter 3, Section 3.2.4 and findings presented in Chapter 6, Section 6.2 and Chapter 7, Section 7.3 have been accepted for publication in the *International Journal of Retail & Distribution Management* and is detailed in the Research Dissemination section.

An abridged version of the findings presented in Chapter 7, Section 7.2 appeared in the *Proceedings of the Colloquium on European Research in Retailing (CERR) 2018* and is detailed in the Research Dissemination section. This is available online at: https://cerr.sciencesconf.org/data/pages/FINAL_CERR2018_PROCEEDINGS.pdf

Signature: _____

Sean Tanner

Date: _____

Acknowledgements

Although I may be the only one being awarded a doctorate, this PhD journey was by no means a wholly individual effort and there are many people whose contributions have made this possible.

At the offset, I owe a wealth of gratitude to my supervisors, Prof. Mary McCarthy and Dr Seamus O'Reilly. Mary and Seamus, your continued support in my development as both a researcher and educator cannot be understated and I will be always grateful for your efforts in supporting me throughout this journey and for going above and beyond in your advice, feedback and guidance. I could not have asked for a better supervisory team! In particular, I would like to thank Mary for her inspiring teaching, which led me to undertaken this piece of research and drove me to become a better researcher.

I would also like to thank my fellow PhD students, in particular, Sarah-Jane Flaherty, Dave Alton, Grace O'Rourke, Conor, James, Maxwell, Emmanuel, Grainne, Teresa, Sarah, Kristina and many more. Your advice, open doors and shared penchant for tea/coffee breaks were a much needed and appreciated pick-me-up throughout the process. I would also like to thank my dear friends who know far more about PhDs, research, publishing and yogurt labelling than they ever cared to. Markus, Sarah, Rosie, Deirdre, thank you for all of your support. Furthermore, I would like to thank my colleagues in the Department of Food Business and Development and the Department of Management and Marketing for the help and opportunities they provided over the years. To my head of department, all of the administrative staff, Alan Collins and Anthony McDonnell, thank you.

I would also like to thank my parents, Eileen and Joe, for their willingness to help in whatever way possible and for their support throughout my life.

Finally, I would like to thank my fiancée, Yvonne, whose understanding, patience, kindness, love and support was consistently there, in both the highs and lows of this journey. Thank you for all of the small gestures and acts of kindness which have made this possible.

Research Dissemination

Peer-Reviewed Publications

Tanner, S.A., McCarthy, M.B. & O'Reilly, S.J. (2019) Exploring the Roles of Motivation and Cognition in Label-Usage Using a Combined Eye-Tracking and Retrospective Think-Aloud Approach. *Appetite*, 135, pp. 146-158.

Tanner, S.A., McCarthy, M.B. & O'Reilly, S.J. Digital Labelling in the Retail Environment: A Domain-Specific Innovativeness Perspective. *International Journal of Retail & Distribution Management*, [Accepted, forthcoming].

Conference Publications (Oral and Poster)

Tanner, S.A., McCarthy, M.B. & O'Reilly, S.J. (2018) Pull Marketing in a Low-Involvement Product Category - The Role of Domain Specific Innovativeness [Working Paper]. *2018 Irish Academy of Management Annual Conference.* University College Cork [September 2018].

Tanner, S.A., McCarthy, M.B. & O'Reilly, S.J. (2018) The Efficacy of Digital Labelling in the Attention Economy *In:* Teller, C., Brusset, X. & Kotzab, H. (eds.) *Proceedings of the Colloquium on European Research in Retailing (CERR) 2018*. Guilford: University of Surrey [July 2018].

Tanner, S.A., McCarthy, M.B. & O'Reilly, S.J. (2018) Digital Labelling and Retail Spaces - Undesired or Misaligned? *Cork University Business School (CUBS) Postgraduate Research Symposium, University College Cork* [May 2018].

Tanner, S.A., McCarthy, M.B. & O'Reilly, S.J. (2017) Using Eye-Tracking Methods and Retrospective Think Aloud to Explore the Cognitive Processes Associated with Label Usage. *Cork University Business School (CUBS) Postgraduate Research Symposium, University College Cork* [October 2017].

Tanner, S.A., McCarthy, M.B. & O'Reilly, S.J. (2016) Motivation and Risk/Benefit Perceptions: Optimising Information Delivery on Food Product Labels in the Dairy Sector. *TRADEIT Entrepreneurial Summer Academy 2016, Berlin* [June 2016].

List of Abbreviations

A-C-V	Attribute-Consequence-Value
AIM	Affect Infusion Model
BoP	Back of Pack
CAQDAS	Computer-Aided Qualitative Data Analysis Software
CTA	Concurrent Think-Aloud
DSI	Domain Specific Innovativeness
EC	European Commission
EKB	Engel, Kollat and Blackwell Model
ERG	Existence, Relatedness, Growth
EU	European Union
eWOM	Electronic Word of Mouth
FoP	Front of Pack
GDA	Guideline Daily Allowance
GM	Genetically Modified
HVM	Hierarchical Value Map
LTM	Long Term Memory
MEC	Means-End Chain
NFC	Near Field Communication
NG	Negotiable Goal
NNG	Non-Negotiable Goal
PNG	Partly-Negotiable Goal
PR	Perceived Risk
QR	Quick Response
RDA	Recommended Daily Allowance
RTA	Retrospective Think-Aloud
SDT	Self-Determination Theory
STM	Short Term Memory
TL	Traffic Light Labelling
TPB	Theory of Planned Behaviour
UX	User Experience
VIE	Valence – Instrumentality – Expectancy
WM	Working Memory

Abstract

Background and Aim:

Although online retailing has revolutionised consumption, traditional food retailers still play a dominant role in exposing consumers to product offerings, acting as one of the first points of interaction between manufacturers and consumers. Given increased interest in labelling as a means of facilitating healthy purchasing, in addition to informing consumer decisions and marketing product offerings, labelling has an important role in the food industry. The primary purpose of this research is to further our understanding of consumer motivation to use food labels in an unfamiliar product context by adopting a risk/benefit lens to consider motivation. Additionally, this study considers the role of digitalisation of food labelling in facilitating consumer decision-making and adding value to product offerings.

Methods:

A multi-stage, sequential qualitative approach was employed to understand the endogenous and exogenous determinants of label usage. Phase 1 drew on behaviourist and interpretivist methods combining eye-tracking methodology and introspective techniques to explore label usage determinants across 17 participants. Whereas previous research has predominantly considered attention through a behaviourist paradigm, this interpretivist study elaborated on eye-tracking data, offering a more holistic understanding of label usage. Phase 2 considered the role of risk and benefit orientations on consumer knowledge structures, through a segment-based approach, which considered product category 'innovators/early adopters' and 'laggards'. Means-end chain analysis and semi-structured interviewing were employed across 38 participants to explore the role of risk and benefit orientations on the networks of meaning activated by labelling and to consider the role of digital labelling in consumer decision-making.

Findings:

Findings presented within this thesis relate to three key areas. Firstly, phase 1 addressed the mechanisms underlying participant interaction with label stimuli, considering *attention, perception*, and *information processing*. Findings support the role of both volitional, goal-directed and non-volitional, stimuli-driven attention in influencing consumer decision-making. Findings highlight the importance of motivational relevance in bridging the gap between attention and information processing. Additionally, goal specificity and extant knowledge structures influenced processing of information, and established information search behaviours, with associations in memory varying across participants and influencing subsequent label usage strategies.

Secondly, phase 2 provides greater context for discrepancies in label usage patterns, and demonstrates the value of needs-based segmentation in the delivery and

framing of label information. Findings suggest that consumers' risk/benefit orientation influences the label attributes considered in purchasing, and the consequences and framing of implications arising from use of label information. In particular, analysis suggests that the valence of cognitive structures activated through interaction with labelling stimuli varies in line with the risk/benefit orientations of participants. Thirdly, in addressing the evolving nature of labelling through pull technologies such as QR codes, findings offer some evidence for the potential value of this more effortful information search, while signalling the role of expectancies as acting as a potential barrier to QR code usage in the low-involvement context. Despite the ubiquity of QR codes in the marketplace, participants were broadly unfamiliar with their functionality and purpose, signalling a broader failure of the marketing effort. Given the low involvement nature of food purchasing and ease of substitution, data suggest a need for digital labelling to move beyond product/brand centric information provision to add meaningful value for consumers. This requires deep knowledge about the core market in relation to both product and information needs.

Research Implications:

This research has implications for future labelling and consumer behaviour research as well as marketing practice. Much emphasis has been placed on promoting attention to labelling stimuli through both endogenous and exogenous means. However, this research suggests that there is a gap between attention and processing, resulting from a lack of perceived motivational relevance of label information. Consequently, there is a need to consider attentional mechanisms within the broader label usage and decision-making context to more clearly align label information to goal attainment. Furthermore, given the impact of risk/benefit orientations on label usage, there is need to consider both the saliency of label elements in communicating product attributes and the responses they elicit.

Additionally, findings indicated that within the low-involvement context, the more effortful information search associated with pull-marketing conventions such as QR codes terminated at the product category, rather than brand level. Consequently, those seeking to add value to current food offerings through diversification of food labelling, should address information provision issues such as complementarity within the product category. There is a need to also consider the congruency of product offerings with subordinate and superordinate food related goals, rather than focusing inwardly on the specific brand offering. As smart labelling applications become increasingly feasible from a production perspective and desirable from a consumer perspective, there is a need to ensure relevant application of such applications to reflect consumers' product and information needs. Future research may consider consumer technology acceptance not only in relation to the technology offering but the domain of its application.

Chapter 1
Introduction

1.1 Overview

This thesis aims to explore the determinants of consumers' motivation to use food product labelling in their purchasing decisions through adopting a risk/benefit lens to consider consumer motivation. This chapter provides a brief overview of current issues in food labelling and food label research, highlighting how labelling represents a nexus of concerns from diverse areas of research and practice. Key considerations in exploring food labelling are outlined and the theoretical perspective adopted in this study is discussed. Subsequently, study objectives are outlined, and the reader is provided with a brief overview of the study design. This chapter then concludes with an overview of the thesis structure.

1.2 Research Background

In recent years, food labelling has become a topic of increased interest in both academic and public discourse. Concerns regarding the health implications of dietary behaviours (Grunert & Wills, 2007; Helfer & Schulz, 2014; Siegrist, Leins Hess & Keller, 2015; Wąsowicz, Styśko-Kunkowska & Grunert, 2015; Ni Mhurchu et al., 2018), consumers' calls for increased transparency (Greehy et al., 2013; Kehagia, Colmer & Chryssochoidis, 2017) and traceability (Spence et al., 2018) in food systems, and an ever evolving and adapting food industry have heightened the importance of information for consumers. To this end, there have been multiple efforts to increase the accessibility of labelling information with a view to facilitating consumers in making nutritionally informed decisions. However, informing consumers regarding the nutritional and compositional aspects of food products accounts for just one aspect of food labelling. Labelling also serves to communicate a product's offerings and act as a marketing tool (Atkinson, 2013; Higgins, McGarry Wolf & Wolf, 2014; Kim & Woo, 2016) in order to increase the likelihood of product acceptance in a highly competitive food market (Dijksterhuis, 2016).

In 2014, the enactment of Regulation (EU) 1169/2011 saw increased harmonisation of labelling conventions both within and between EU member states. One of the main objectives of this legislation was to ensure adequate provision of information to consumers, while ensuring that label information is broadly accessible to the 'average consumer'. The new labelling regulation was introduced against the

backdrop of increasing concerns regarding the health implications of dietary behaviours (Grunert & Wills, 2007; Helfer & Schulz, 2014), calls for simplifying consumer decision-making and increasing transparency and increasing the ease of understanding of label information among consumers. In particular, the regulation responds to ongoing debate among industry stakeholders as to the most appropriate means of conveying nutritional information, including front-of-pack information (Hodgkins et al., 2012) through setting out formatting and information guidelines. Key changes provided for in the regulation included improving legibility of label content, clearer and harmonised mandatory allergen information provision, new requirements for the presence and presentation of nutritional information for prepacked processed food, standardising of labelling requirements for online, distance selling and in-store purchases and strengthening of the rules to prevent misleading practices.

Despite introduction of labelling conventions, which reportedly simplify or facilitate the decision-making process, such as front of pack labelling, guideline daily amounts, logos and claims (FSA, 2010; Bialkova & van Trijp, 2011; Hodgkins et al., 2012; Watson et al., 2014; Antúnez et al., 2015; Ni Mhurchu et al., 2018), research suggests that consumer utilisation of labelling information remains lower than desired (Gregori et al., 2014). Given the challenges associated with delivering on the objective of Regulation (EU) 1169/2011, to cater to the 'average consumer', there is a need to fundamentally assess the motives for label usage and non-usage among consumers.

Drawing on relevant motivation literature, this study adopted a predominantly interpretivist perspective to explore the motivational influencers of label usage and non-usage. In seeking to add to the extant body of literature, this study considers the motivation construct through the prism of perceived risk and perceived benefit literatures to understand the role of motivation in information acquisition and processing. Whereas much of the literature considers information, and food labelling specifically, as a means of reducing risks and identifying benefits (Bredahl, 2004; Brunel & Pichon 2004), there has been less consideration of the role of risk and benefit perceptions in motivating label usage in the first instance.

Within consumer behaviour, the perceived risk stream of research has developed to be primarily operationalised in terms of negative consequences, such that

perceived risk in consumer research is chiefly synonymous with loss (Stone & Grønhaug, 1993). This is distinct from other areas of risk research, where risk is conceptualised as encompassing both positive and negative outcomes (Fischhoff et al., 1978; Alhakami & Slovic, 1994; Frewer, Howard & Shepherd, 1998). Indeed, findings from other streams of risk research suggests that, from an individual's evaluation perspective, risk and benefit considerations are inextricably linked (Alhakami & Slovic, 1994). Within consumer behaviour research, the distinction between objective and subjective risk offered by the perceived risk literature is a substantive one. It is for these reasons that this study builds on this literature through the inclusion of benefit perceptions in considering information usage motivations.

Furthermore, changes and advancements in the field of food labelling practice enabled through technological advances such as smart labelling (Skinner 2015), QR codes (Narang, Jain & Roy, 2012; Atkinson, 2013) and NFC enabled labels (Borrego-Jaraba, 2013; Diageo, 2015), raise questions regarding their perceived utility and acceptability among consumers. The 'digitalisation' of labelling, which offers a shift from traditional print labelling to more dynamic, technology enabled labels, has been relatively under researched to date, despite its potential to support ongoing mobile marketing efforts (Shankar et al., 2010; Okazaki, Li & Hirose, 2012; Atkinson, 2013; Hui et al., 2013) and dietary change (Ni Mhurchu et al., 2018).

Given changes within the regulatory environment, increased concern regarding the prevalence of diet related health conditions, consumers' calls for transparency and a labelling landscape evolving in line with technological advancements, research pertaining to consumers' label usage motives is both timely and necessary.

1.3 Research Objectives

In considering consumers' motivation to use food label information as part of their purchase decision process, there are a number of issues which need to be addressed. As a visual form of communication, visual attention and perception is a prerequisite for label usage (Grunert & Wills, 2007). Contemporary labelling research has placed much emphasis on the role of visual attention in labelling, leading to a significant body of research adopting eye-tracking methods to better understand label usage (Bialkova & van Trijp, 2011; Ares et al., 2013; Siegrist, Leins-Hess & Keller,

2015; Oliveira et al., 2016; van Loo et al., 2018; Peschel, Orquin & Mueller Loose, 2019). However, the role of motivation within the label usage process has received comparatively little attention, leading some to call for labelling research to be situated within its broader context (Mawad et al., 2015). Indeed, it has been asserted that eye-tracking methods are less effective at capturing the motivational component of usage, when compared with introspective techniques (Miller et al., 2015). Consequently, the first element of this study seeks to add to the existing body of literature by exploring the role of motivation within the attention process. The following objective is addressed in research phase 1:

Research Objective 1: To map the influence of consumers' personal endogenous dispositions (including risk/benefit orientations) and exogenous factors on label usage and information processing.

Findings pertaining to this research objective is presented in Chapter 5. Whereas phase 1 focuses on the mechanisms through which information is assimilated into memory and processed and the role of endogenous and exogenous factors in influencing these mechanisms, the second study phase is concerned with the processing and evaluation of information. Building on study phase 1, the second study phase explores the role of individuals' risk/benefit orientations in influencing information search and the networks of meaning activated by food labels. Additionally, considering the evolving nature of labelling, phase 2 also sought to address questions arising from phase 1 and further understanding of the congruency between traditional print labelling and more dynamic digital labelling (particularly QR codes). Accordingly, the second phase was guided by the following objectives:

Research Objective 2: To assess the impact of risk/benefit orientations on associations in memory activated through label usage.

Research Objective 3: To evaluate the impact of domain-specific innovativeness on understanding, interpretation and perceived utility of digital labelling, enabled through pull marketing, in adding consumer value.

These research objectives gave rise to three research questions, which are addressed in Chapters 5, 6 and 7 respectively:

RQ1: How and to what extent do endogenous and exogenous factors influence attention to labelling stimuli and subsequent information processing?

RQ2: Does product category innovativeness/risk aversion influence associations activated through label usage?

RQ3: Does understanding, interpretation and perceived utility of QR codes vary across innovators/early adopters and laggards?

1.4 Research Study Design

Given the exploratory nature of the research objectives outlined, this study adopted a multi-stage approach. Both phases were qualitative in nature and drew on an interpretivist perspective to data collection and analysis. Although some techniques more closely aligned with positivist thinking were employed such as eye-tracking, these were supplemented with qualitative data to provide a more nuanced and informed perspective. Greater detail of these considerations will be provided in Chapter 4.

Research Phase 1

Research phase 1 employed a combination of eye-tracking methodology, retrospective think-aloud protocols and semi-structured interviewing to establish the role of exogenous and endogenous factors on participants' *attention, perception* and *processing* of labelling information. Recently there has been an increase in the application of eye-tracking methodology in the field of labelling research. However, there has been a tendency towards sole-reliance on eye-tracking techniques (e.g. Visschers, Hess & Siegrist, 2010; Bialkova et al., 2014; Antúnez et al., 2015; Peschel, Orquin & Mueller Loose, 2019) at the cost of rich thick introspective data (Miller et al., 2015).

In seeking to address the unmet methodological potential of previous work within this space and building on the interpretivist perspective underpinning this research, this study phase integrated eye-tracking methodology with introspective

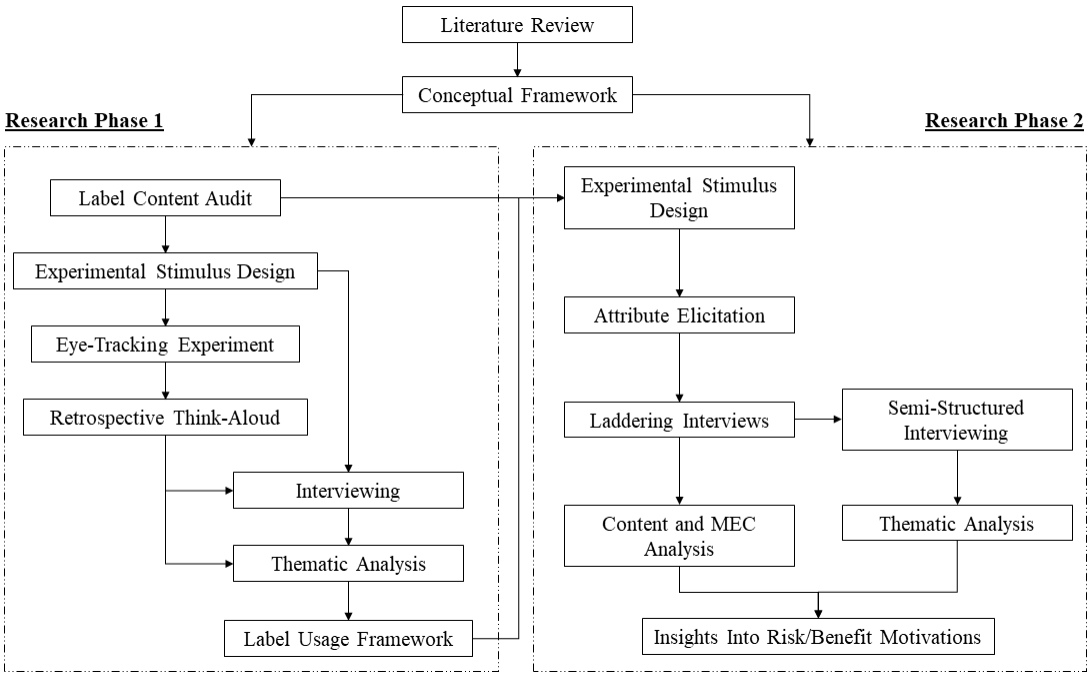
techniques (retrospective think-aloud and semi-structured interviewing). Additionally, a content audit of current food labels was conducted by the author to facilitate the development of experimental labelling stimuli for the eye-tracking experiment. Epistemologically speaking, this study involved the integration of methods typically synonymous with the more positivist school of behaviourism and the more interpretivist school of constructionism. As such, this study integrates the seemingly epistemologically opposed approaches of eye-tracking and introspection in order to deliver new insights into label usage research and consumers label usage motivations. As this study adopted a qualitative approach to eye-tracking applications, a sample size of 17 participants was required to reach theoretical saturation, while also ensuring adherence to quotas established as part of the purposive maximum variation sampling approach employed. Thematic analysis of interview data was undertaken in line with the approach set out by Braun and Clarke (2006).

Research Phase 2

The second research phase addressed the role of risk and benefit orientations in knowledge structures and consumer adoption of the more effortful form of communication achieved through pull-marketing technologies, specifically, QR code-based labelling. In seeking to further our understanding of risk and benefit orientations, the consumer innovativeness literature was considered as a means to identify risk averse and benefit oriented consumer segments (Steenkamp, Hofstede & Wedel, 1999; Matzler, Grabner-Kräuter & Bidmon, 2008; Pettifor et al., 2017). Consequently, participants were recruited to innovator/early adopter (n=19) and laggard (n=19) segments using Goldsmith and Hofacker's (1991) domain-specific innovativeness (DSI) scale. A combination of means-end chain (MEC) analysis (Gutman, 1982) and semi-structured interviewing was employed to address RQ2 and RQ3 respectively. In addressing RQ2 a MEC approach was adopted to establish and compare the networks of meaning activated through interaction with food labels. Subsequent interview data was analysed thematically in line with the approach set out by Braun and Clarke (2006) coding to address RQ3, in order to further our understanding of consumer perceptions of digital labelling within the food domain.

A diagrammatic representation of the full study design is presented in Figure 1.1. This highlights the respective roles of each data collection point in contributing to expanding on existing theory.

Figure 1.1: Study Design Overview



1.5 Thesis Overview

This thesis is comprised of 8 chapters. Chapters 2 and 3 provide an overview of the relevant literatures underpinning this research. Specifically, Chapter 2 considers the development of the motivation construct and various perspectives on motivation, ultimately considering the value of perceived risk/benefit literatures in framing the motivation construct when considering label usage. Chapter 3 proceeds to consider the current state of food labelling and key research within the area. It then goes on to frame labelling within the context of information processing literatures, considering the role of affect and cognition in the attentional mechanisms guiding label usage. This chapter also considers the role of digitalisation of food labelling and situates pull marketing within existing risk/benefit and innovation literatures. Chapter 3 concludes by providing a conceptual framework of label usage which draws on existing literature and frames the research objectives, design and findings presented in the subsequent chapters.

Chapter 4, the methodology chapter, provides a detailed overview of the study design for research phases 1 and 2. In seeking to reconcile the fundamentally different perspectives within the motivation literature, an argument is made for the mixing of epistemologically opposed perspectives of behaviourism and constructivism within the first research phase. Drawing on phase 1 findings an overview of research phase 2 methods is then provided, which highlights the relative merits of qualitative reductionism (MEC analysis) and qualitative holism (semi-structured interviewing) in addressing RQ2 and RQ3 respectively.

Chapters 5, 6 and 7 present key findings from research phases 1 and 2. Chapter 5 considers label usage in terms of *attention*, *perception* and *information processing* and drawing on phase 1 findings builds on the proposed conceptual framework of label usage. Considering the role of risk/benefit orientations in the formation of networks of meaning, Chapter 6 presents findings related to the MEC analysis to address RQ2. As distinct from Chapter 5, which considers the mechanisms guiding label usage, Chapter 6 explores group level differences in information processing once labels are attended to. Chapter 7, the final findings chapter, draws on both study phases and situates key findings in the context of evolving labelling conventions, particularly, digitalised labelling enabled through pull marketing technology, here: QR codes. In so doing this section provides new insights into an under-researched area within the food labelling domain.

The final chapter, Chapter 8, concludes with a discussion of the key research findings and implications for food marketers, policy makers and future research areas. It provides an overview of the attainment of research objectives, considers strengths and limitations associated with this research, and makes recommendations for future research within this domain.

Chapter 2
A Risk/Benefit Approach to Consumer Motivation

2.1 Introduction

In seeking to further our understanding of label usage and information search, this chapter explores the role of motivation in consumer decision-making. Drawing on various bodies of literature, the motivation construct is discussed, with particular attention to the role of perceived risk and benefit considerations in consumers' evaluations of food products and the information which accompanies them. Having explored the motivation construct in this chapter, its role in attention and information processing will then be considered in Chapter 3.

Over the last number of decades, marketing researchers have sought to understand the factors that drive consumer behaviour, to better deliver on consumer needs and desires, and develop a deeper understanding of consumer decision-making (Costa, Dekker & Jongen, 2004; Grunert, Hieke & Wills, 2014; de Boer & Schösler, 2016). In the context of consumer decision-making, it is broadly accepted that product purchases are driven by the benefits or consequences they deliver (Haley, 1968; Kotler & Armstrong, 2004; Edgar, Huhman & Miller, 2017). Indeed, it has been asserted that from a consumer perspective, "*products are viewed as a bundle of benefits, not attributes*" (Lai, 1995, p.381). However, opposing theories such as perceived risk theory (Bauer, 1960; 1967; Stone & Grønhaug, 1993; Mitchell, 1999; Brunel & Pichon, 2004), implicitly challenge such fundamental assumptions, with findings from other research disciplines suggesting that risks and benefits are considered in tandem in the evaluation process (Fischhoff et al., 1978; Alhakami & Slovic, 1994). This chapter proposes a risk/benefit prism, through which to consider the motivation phenomenon. In so doing, this chapter seeks to cast new light on the respective roles of risk and benefit considerations in motivating behaviour and offer an alternative perspective through which to consider motivation, and its role in behaviour enactment and information search.

2.2 The Development of Motivation in Behavioural Studies

It is now acknowledged that approaches to behavioural research which exclude variables such as motivation and emotion fail to fully account for behavioural drivers (Dai & Sternberg, 2004). Consequently, there has been a trend towards incorporation of motivation and its antecedents into behavioural models to better account for,

understand and predict behaviours (see Rogers, 1975; Ajzen & Fishbein, 1980; Deci & Ryan, 1985; Davis, 1989; Ajzen, 1991).

During the last century, motivation studies have undergone a number of paradigm shifts and crises, such that a comprehensive review of this topic would be insufficient were it to neglect the chronological development of the field. The distinction between the 'Grand Theories Era' and 'Mini-Theories Era' of motivation offered by Reeve (2009) provides a useful means to frame and understand said developments. During the Grand Theories Era, researchers sought to develop a unified theory with a "*single all-encompassing cause*" to explain all human motivation (Reeve, 2009, p.26). 'Causes', which formed the basis of various grand theories, include Descartes' 'will', Darwin's 'instinct' and Freud and Hull's 'drive'. However, over time limitations associated with each of these approaches were discerned. Will theory failed due to its complexity and inability to advance the study of motivation; instinct theory collapsed under its own weight due to the innumerable instincts which were identified in the literature (Holt, 1931), and drive theory failed due its inability to fully account for behaviours (Reeve, 2009). Owing to the limited capability of these Grand Theories to fully account for behaviours in a generalisable and manageable manner, the Mini Theories Era of motivation studies emerged in the 1960s and 1970s. This era is characterised by a microcosmic approach, whereby focus is limited to specific groups of individuals or motivation phenomena. Within this area, examples include Vroom's (1964) expectancy-value theory of motivation, Deci's (1975) intrinsic motivation, Bandura's (1977) self-efficacy theory and Locke and Latham's (1984) goal setting theory. The main distinctions between these two eras are illustrated in Table 2.1.

Table 2.1: Summary of Motivation Eras[1]

	Grand Theories Era	**Mini Theories Era**
Purpose	A single comprehensive theory to explain human motivation.	Niche theories focusing on specific groups or phenomena.
Scope	Macrocosmic	Microcosmic
Limitations	Universality. Over generalisation.	Limitless potential areas for research.

[1] Based on Reeve (2009)

Concurrent to these developments, the discipline of psychology as a whole underwent major changes in the late 1960s, seeing a decline in the positivist paradigm, thereby giving rise to the 'cognitive revolution' (Locke, 1996; Miller, 2003). Indeed, in the early 1970s, Dember (1974, p.161) declared "*psychology has gone cognitive, and so has motivation*". However, motivation studies went through a crisis in the 1970s and 1980s due to the shift from drive theory to mini-theories and the cognitive revolution more broadly. During this period, motivation research slowed markedly, with reductionist approaches dominating the field of psychology (Reeve, 2009).

One of the main drivers of the 'cognitive revolution' in psychology is the limitation of stimulus-response behaviour models (Dember, 1974) and drive reduction models (Locke 1996) in fully explaining individuals' behaviours and accounting for the complexity of human action. The exclusion of introspection in data gathering, which prevailed during the behaviourist period (Dember, 1974; Locke 1996), led researchers to approach understanding of psychological processes through interpretation of "*strictly physiological mechanisms*" (Locke, 1996, p.117). Although this allowed for a more value-free approach to research, it neglected the role of internalised mechanisms in regulating behaviour. However, this changed during the cognitive revolution.

Behaviourism

Behaviourism, broadly speaking, can be viewed as the philosophy which underpins behaviour analysis (Baum, 1994) and is an approach in psychology which has been argued to emphasise "*the role of environmental factors in influencing behaviour, often to the (apparent) exclusion of innate or inherited factors"* (Gross, 2009, p.197). It was pioneered by Watson (1913), who expressed concern regarding the use of introspective techniques in the study of psychology as they relied too heavily on the judgement of researchers, stating "*if … a feeling seems reasonably clear to you, your introspection is again faulty. You are seeing too much. Feelings are never clear"* (Watson, 1913, p.163). As such, Watson advocated that psychology should become a natural science of behaviour and, in so doing, should set aside the use of introspective techniques. A natural science of behaviour is predicated on the concept of *determinism* (Baum, 1994), which posits that behaviour is determined solely by hereditary and environmental factors and that "*man has no choice with respect to his beliefs, choices,*

thinking or actions" (Locke, 1996, p.117). This is at odds with much of modern psychological and consumer behaviour research, as it neglects the role of the individual in determining their own behaviour. This behaviourism, which is more intensely focused on measurable and observable behaviours, and distinguishes between the objective and subjective world due to its realist underpinnings, was referred to as methodological behaviourism, or classical Watsonian behaviourism (Schneider & Morris, 1987).

Whereas traditional methodological behaviourism rests on the realist perspective, radical behaviourism, also known as Skinnerian behaviourism, after the work of Skinner (1945), is based on pragmatism which holds that "*the power of scientific inquiry lies not so much in our discovering the truth of the way the objective universe works, but in what it allows us to do"* (Baum, 1994, p.20). Radical behaviourism acknowledges the role of the mind in behaviour, however it also asserts that the study of observable behaviour is more efficient than studying internal cognitive events. Skinner, through radical behaviourism, is considered the pioneer of operant conditioning, a learning process whereby behaviour enactment is determined by reinforcement or punishment. It is worth noting that, as such, the operant conditioning position tacitly acknowledges the creating of associations in memory through the creation of links between behaviours and behavioural outcomes. However, given the behaviourist underpinning of operant conditioning, the focus remains on the external rather than internal representation of behaviour-consequence associations. This appears to question the *determinist* underpinning of traditional methodological behaviourism and allow for the potential mixing of interpretivist and behaviourist approaches.

Cognitive Psychology and The Cognitive Revolution

In the 1950's and 1960's, behaviourism began to fall out of favour among those within the psychology community, giving way to the field of cognitive psychology. Fundamentally, cognitive psychology considers individuals as information processors, who transform inputs in the environment to outputs using cognitive systems. Whereas the behaviourist approach focused exclusively on external observable behaviours, the cognitive approach sought to examine internal processes and embrace introspective techniques (Locke, 1996; Campbell, 1999; Jack & Roepstorff, 2002). During this

period there was a shift towards motivation being considered in terms of mental constructs such as goals (Locke, 1968) and expectancy (Vroom, 1964), rather than innate biological drivers and predispositions.

The cognitive revolution was driven largely by the invention of the computer, which offered an effective analogy for exploring the human mind and its information processing abilities and structures (Miller, 2003). However, this analogy has been argued as problematic, as it led to cognitive reductionism, which contributed to the exclusion of variables such as motivation and emotion. More recently, there has been a movement away from the cognitive reductionist approach to non-reductionist approaches which consider the role of factors such as motivation, emotion and personality (Deary, 1999; Dai & Sternberg, 2004; Gallagher, 2010).

Defining Motivation and the Motivation-Behaviour Link

Fundamentally, the study of motivation has been concerned with behavioural outcomes (Brown, 1961; Ajzen, 1985; Deci, 1992; Visschers, Hess & Siegrist, 2010), with motivation referring to *"factors that activate, direct and sustain goal-directed behaviours"* (Nevid, 2012, p.288). However, there has been a clear lack of consensus within the literature as to the meaning and scope of the term 'motivation' (Kleinginna & Kleinginna, 1981; Mele, 2005, p.5). Viewing motivation as a mental construct, Dai and Sternberg (2004, p.11) suggest that to look at motivation, one must do so in relation to an object, action or process. This suggests that motivation is dependent on both the antecedents which may give rise to it and the object of its direction (i.e. the desired end state to which motivation leads). Deci and Ryan (2008) subscribe to this view and assert that it is not the quantity of motivation which is most important but rather the type of motivation in question, having previously contended that "*motivation concerns energy, direction, persistence and equifinality – all aspects of activation and intention*" (Ryan & Deci, 2000a, p.69). Indeed, they suggest that motivation is at the core of biological, cognitive and social regulation. Central in the conceptualisation of the motivation-behaviour linkage are the concepts of *energy* and *direction* (Deci & Ryan, 1985; Reeve, 2009).

To this effect, Deci and Ryan (1985) view *energy* in motivation theory as being related to needs and *direction* as being related to the processes and structures, which

give meaning to social stimuli and lead to need satisfaction. The concept of needs, as a central driver in motivation, has a long-standing tradition (Maslow, 1943; Alderfer, 1969) and is addressed in Section 2.5. Synthesising the considerations and perspectives above, the following become salient when seeking to define motivation:

1. energy and direction,
2. the object or objective to which the motivation relates (i.e. goals),
3. the sources which give rise to motivation and
4. the variables which can influence motivation.

Taking these considerations into account, *motivation* can be viewed as a force, internal to the individual, which is directed towards a particular objective or desired end state and which regulates the direction towards which a behaviour is focused as well as the effort an individual deploys when performing said behaviour, with this force being influenced by multiple variables, both within and outside of the individual's control.

Implicit in the prevailing conceptualisations of motivations is the idea that motivation is responsible for giving behaviour its direction and strength and as such that behaviour is purposive and goal-directed (Mitchell, 1982). However, there is a school of thought which posits that not all behaviours are necessarily motivated; particularly those which are habitual in nature. Indeed, Maslow (1943, p.371), in his propositions regarding the nature of human motivation, makes the assertion that "*behaviour is almost always motivated*", thereby acknowledging the potential for unmotivated behaviours. Consequently, we must acknowledge a potential limitation or at the very least an area in need of cautious enquiry, when relying on motivation conceptualisations which seek to be applicable to all behaviours.

2.3 Categorisations of Motivation

In seeking to better understand the motivation-behaviour link, there has been an effort to distinguish between different types of motivations, with existing taxonomies highlighting key aspects of the motivation phenomenon. Having considered the literature, it appears that motivation taxonomies are derived from considerations such as the *source* (e.g. intrinsic/extrinsic motivation), *valence* (e.g.

approach/avoidance motivation) and *domain* (e.g. health, sports, learning) of motivation.

Intrinsic and Extrinsic Motivation

Considering the source of motivation, the distinction between intrinsic and extrinsic motivation offers a useful point of departure (Deci, 1975; Ryan & Deci, 2000b). Intrinsic motivation refers to the innate tendency within an individual to engage in a particular behaviour out of interest and for the enjoyment which it will bring and not due to any external rewards (Deci & Ryan, 1985; Elliot & Harackiewicz, 1994; Reeve, 2009). Although intrinsically motivated individuals "*do not require extraneous incentives*" (Ryan & Deci, 2000b, p.56), incentives may accompany intrinsically motivated behaviours. Acknowledging that certain behaviours may be intrinsically motivated, it is necessary to distinguish between the intrinsic and extrinsic motivators. Although intrinsically motivated behaviours may offer secondary (extrinsic) gains, the primary motivation remains the enjoyment and internal experiences associated with said behaviours (Deci & Ryan, 1985), such that, for example, an individual may paint out of interest or for enjoyment (intrinsic motivation), but may also receive external rewards such as praise or remuneration.

Differentiating between intrinsically and extrinsically motivated behaviours presents a challenge, particularly in the context of consumption, whereby external incentives are almost always present. There is also evidence to suggest a relationship between intrinsic motivation and extrinsic reward beyond the secondary satisfaction of extrinsic needs mentioned previously. In particular, it has been demonstrated that 'over justification' (i.e. over-incentivising) of intrinsic motivation through extrinsic rewards can reduce intrinsic motivation (Lepper, Greene & Nisbett, 1973).

Extrinsic motivation is antonymic to intrinsic motivation insofar as that it arises from incentives, such that behaviour enactment motives are external to the individual (Ryan & Deci, 2000a). These incentives may comprise external rewards, pressures (to pursue certain courses of action or achieve particular end-states) or choices, all of which may afford individuals varying degrees of control and autonomy (Deci & Ryan, 1985). Considering the scope of potential behaviour motives, the widely used term incentive appears somewhat problematic due to its overtly positive

connotations. Indeed, Vallerand (1997, p.279) views extrinsic motivation as being driven by the desire to either "*receive something positive or avoid something negative"*, a view which lends support to the risk/benefit prism approach to motivation and is reflected in the approach/avoidance motivation taxonomy which follows.

Approach and Avoidance Motivation

Whereas the intrinsic/extrinsic taxonomy is derived from the motivational source, the approach/avoidance taxonomy distinguishes between types of motivation based on their valence (Elliot, 1999). As noted by Elliot and Covington (2001), there has been a lack of consensus as to application of the terms approach and avoidance motivation. However, broadly speaking, for approach motivation, behaviour is enacted in pursuit of a desired outcome, whereas avoidance motivation arises from the desire to avoid negative outcomes (Arnold & Reynolds, 2012). There is strong evidence to suggest the existence of approach and avoidance orientations in motivation studies. Particularly, drawing on the work of Gray (1990), Arnold and Reynolds (2012) note that approach and avoidance tendencies are governed by different underlying neurobiological systems, which vary between individuals in form and strength and produce a predisposition towards positive and negative stimuli.

Given its focus on negative outcomes, avoidance motivation is associated with more risk averse and vigilant thinking, which restricts creativity whereas evidence suggests that approach motivation results in more explorative behaviour and higher levels of risk tolerance (Roskes, 2015). This orientation towards positive and negative dispositions and their motivational and behavioural implications are addressed in greater detail later in this chapter.

Domain-Centric Motivation

It has been argued that given the role of context dependent factors, such as knowledge, goal saliency and self-relevance, domain-specific approaches to motivation have greater explanatory power than generalised motivation theories. Building on the tenets of the mini-theories era of motivation studies discussed previously, the concept has been adapted for varying goals, such that in the literature, one can observe discussions related to motivation applied to specific domains, such as health motivation (Visschers, Hess & Siegrist, 2010), sports motivation (Murcia et al.,

2008), learning motivation (Niles, 1995) and work motivation (Gagné & Deci, 2005). Given the potentially innumerable domains of motivation that exist, it is beyond the scope of this review to provide an overview of all domain-centric approaches. However, it is worth noting that the domain centric approach appears to more fully account for context-specific determinants of behaviour, offering potentially more nuanced and in-depth understanding of the motivational factors underpinning a given behavioural domain.

2.4 Deconstructing the Motivation Construct

Having detailed the various approaches to motivation studies, discussion now turns to key components of the motivation construct, considering the antecedents of motivation and the factors which modulate motivation levels.

2.4.1 Antecedents of Motivation

As previously noted (see Section 2.2), motivation is influenced by the object of its direction; to this end, goals, values and their respective ability to give rise to motivational states merits consideration. This section will consider the role of goals, goal structures and values in giving rise to motivation.

Goals

Definitions for the term 'goal' have varied across research contexts, particularly in relation to the degree of context derived specificity, however, generally speaking, goals can be defined as desired end states towards which people move. Generally, goals are viewed as desired outcomes, which energise and direct action (Neal et al., 2012). There has been much research undertaken on the interplay between goals and motivation, with goals occupying a central place within motivation studies. Indeed, Mitchell (1982, p.81) defined motivation as being "*those psychological processes that cause arousal, direction, and persistence of voluntary actions that are goal directed*". The interplay between goal direction and motivation has increasingly informed discourse within the area (Bandura & Cervone, 1983; Ford, 1992 in Campbell, 2007). Implicit in the assertion put forward by Mitchell (1982) is that motivation, as well as subsequent behaviours, are purposive in nature, i.e. goal-directed. Potential limitations with this which are attributable to automated and habitual behaviours are addressed in Section 2.6.

Findings from this literature relating to instances where goals are assigned to an individual rather than being developed by the individual themselves, are of interest in the context of consumer behaviour where purchasers may also act on behalf of others within the household. Although there is evidence to suggest that this distinction is negligible, provided the rationale for the goal is clear (Locke & Latham, 2002), this finding has been disputed. Building on previous work, Ryan and Deci (2000a, p.70), assert that imposed goals, or any other external control results in an "*external perceived locus of causality*" which reduces intrinsic motivation. In relation to label usage and study design, the implication of the perceived locus of control as it relates to goal setting merits particular attention.

Turning to look at the source of goals, Locke and Latham (2006, p.265) view goals as a "*discrepancy-creating process*" as the term goal implies dissatisfaction with a current state and a desire to attain an objective or to reach a desired state of being. Similarly, Reeve (2009, p.207) frames goals as arising from a "*mismatch perceived between one's present state and one's ideal state*" which gives rise to an "*incongruity*" which has motivational properties. Similar to motivation, Locke and Latham (2002) ascribe a directive and energising function to goals relative to performance. In the context of this research, the term *goal* is understood to mean: a desired end-state or object towards which an individual strives, with such desire arising from dissatisfaction with the current state of being. Although goals do also occur at a group or institutional/macro level (Locke & Latham, 2006), for this study, goals are explored only through the individual's perspective.

Goal Difficulty

Although a link between goal difficulty (i.e. the perceived ease of goal attainment) and performance has been acknowledged (Atkinson, 1958; Locke & Latham, 2002), the exact nature of this relationship is contested. Two schools of thought dominate in this regard. Atkinson's (1958) findings suggest that goal difficulty and performance is represented by an inverse curvilinear function whereby tasks high or low in difficulty result in low effort. Conversely, Locke and Latham (2002) propose a positive linear function whereby the most difficult goals result in the highest level of effort, with this positive linear relationship being dependent on the absence of conflicting goals (Locke & Latham, 2006). In the context of consumption, this raises

questions regarding the applicability of the goal-setting view, given the potential for both internal goal conflict, and goal conflict arising from purchasing for others within the household. Findings from the area of perceived self-efficacy also suggest that efficacy beliefs may influence the relationship between goal-difficulty and motivation as well as the level of difficulty perceived for a particular goal.

Goal Specificity

Goal specificity refers to "*the degree of quantitative precision with which the aim is specified"* (Locke et al., 1981, p.126). Goals vary in their degree of specificity, ranging from highly specific goals to what has been termed as abstract (Latham & Brown, 2006, p.608), vague (Locke, 1996, p.119) or ambiguous (Wallace & Etkin, 2018) goals. Locke (1996) suggests an inverse relationship between goal specificity and performance variation i.e. in the presence of highly specific goals, behaviour variation will reduce, with the primary means of achieving high specification being quantification. However, in the context of consumer behaviour, quantification of goals and measurement of progression towards goal attainment is not always feasible owing to factors such as time, knowledge and information availability. Therefore, the relationship between motivation and goal specificity is dependent on the degree of control an individual has over said behaviour as a result of both personal (e.g. knowledge) and environmental (e.g. information availability) factors.

Although the exact nature of the interaction between goal-specificity and motivation is contested, there is a consensus that goal specificity impacts motivation. Wallace and Etkin (2018) demonstrated the higher levels of goal ambiguity results in marginal goal progress appearing less impactful, thereby decreasing subsequent motivation levels. Goal ambiguity allows for a broader range of outcomes constituting success (Wallace & Etkin, 2018) i.e. equifinality. For instance, a specific consumption goal such as 'eating an apple today per day', affords one route to goal attainment as opposed to a goal to 'eat healthily', which could be achieved through multiple means.

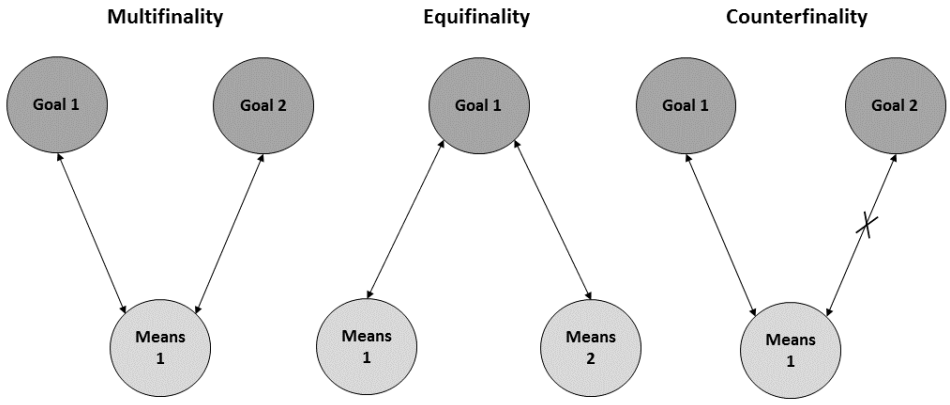
Goals Systems

Goals systems can be defined as "*the relationship between goals and means in terms of an interconnected cognitive architecture, wherein a superordinate goal is connected to lower level subordinate goals, that, in turn, are linked to their own means*

of attainment" (Chun et al., 2011, p.1124). In particular, within the context of goal hierarchies, it has been noted that goals vary in their degree of abstraction, ranging from more concrete subordinate goals to abstract higher-order superordinate goals (Höchli, Brügger & Messner, 2018). Within this architecture, it is assumed that attainment of subordinate goals contributes to progression towards superordinate goals.

As noted by Chun et al. (2011), goal architectures encompass not only the relationship between subordinate and superordinate goals, but also the relationship between means and goals. This network of means-goals linkages accounts for the various configurations of means-goals relationships. In giving structure to these forms, Kruglanski et al. (2015) identify three distinct means-goals relations: multifinality, equifinality and counterfinality (see Figure 2.1).

Figure 2.1: Goal System Architecture[2]



Multifinal means allow for the simultaneous achievement of multiple goals, as distinct from unifinality, whereby only one route to goal attainment exists (Kruglanski et al., 2015). As such, multifinal means may be viewed as more valuable as they can result in the satisfaction of multiple goals (Chun et al., 2011). Equifinality refers to instances whereby multiple routes to attainment of the same focal goal exist, thereby allowing for substitution between means of goal progression and increasing the perceived likelihood of goal attainment (Kruglanski, Pierro & Sheveland, 2011). Finally, counterfinality refers to instances where "*a means that serves a focal goal also undermines an alternative goal*" (Kruglanski et al., 2015, p.88). Building on the

[2] Adapted from Kruglanski et al. (2015)

principle of counterfinality, it appears that in instances where means results in goal frustration, consumers are forced to enter a process of goal prioritisation to maximise their own utility.

The goal system architecture model depicted raises a number of questions in need of addressing from both a consumer behaviour and motivation studies perspective. This perspective appears to be highly cognitive in nature, relying on an individuals' ability to identify associations between means and goals, store these associations in memory and identify potential conflicts between means-goal structures (e.g. in the instance of counterfinality). This raises questions where faulty or inaccurate means-goals relations are created, as well as the saliency and valence of said goals system architectures. In addressing this question, a cognitive perspective of motivation and information usage is presented in Section 3.4 and seeks to reconcile these issues.

Values

Although commonly used within the motivation literature, the term *value* is one which is open to misinterpretation and misappropriation, often being used interchangeably with the term *goals* (Costa, Dekker & Jongen, 2004), thereby presenting problems in terms of the operationalisation and interpretation of research. As researchers have sought to define and redefine the term within the context of their works, a clear lack of consensus as to its meaning has developed, which seems logical given that values are often viewed as being at the upper end of abstraction in terms of motivation (Gutman, 1982; Grunert, Hieke & Wills, 2014). Nevertheless, there are constantly emerging themes when speaking to the idea of values, particularly, permanence, endurance, modes of acquisition, strength and change (Rokeach, 1973).

In seeking to understand the role of values and goals in motivation studies, it is necessary to clearly distinguish the two. As distinct from *goals*, which are desired end states, *values* can be viewed as "*an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence*" (Rokeach, 1973, p.5). There are a number of aspects to take into consideration here. Firstly, this suggests that values exhibit the characteristic of permanence or endurance and are not as wholly susceptible to change, when compared with goals. This notion of endurance is echoed elsewhere within the

literature, with Schwartz and Bilsky (1987, p.551) contesting that values are "*concepts or beliefs, ... about desirable end states or behaviours, ... that transcend specific situations, ... guide selection or evaluation of behaviour and events, and ... are ordered by relative importance*". Secondly, Rokeach's definition suggests that values can stem from the individual as well as being acquired through social interactions. This reflects Rokeach's (1973) three potential antecedents of human values, those being culture, society (and its institutions) and personality.

Rokeach (1973) suggests that the value construct plays a central role within the social sciences as they have the potential to manifest themselves in virtually every behaviour. Given that values permeate through human interactions, a logical course of enquiry which has arisen seeks to identify and account for the role of values in behaviour and motivation. When seeking to understand the values driving consumer actions, it is also important to understand commonalities and differences within and among different groups of consumers (Boecker, Hartl & Nocella, 2008; Sorenson, & Henchion, 2011; den Uijl et al., 2016). Given the subversive and pervasive nature of values in influencing behaviour, this presents researchers seeking to capture and account for the role of values in influencing behaviours with a challenge.

Arguably, one of Rokeach's (1968, 1973) most enduring contributions to values research is the distinction between *instrumental* and *terminal* values, which address means-values and ends-values respectively. Terminal values are concerned with preferred end states and comprise both personal values e.g. peace of mind and societal values e.g. world peace (Rokeach, 1973). Conversely, instrumental values relate to preferred modes of behaviour (Gutman, 1982) and comprise moral values e.g. honesty and competence values e.g. logicality (Rokeach, 1973).

2.4.2 Influencers of the Motivation/Goal-Performance Relationship

Various factors have been identified as impacting on the goal-motivation-behaviour relationship, including context (Walker et al., 2004), feedback (Bandura & Cervone, 1983; Locke 1996), self-efficacy beliefs (Locke, 1996) and self-dissatisfaction (Bandura & Cervone, 1983).

Context

Thus far discussion has focused exclusively on conceptualisations of motivation as an individual phenomenon. However, there is a growth in interest in the role of context as it relates to motivation (Ryan, 2001; Walker et al., 2004; Järvelä & Salovaara, 2004; Lewalter & Krapp, 2004). Viewing behaviours as context dependent, we can distinguish between micro- and macro-environmental levels of context influencing choice (Olson & Reynolds, 2001, p.6). At the micro-environmental level, this can encompass the social environment, including the role of peers (Ryan, 2001) and the physical environment, as well as more broadly defined contexts, such as the purchasing context.

When looking at the role of context as it relates to motivation, even a cursory reading of the literature makes clear the role of sociocultural factors in motivation studies (Walker et al., 2004; Pressick-Kilborn, Sainsbury & Walker, 2005). As opposed to traditional views which conceptualise motivation as an individual phenomenon, sociocultural perspectives require a "*reconceptualization of motivational variables*" (Walker et al., 2004) to account for the social dimension of motivation. They move motivation from being an individual phenomenon, to being a product of individuals' social and cultural environment. In the context of consumer behaviour, this highlights the importance of understanding the purchasing context, i.e. the circumstances under which information for a particular product is sought and a purchase decision is made. The purchasing context is made up of multiple factors which can influence individuals' motivations, including purchase location (Rose, Hair & Clark, 2011), time availability, factors relating to the individual for whom the product is being purchased, product alternatives and perceived social pressures. The relevance of contextual factors on motivation will be further elaborated on in Section 2.7 when discussing the perceived risk construct.

Perceived Self-Efficacy

Self-efficacy refers to "*people's beliefs in their capabilities to mobilize the motivation, cognitive resources, and courses of action needed to exercise control over events in their lives*" (Wood & Bandura, 1989, p.364). Closely related to goal difficulty, self-efficacy can be understood as "*task specific self-confidence*" (Lerner & Locke, 1995, p.139) or "*task-specific competence expectancies"* (Elliot & Church,

1997) and has proven to be one of the most important concepts in psychology over the last number of decades in social-cognitive theory (Judge et al., 2007). Self-efficacy impacts goals and goal attainment in several ways, including the difficulty of and commitment to a focal goal, goal selection, goal attainment strategies and responses to failure during goal pursuit (Bandura & Cervone, 1983; Locke, 1996).

According to Bandura (1977, p.191), self-efficacy perceptions stem from "*performance accomplishments, vicarious experiences, verbal persuasion, and physiological states*". Bandura (1977) distinguishes between efficacy expectations and outcome expectations, whereby the former occurs before behaviour enactment and the latter subsequently. Although an individual may believe that a given behaviour could result in a desired outcome, they may not believe that their actions will result in the successful performance of the requisite behaviour. This distinction has major implications in terms of the enactment of behaviours which are required to attain desired goals. Perceived self-efficacy can affect behaviour in two primary ways. Firstly it can determine whether the behaviour is enacted and, secondly, it can affect the amount of effort an individual will expend in their goal pursuit (Bandura, 1977). In relation to consumer decision-making and label usage, the role of self-efficacy on strategy selection employed is elaborated on in Chapter 3.

Self-Evaluation and Feedback

Bandura and Cervone (1983) assert that self-dissatisfaction with a given performance relative to desired outcomes can serve as a motivational inducement for increased effort. Self-dissatisfaction occurs among people when there exist "*perceived negative discrepancies between what they do and what people seek to achieve"* (Bandura & Cervone, 1983, p.1017) and can encompass feelings of displeasure and disappointment with oneself and ones' own performance. However, self-dissatisfaction derived motivational impetus is contingent on individuals having personal standards and knowledge of their own performance (ibid). Consequently, in the absence of knowledge of one's own performance (i.e. feedback) and an ability to self-evaluate, self-reflection will not occur. The absence of this self-reflection, in turn, reduces the potential for self-dissatisfaction, which has motivational properties. A further limitation associated with self-dissatisfaction as it pertains to increasing

motivation is the potential of high dissatisfaction to (unduly) undermine perceived self-efficacy (Bandura & Cervone, 1983).

Although feedback can facilitate assessment of goal progression (Locke, 1996), the impact of actions taken is not always immediately clear. Particularly in the case of food, a shift in food risk and consumption consequences from occurring in the short term to long term make food related consequences more difficult for consumers to discern (Rozin, 2005). This broad trend towards elongation of the feedback loop within the food domain (from an individual consumer's perspective), in terms of lack of timely and recognisable feedback/consequences, has the potential to impact on goal strength considering the impact of feedback (Locke, 1996) and self-dissatisfaction (Bandura & Cervone, 1983) on goals.

2.5 Theories of Motivation

With the decline of behaviourism and the rise of the cognitive revolution, there came a new wave of motivation research, which sought to look inward at the cognitive and innate drivers of behaviour. This section provides an overview of the major scholarly endeavours in the area of motivation studies and their implications for contemporary consumer behaviour and motivation studies. Within the motivation literature, two main bodies of research exist: *content theories* and *process theories*. Whereas content theories focus on the factors which give rise to motivation, process theories are concerned with how motivation occurs.

2.5.1 Content Theories of Motivation

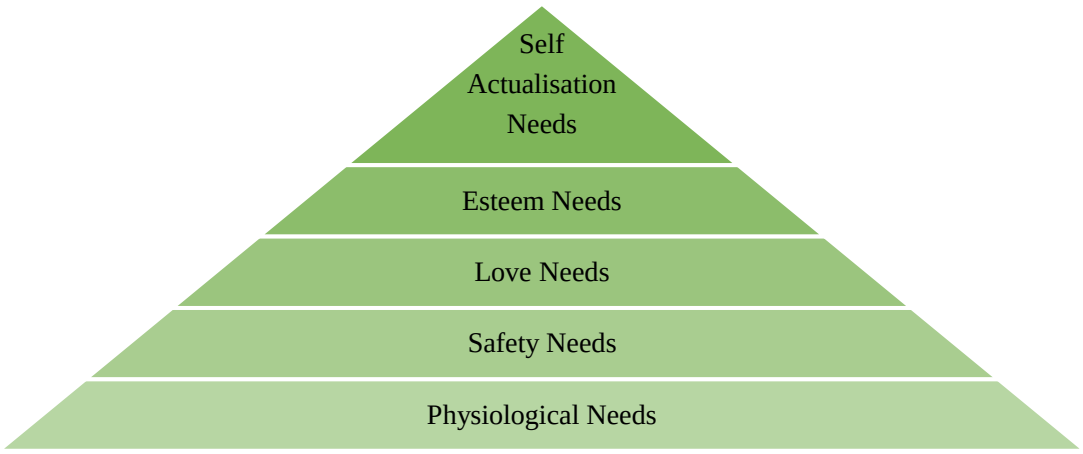
Content theories (also known as needs theories) focus on the factors which give rise to motivation and include Maslow's (1943) hierarchy of needs, Alderfer's (1969) Existence Relatedness Growth (ERG) Theory and McGregor's (1960) Theory X and Theory Y. Acknowledging the needs-motivation link (Deci & Ryan, 1985; Maslow, 1943; Alderfer 1969), a meaningful understanding of motivations underlying behaviour must consider the needs which form the basis of those motivations by giving them a direction (Deci & Ryan, 1985), as well as the intervening factors which affect motivation strength.

However, the concept of needs, although used commonly in the vernacular, is difficult to define. Here, the distinction between needs and wants serves as a point of departure. Needs are requisite for the functioning of the individual, whereas wants are desires which are non-essential. Both Maslow's (1943) hierarchy of needs and Alderfer's (1969) ERG theory, introduce elements to needs categorisation which move the individual beyond a simple living organism to a social entity, whereby for instance 'love', 'esteem' and 'relatedness' are regarded as needs. This is quite different from motivation studies during the behaviourist period, which viewed the human as driven primarily by biological urges for the purpose of survival.

Maslow's Hierarchy of Needs

Maslow's (1943) hierarchy assumes that needs are sequentially ordered, and satisfaction of needs occurs in a hierarchical fashion where satisfaction of lower-order needs is a prerequisite for satisfaction of higher-order ones. This suggests that physiological need frustration acts as a barrier to the pursuit of higher order need satisfaction. Although acknowledging that an act may be guided by multiple motivations (*ibid*, p.370), Maslow's hierarchy (Figure 2.2) does not allow for simultaneous satisfaction of needs on different levels of the hierarchy. Although Maslow (1943) offers a useful means of considering goals, i.e. as a hierarchy of abstraction, the requirement for sequential satisfaction of increasingly abstract needs lacks verisimilitude.

Figure 2.2: Maslow's Hierarchy of Needs[3]



[3] Adapted from Maslow (1943)

ERG Theory of Human Needs

Building on Maslow's hierarchy, Alderfer's (1969) ERG theory seeks to address Maslow's classification by grouping similar needs, thereby eliminating overlap between the categories developed by Maslow, allowing for the simultaneous satisfaction of multiple need categories, and removing the hierarchical nature of Maslow's theory. This conceptualisation affords a greater degree of flexibility while accounting for behaviours which allow simultaneous satisfaction of multiple needs such as physiological and social needs, e.g. social eating context. Alderfer (1969) acknowledges a hierarchy in terms of degrees of abstraction with regards to the need categories identified in ERG Theory, which contrasts with Maslow's (1943) hierarchy whereby satisfaction of higher order needs is contingent on satisfaction of lower order needs.

Apparent in both of these conceptualisations is the concept of dualism, a tradition in understanding motivation which has been attributed to the reductionist approach taken in ancient Greece. Dualism polarises the physical and psychological, distinguishing from a rational mind and an irrational and impulse driven body (Brinol, Petty & Belding, 2017). Although such a separation is not made in these need theories, both Maslow's and Alderfer's approaches to need categorisation polarise physical needs and psychological needs, which appear logical given the increasing levels of abstraction outlined. These theories do however depart from dualism insofar as that intermediary categories are identified. Taking the concept of dualism as a starting point, there is a trend towards need categorisations which map along a spectrum of abstraction, ranging from lower-order (physical) needs to higher-order (psychological) needs. A limitation attributable to both of these theories is their universality, i.e. their macrocosmic approach towards understanding human needs, leading to generalisations which may not be applicable to all groups and is one of the factors which contributed to the rise of the 'Mini Theories Era' of motivation studies.

Self-Determination Theory

Deci and Ryan (1985), in their Self Determination Theory (SDT), put forward the role of self-determination in motivation, highlighting the role of autonomy as a motivating factor. There has been much debate surrounding the definition and scope of the terms self-determination and autonomy within the context of SDT (Ryan &

Deci, 2006). In the context of social environments, which places perceived constraints in the forms of social norms, a question remains regarding the extent to which a behaviour can be truly autonomous. To this effect, Cross and Gore (2003) speak to the notion of behaviour as being scripted by culture. Ryan and Deci (2006) define autonomy as a matter of degree, taking place on a continuum of motivation ranging from heteronomy to autonomy.

In seeking to reconcile Cross and Gore's (2003) cultural determinist view with Ryan and Deci's (2006) view of the autonomy construct as being a behaviour regulated through reflective interest and endorsement, a more apt terminology may seek to rely on the taxonomy employed by Ajzen (1985, 1991) who frames constructs in terms of perception (see Section 2.5.2). Accordingly, a concept of perceived autonomy would allow for motivation to arise from the perception of autonomy, unencumbered by the role of existing social structures. This definition would then vary from that of Ryan and Deci (2006), which defines autonomy as being willing and reflective compliance with rules, regulations and social norms, provided this compliance is congruent with the individual's free will upon deliberative reflection. The element of deliberative reflection and autonomy is also of interest when considering habits and habitual behaviour. Habits, as a construct, involve shallow processing, which appears incongruent with the definition of autonomy as outlined by Ryan and Deci (2006), as habits (see Section 2.6) represent a form of cue-contingent automaticity, as opposed to reflective goal-directed behaviour (Wood & Neal, 2009; van't Riet et al., 2011).

2.5.2 Process Theories of Motivation

Process theories (also referred to as cognitive theories) view motivation as a process and aim to *"identify how individuals will or should act to identify what their motivators are and to achieve the goals associated with these motivators"* (Hendriks, 1999, p.95). Specifically, process theories are concerned with how behaviour is initiated, directed, sustained and terminated (Segal, Borgia & Schoenfeld, 2005). Process theories include *Expectancy Theory* (Vroom, 1964), *Achievement Motivation Theory* (Atkinson, 1964), *Goal-Setting Theory* (Locke, 1968), *Self-Efficacy Theory* (Bandura, 1977) and the *Theory of Planned Behaviour* (Ajzen, 1985; 1991).

Expectancy Theory of Motivation

Initially proposed by Vroom (1964) to explore work motivation, and subsequently used to investigate other organisational phenomena (Van Eerde & Theirry, 1996), *expectancy theory* of motivation is intuitive in nature and posits that individuals are motivated by the results or outcomes arising from behaviour performance. Since its inception, expectancy theory, and theories building on its core tenets, have been used to further explain motivational issues in other disciplines, including consumer behaviour (Olsen et al., 2008), education (Wigfield & Eccless, 2000) and technology acceptance (Baptista & Oliveira, 2015).

As a process theory of motivation, expectancy theory is concerned with the cognitive antecedents of motivation as opposed to those factors, such as needs and wants, which give rise to motivation (Lunenburg, 2011). Specifically, expectancy theory has at its core the Valence – Instrumentality – Expectancy Model (VIE model) (Van Eerde & Thierry, 1996), whereby, outcomes are assumed to have either a positive or a negative valence (Bjørnebekk & Gjesme, 2009). Here valence is understood to refer to "*all possible affective orientations toward outcomes, and it is interpreted as the importance, attractiveness, desirability or anticipated satisfaction with outcomes*" (Van Eerde & Thierry, 1996, p.567). In the context of label usage, as further elaborated on in Chapter 3, expectancy theory accounts not only for the influence of the perceived value of an activity on motivation, but also accounts for individuals' "*ability beliefs*", i.e. beliefs regarding how well an individual will do in conducting the activity (Wigfield & Eccles, 2000). As highlighted by Wigfield and Eccles (2000), the ability belief construct overlaps with Bandura's self-efficacy construct discussed previously.

Goal-Setting Theory

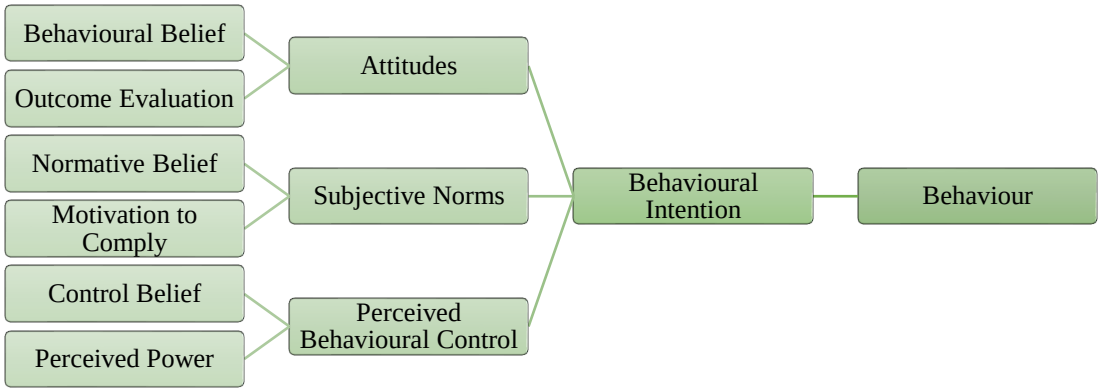
Locke's (1968) goal-setting theory addresses the impact of setting goals on subsequent performance (Locke & Latham, 2006). In particular, goal setting theory posits that difficult goals lead to higher levels of task performance than easy or vague goals, provided there is sufficient goal commitment and ability to attain goals. As illustrated in Section 2.4.1, goal-setting theory falls into conflict with expectancy theory in relation to the impact of goal difficulty on performance. Whereas goal theory assumes a positive linear relationship between difficulty and performance, expectancy theory poses a positive linear relationship between success expectancy and

performance (Locke & Latham, 2005). Furthermore, a limitation of goal setting theory is its exclusive focus on concrete, narrowly defined goals, which are not fully reflective of broader societal challenges (Höchli, Brügger & Messner, 2018). Particularly in the context of consumer behaviour, this does not account for individuals' ability to deconstruct superordinate goals into more clearly defined and manageable subordinate short-term goals.

Theory of Planned Behaviour (TPB)

TPB assumes that intention is the best predictor of behaviour (Ajzen, 1985), with intentions being assumed to capture the motivational factors influencing behaviour (Ajzen, 1991). Intentions, in turn, are assumed to be influenced by behavioural attitudes, subjective norms and perceived behavioural control (Ajzen, 1985). This approach has been widely used in the study of food related behaviours (Thompson & Thompson, 1996; Olsen et al., 2008; Lada, Tanakinjal & Amin, 2009). However, similar to many of the pervading motivation theories of the period, assumptions of rationality and conscious goal-pursuit act as a limitation on predictive validity and explanatory power. In acknowledging the habitual dimensions of consumer decision-making, there have been attempts to expand the predictive ability of TPB through inclusion of habit (Mahon, Cowan & McCarthy, 2006). A strength of this approach from a behavioural intention perspective is the focus on beliefs (see Figure 2.3) as opposed to objective measures of constructs such as control, as this accounts for the role of individual perceptions in influencing behaviour, which, as illustrated in the case of self-efficacy, can have a substantial impact on behaviour enactment.

Figure 2.3: Theory of Planned Behaviour



2.6 Habitual Behaviours

As noted in Section 2.2, when considering the motivation construct, pervading definitions consider behaviour as being purposive and goal-directed. However, there is a substantial body of literature relating to habit theory which fundamentally challenges this assumption and has implications for both the design and interpretation of research within the motivation-behaviour domain. This section seeks to consider the role of automaticity in behaviour enactment, particularly as it relates to habitual behaviours. To this end, discourse will turn to the role of cues in activating behaviours without the need for conscious goal setting.

Habits can be viewed as "*learned sequences of acts that have been reinforced in the past by rewarding experiences and that are triggered by the environment to produce behaviour, largely outside of people's conscious awareness*" (van't Riet et al., 2011, p.586). This definition encompasses three key characteristics of habits which have been identified repeatedly throughout the literature, namely; repetition of behaviour, automaticity, and cueing (Verplanken & Aarts, 1999; Wood & Neal, 2009; Orbell & Verplanken, 2010; van't Riet et al., 2011; Neal et al., 2012). These characteristics have implications for the level of conscious involvement in the behaviour process, given that habitual responses occur largely outside of conscious awareness (van't Riet et al., 2011). This reduces conscious involvement (Wood & Neal, 2009) as well as individuals' ability to report habitual behaviours. Additionally, given that automaticity and ease with which habitual behaviours are enacted, this can restrict individuals' acquisition of new information. Despite a lack of consensus as to the exact nature of these characteristics and their relationship with motivation, they remain central to the discourse around habits. Understanding of the relationship between habits and goals can only be discussed meaningfully through an understanding of habit formation.

Habit Formation

Habits form when a behaviour is repeated multiple times within a stable context (Orbell & Verplanken, 2010; van't Riet et al., 2011). The behaviour, which acts as the basis of habit formation is assumed to be goal-directed (Wood & Neal, 2007) which aligns with the definition of behaviour forwarded within the literature thus far (Mitchell, 1982; Deci & Ryan, 1985). As such, Wood and Neal (2007, p.844)

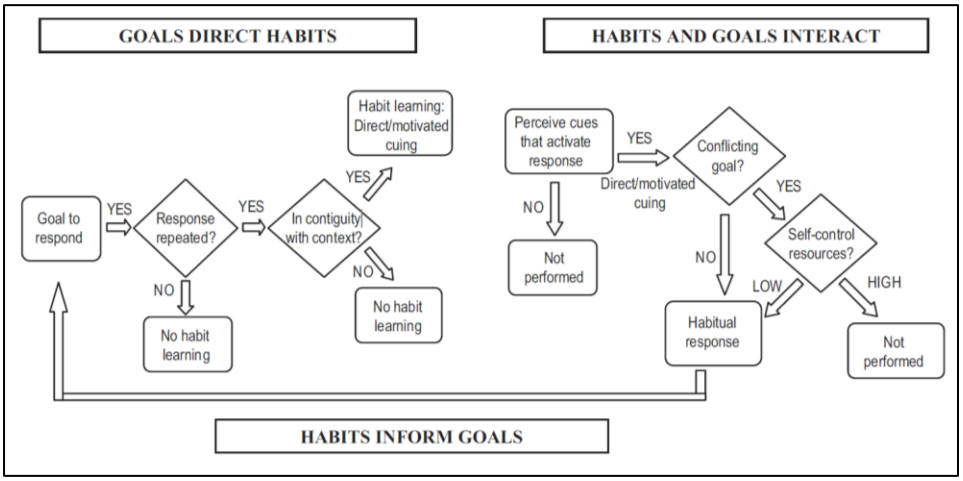
describe habits as "*the residue of past goal pursuit*". Repetition within a stable context is essential for habit formation as environmental cues present must become associated with behaviour enactment. As behaviours become habitual, they are enacted on a subconscious level, provided the necessary environmental cues are present.

Cueing

'Cues', in the context of habit, refer to stimuli in the environment which have become associated with behaviour performance through repetition. As a form of cue contingent behaviour, habit activation is contingent on the presence of associated environmental cues (Wood & Neal, 2007; van't Riet et al., 2011). Due to the situational cueing of habits, such behaviours are enacted with little conscious awareness (Orbell & Verplanken, 2010). One of the central questions regarding habits is whether or not they are goal-directed given that they are activated automatically by an environmental cue; indeed, this is a source of ongoing debate within the literature (Neal et al., 2012).

The habit goal interface (see Figure 2.4) proposed by Wood and Neal (2007) seeks to elaborate on the interaction of goals and habits. The model encompasses all of the major characteristics of habits, i.e. repetition, cueing and automaticity, and is congruent with previous propositions which view habits as forming in the service of goals (Mitchell, 1982; Deci & Ryan, 1985; Verplanken & Aarts, 1999). Wood and Neal (2007) distinguish between 'direct cueing' and 'motivated cueing'. Direct cueing views habits as being represented in memory as direct context-response associations, whereas motivated cueing occurs where the response outcome is conditioned onto the context cues, and as such motivated cues indicate the possibility of rewarded behaviour. To this effect, Wood and Neal (2007) posit a relationship between habits and goals whereby goals direct habits, habits and goals interact, and habits inform goals through inference-making.

Figure 2.4: The Habit-Goal Interface[4]



Within the context of this framework, the notion that habitual response can offer a basis for identifying the goal which directed the behaviour that was ultimately habitualised, merits special consideration from a research design perspective. Although the assumption that habits can inform goals is both intuitive and appealing, it is highly dependent on a participant's ability to accurately introspect. In practical terms, from a research perspective it is difficult to ascertain whether participant reporting of the initial goals leading to habit formation is truly representative of said goals, or is a form of post-hoc justification of behaviour performance. The capturing and understanding of habitualised and subconscious behaviours represents a key concern in the context of food labelling research, with the methodological and study design implications of the limitations of habit theory identified here being further addressed in Section 4.3.

2.7 Perceived Risk within Consumer Research

Although there is a focus within the literature on the 'positive' factors which give rise to motivation, such as needs (Maslow, 1943; Alderfer, 1969), values (Rokeach, 1973) and self-determination (Deci & Ryan, 1985), behavioural motivation can also stem from negative sources such as fear (Rogers, 1975). Indeed, throughout this chapter allusions have been made to the role of perceived negative outcomes in motivating behaviour, such as avoidance motivation (see Section 2.3) and the VIE model underpinning expectancy theory (see Section 2.5.2). To this end, the Theory of Perceived Risk (Bauer, 1960; Bauer, 1967; Mitchell, 1999) is a useful means for

[4] Wood and Neal (2007, p.850)

understanding consumer purchase motives (Mitchell & Greatorex, 1989; McCarthy & Henson, 2005; Yeung, Yee & Morris, 2010) and information search (Hubert et al., 2017; Hussain et al., 2017), which arise from a 'negative source', i.e. the fear of loss and/or other negative consequences arising from purchasing and consumption.

Risk, as a concept, has long existed (Lupton, 2013), having been adopted in the field of economics in the 1920s (Dowling & Staelin, 1994). However, the genesis of perceived risk within consumer behaviour and marketing domains can be attributed to Bauer (1960), who later rationalised the use of perceived risk in this area as follows:

> *"consumer behaviour involves risk in the sense that any action of a consumer will produce consequences which he cannot anticipate with anything approximating certainty, and some of which are likely to be unpleasant"* (Bauer, 1967, p.24).

Acknowledging the link between purchase motives and perceived risk, Cox and Rich (1964) suggest a relationship between these two constructs, whereby the importance of the purchase goal influences the potential loss encountered by the consumer and the level of risk which the consumer subsequently perceives; i.e. the motives underlying a purchase decision can, in turn, influence the risk perceived by a consumer. As such, risk perceptions are subjective, idiosyncratic and context sensitive.

Given findings which demonstrate a correlation between risk perceptions and purchase intention and the role of perceived risk in decision-making (Cox & Rich, 1964) and information search (Kuttschreuter, 2006), this area of enquiry has been used within the marketing discipline to understand consumer behaviour (Stone & Grønhaug, 1993), which is de facto a pursuit to understand consumer motivation, assuming that behaviours are motivated (Reeve, 2009; Mitchell, 1982). Indeed, perceived risk theory has been applied in a range of consumption related contexts, including telephone shopping (Cox & Rich, 1964), choice of retail outlets (Mitchell & Harris, 2005), food technology (Frewer, Shepherd, & Sparks, 1994), product choice (Mitchell & Greatorex, 1989; McCarthy & Henson, 2005) and product categories (Dowling & Staelin, 1994; Brunel & Pichon, 2004).

In line with a broader trend towards the use of psychographic segmentation variables (Raaij & Verhallen, 1994), the application of perceived risk to market

segmentation has also been tested (Mitchell & Boustani, 1993; McCarthy & Henson, 2005). Indeed, Mitchell and Harris (2005, p.831) identify the potential of perceived risk in identifying what they term as "*risk-sensitive segments*" and integrating information on said segments into marketing strategy. In particular, Mitchell and Boustani (1993, p.30) suggest that the theory of perceived risk could be used to create "*product positioning maps*" which could be used to identify gaps in the market, ultimately being used to form "*market-segments*". They also suggest influence of buying for others as a potential area for future research.

Objective vs. Subjective Risk

It is important to distinguish between subjective and objective risk as well as the rationale underlying the choice of one over the other in a given research situation. Objective risk refers to a statistical expectation value (i.e. probability) of an outcome occurring based on facts and physical observations (Hansson, 2010). This is distinct from subjective evaluations of risk which are value laden and account for individual perceptions of the riskiness of a given act (Hansson, 2010).

Perceived risk, as understood in consumer behaviour research, differs from alternate conceptualisations of the risk construct. As highlighted by Stone and Grønhaug (1993, p.40), risk as it relates to other disciplines focuses on "*potentially positive and potentially negative outcomes*", whereas perceived risk as it relates to consumer behaviour and marketing has focused primarily on avoiding "*potentially negative outcomes*". Lupton (2013, p.9) asserts that risk, as it has come to be used in contemporary settings, is "*generally used to relate only to negative or undesirable outcomes, not positive ones*". There have, however, been some exceptions to this trend, with some authors addressing benefit perceptions within perceived risk research (Choi, Lee & Ok, 2013).

Whereas some assert that an objective risk must exist in theory, while acknowledging that in practice it is immeasurable within the context of consumers' purchase decisions (Mitchell, 1999), others have argued that there is no such thing as an objective risk in the context of consumer behaviour, given the complexity and subjective nature of the risk dimensions consumers encounter (Stone & Winter, 1985 in Mitchell, 1999). Due to the impossibility of consumers evaluating objective risk,

owing to "*limited cognitive capacity*" (Stone & Grønhaug, 1993, p.40) and incomplete information (Tellis & Gaeth, 1990), perceived risk theory has been applied widely in the marketing literature. To this effect Bauer (1967, p.24) concludes that:

> *"It is inconceivable that the consumer can consider more than a few of the possible consequences of his actions, and it is seldom that he can ever consider these few consequences with a high degree of certainty"*.

In terms of consumer behaviour, perceived risk has been deemed a more appropriate measure of risk, as even in the presence of a low objective risk measure, where an individual perceives higher levels of risk they tend to behave accordingly and seek to reduce their risk exposure (Adams, 1995, p.11-13; Mitchell, 1999, p.64, McCarthy & Henson, 2004). Indeed, the perceived risk literature appears to align to other areas within motivation studies, such as self-efficacy theory and TPB, whereby individually held beliefs regarding behavioural outcomes are considered more meaningful influencers of motivation. Slovic (1987), for example, demonstrates how the disparity between high risk perception levels among citizens and low risk levels determined by professional risk assessors may have potential negative economic consequences, as individuals continue to rely on their own risk perceptions/beliefs.

There also exists a debate as to the exact terminology that should be applied to this particular phenomenon, which stems from the difference between objective and subjective risk. Objective risk, as stated, is based on some probability of loss occurring, which is derived from calculations relating to the likelihood of different outcomes. Uncertainty, however, differs to the extent that the outcomes are unknown. This distinction is best defined by Knight (1948) in Mitchell (1999) who distinguishes between risk and uncertainty, stating that *'risk'* has a known probability, whereas *'uncertainty'* exists in the absence of a precise probability.

Building on this distinction, Stone and Grønhaug (1993, p.40) view this matter as one of "*perceived uncertainty*" rather than "*perceived risk*", as consumers cannot assign probabilities to outcomes, or indeed identify all potential outcomes and as such no meaningful risk determination can be made. Although an interesting distinction, it is lexical in nature and does not meaningfully impact on the subsequent operationalisation of perceived risk research, save misunderstandings arising from

interchangeable use of the two terms and any subsequent lack of rigorous concept definition. Indeed, in practice, the terms have come to be used interchangeably, with the distinction between the two becoming subsequently unclear (Stone & Grønhaug, 1993, p.41; Mitchell, 1999, p.166). However, it is important to distinguish between classical definitions of risk, which adhere strongly to probabilities of known outcomes (Hansson, 2010) and risk as it is viewed in the marketing literature, which detaches itself from the strictures of classical risk and probability theories.

Subjective Risk Constructs

Since Bauer (1960) first introduced the concept of perceived risk, many variations of the construct have emerged, which are summarised in Table 2.2. However, despite the variation in terminology, all of the risk conceptualisations which have emerged exhibit the property of bi-dimensionality (Mitchell, 1999; Brunel & Pichon, 2004). Undoubtedly, the most prevalent conceptualisation of perceived risk is that which Bauer (1960) first introduced, i.e. a perceived risk (PR) composed of *uncertainty* and potentially negative *consequences* (Dowling & Staelin, 1994, p.119). It has been suggested that the bi-dimensional characteristic of perceived risk can be traced to classical risk theory (Volle, 1995 in Brunel & Pichon, 2004).

Table 2.2: Perceived Risk Conceptualisations

Perceived Risk Components	**Citing Author(s)**
Uncertainty & Consequences	(Bauer, 1960; Mitchell & McGoldrick, 1996; Mitchell, 1998)
Product Satisfaction & Probability of Satisfaction Occurring	(Mitchell & Greatorex, 1989)
Product Category Risk (PCR) & Product Specific Risk (PSR)	(Dowling & Staelin, 1994)[5]
Amount at stake & Subjective Certainty	(Cox & Rich 1964, p.33)
Probability of Loss & Importance of Loss	(McCarthy & Henson, 2005)

Given its central role in perceived risk theory, it is worth turning to the concept of *uncertainty*, including the areas in which uncertainty can arise. In his discourse concerning individuals' encounters with risk, Adams (1995, p.1) refers to "*decision making in the face of uncertainty*". Adams (1995) views risk as being ubiquitous,

[5] Dowling and Staelin (1994) closely incorporate Bettman's (1973) model such that PCR is analogous to inherent risk and PSR is equivalent to handled risk. These are discussed in the following section.

presenting itself in all domains and manners of social interactions. Uncertainty has played a key role in the understanding of consumer information search (Korhonen et al., 2011). To this end, much effort has been focused on identifying the various components of uncertainty. Most prominent among such efforts is distinction between *choice uncertainty* and *knowledge uncertainty* (Urbany, Dickson & Wilkie, 1989). Choice uncertainty refers to the uncertainty a consumer has in relation to which product they should chose, whereas knowledge uncertainty refers to uncertainty about what is known about alternatives.

Dowling and Staelin (1994, p.120) forward the notion that feelings such as concern, psychological discomfort and uncertainty arise from consumers' perception of risk. In particular, they rely on the term "*feeling*". However, it is important to distinguish between worry and similar feelings which can be seen as an emotional response, as opposed to perceived risk, which is a form of cognitive assessment (Schmiege, Bryan & Klein, 2009). There is also evidence to suggest that emotional responses to risk can impact the risk reduction strategy employed (Brunel & Pichon, 2004). The affective and cognitive dimensions of decision-making are elaborated upon in Chapter 3.

Inherent and Handled Risk

Bettman (1973, p.184) argues that the overall risk perceived by consumers can be broken into two categories: *inherent risk* and *handled risk*. Inherent risk refers to "*the latent risk a product class holds for a consumer*", whereas handled risk is "*the amount of conflict the product class is able to arouse when the buyer chooses a brand from a product class in his usual buying situation*". Inherent risk perceived by the consumer is influenced by the consumer's perceived ability to construct a reasonable decision rule for purchasing within a product class and the importance of that product class to the consumer (Bettman, 1973). This would suggest that inherent risk perceptions vary among consumers and are a function of product class saliency and self-efficacy beliefs. In the absence of information, it is proposed that handled and inherent risk should be equal (Bettman, 1973). Given the definition of handled and inherent risk forwarded above, this is logical, as information relating to products within a category have the potential to reduce uncertainty, thereby altering handled risk. To this end, Mitchell (1999, p.166-167) defines handled risk as "*the end results*

of information acquisition and risk-reduction processes on inherent risk". However, as pointed out by Lumpkin and Dunn (1990), information acquisition may also increase the overall risk perceived, meaning that information search may either increase or decrease handled risk relative to inherent risk. It is important to understand the risk consumers perceive as inherent to a product category, as this may reduce the likelihood of adopting risk reduction strategies, as will be discussed in Section 2.8.

Risk Dimensions

Throughout the risk literature, various terms have been used to express the different types of potential loss and areas where risk can be perceived, leading to a lack of uniformity regarding terminology and taxonomy. With regards to terminology, terms such as *consequences* (Kaplan, Szybillo & Jacoby, 1974), *risk domains* (Mandel, 2003) and *risk dimensions* (Stone & Grønhaug, 1993; Brunel & Pichon, 2004) have been used, with the latter appearing most prominently. In this instance, risk dimension refers to any area in which a risk can be perceived, and represent generic categories of risk which may exist for a given product. In terms of taxonomy, numerous risk dimensions have been identified within the literature. These include physical, financial, performance, functional, social, psychosocial, psychological and time risks (Kaplan, Szybillo & Jacoby 1974; Mitchell & Boustani, 1993; Stone & Grønhaug, 1993; Mitchell & McGoldrick, 1996; Brunel & Pichon, 2004; McCarthy & Henson, 2005; Mitchell & Harris, 2005).

Jacoby and Kaplan (1972) identify five risk dimensions which attain a reasonably accurate measure of overall risk: performance, financial, social, psychological and physical risk. These were confirmed in a subsequent study by Kaplan, Szybillo and Jacoby (1974). However, in reviewing the literature, Stone and Grønhaug (1993, p.43) expanded on these five dimensions through the inclusion of time risk, thereby identifying "*six dimensions of risk*", which are most commonly cited as influencing overall risk. A brief description of each of these dimensions is provided in Table 2.3. However, in the context of these risk categories, it is important to note that there potentially exists "*innumerable subdivisions*" (Adams, 1995, p.21).

Table 2.3: Risk Dimensions

Risk Dimension	Description
Performance	Potential loss stemming from failure to deliver in relation to one or more performance related criteria (Mitchell & Harris, 2005; Roberts & Pettigrew, 2008) where the product does not function as expected (Grewal, Gotlieb & Mermorstein, 1994). In relation to food, this may include taste, olfaction, satiety and function.
Financial	All monetary costs associated with product acquisition and use, including purchase costs, information search costs, transportation (Mitchell, 1998) shopping (Mitchell & Harris, 2005), value for money (Roberts & Pettigrew, 2008) and repair/replacement costs.
Social & Psychological	Loss of esteem and respect including the prospect of being viewed unfavourably by important referents arising from product purchase and/or consumption (Choi, Lee & Ok, 2013). Social and psychological risk have often been combined under the category of psychosocial risk (Mitchell & Boustani, 1993), with the distinction between the social and psychological elements of psychosocial risk not always clear. However, the psychological component relates chiefly to anxiety arising from social loss, leading to the two concepts not always being decoupled.
Physical	Potential negative physical outcomes such as those relating to health and appearance (Mitchell & Harris, 2005). In the context of food, physical risk typically encompasses physical illness (short- or long-term) arising from consumption (Choi, Lee & Ok, 2014) and can stem either from the food stuff itself or from subsequent preparation of the product. Physical risks can be compounded by factors such as existing illness and knowledge deficits.
Time	Potential loss of time spent in decision-making and any further actions required for product use. Time risk can include the amount of time that would be required to use the product, rectify faults, (Mitchell & Harris, 2005), return the product (Cox & Rich, 1964) and time to find and purchase a product (Mitchell & Harris, 2005).

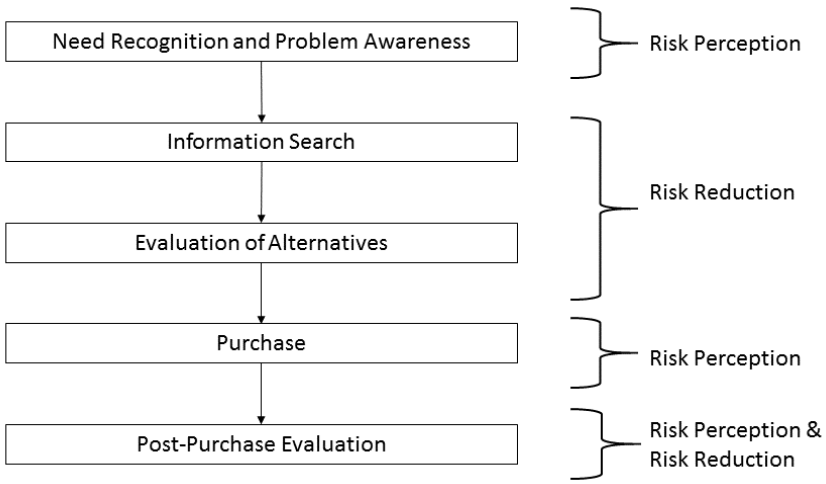
Evidence suggests that the saliency of different risk dimensions varies in accordance with the product category (Kaplan, Szybillo & Jacoby, 1974; Mitchell & Greatorex, 1989; Stone & Grønhaug, 1993), with these findings supported in respect of food products (McCarthy & Henson, 2002). For example, in the case of beef consumption, McCarthy and Henson (2005) found that financial and performance risk were most important, whereas for wine purchasing, Mitchell and Greatorex (1993) found that functional, financial and social risk were most important. Kaplan, Szybillo and Jacoby (1974, p.290) term the similarity of the respective saliency of various risk dimensions for products in the same product category, as "*risk-consequence*

hierarchies". In the context of perceived risk research, it is therefore important to determine the salient risk dimensions which impact consumer decision-making.

2.8 Risk in the Decision-Making Process

In the context of consumer decision-making, risk can be perceived "*before, during and after the purchasing act*" (Brunel & Pichon, 2004, p.363). To deconstruct this statement, it is first necessary to look at the process by which consumers make purchase decisions. Consumer decision-making refers to "*the processes determining product choice in a situation where multiple options are available, and how choice is affected by information on the choice alternatives*" (Grunert & Wills, 2007, p.386). The stepwise model of consumer decision-making proposed by Engel, Kollat and Blackwell (1968), known as the EKB model, has formed the basis of discourse around consumer decision-making over the last number of decades and offers a useful means for considering risk in the decision-making process, as illustrated in Figure 2.5.

Figure 2.5: Risk within the EKB Model of Consumer Decision-Making



The EKB model views the consumer decision-making process as being comprised of five sequential stages. The recognition of needs or problems is the catalyst which initiates the decision-making process. In both the information search phase and evaluation of alternative phase, uncertainty is present, either in the form of knowledge and/or choice uncertainty, thereby resulting in information search. Risk, however, pervades this process as uncertainty may be present in all phases of the decision-making process, with information potentially reducing uncertainty. However, even after gathering information, uncertainty may remain, either as a result

of incomplete information or self-doubt related to an individual's ability to correctly interpret information. Having considered the occurrence of risk in the decision-making process, this review turns to consider the risk reduction strategies used by consumers.

2.8.1 Risk Reduction Strategies

When confronted with risk, consumers seek to reduce the likelihood of incurring a loss as a result of product purchase and/or consumption. There are two 'generic approaches' to reducing risk, based on the risk conceptualisation, which defines perceived risk as a product of *uncertainty* and *consequence* (Cox & Rich, 1964; Mitchell & McGoldrick, 1996; Brunel & Pichon, 2004). These two approaches seek to either reduce the uncertainty component and/or the impact of potential negative consequences. When consumers try to reduce the amount at stake (i.e. the potential loss), this generally results in the purchase being foregone entirely (Cox & Rich, 1964).

Consequently, there is a general consensus that the primary means of risk reduction, if not the most ideal means of risk reduction from a marketing perspective, is information search (Bauer, 1960; Cox & Rich, 1964; Mitchell & Greatorex, 1989. As such information typically forms the basis of risk reduction models (Dowling & Staelin, 1994) and taxonomies (Brunel & Pichon, 2004). In keeping with the distinction put forward by Locke and Latham (2006) between existing knowledge and knowledge which must be acquired, Cox and Rich (1964) draw a distinction between information seeking and use of existing information in terms of the resultant behaviour and individuals' risk-taking behaviours. This distinction relates to the amount of information search the consumer is prepared to undertake in evaluating the product.

Brunel and Pichon (2004), using the concept of coping (i.e. the processes which are employed to reduce the negative impact on one's psychological wellness), developed a taxonomy of risk reduction strategies. In compiling the primary risk reduction strategies undertaken they identify four different categories of risk reduction strategies: confrontation, avoidance, clarification and simplification. These categories seek to integrate Bettman's (1973) risk classification and are summarised in Table 2.4. Brunel and Pichon's (2004) taxonomy differentiates between cognitive and affective

strategies of risk reduction. This distinction between cognitive and affective information strategies is elaborated on in Chapter 3.

Table 2.4: Matrix of the Strategies of Risk Reduction[6]

	Strategies focused on the problem	**Strategies focused on the emotion**
Inherent risk-reduction strategies	*Confrontation Strategies* (Information Search; Problem Resolution; Use of Intrinsic Cues; Purchasing and Stocking)	*Avoidance Strategies* (Behavioural Disconnection; Denial; Fatalism; Cognitive Repression; Magic thought)
Handled risk-reduction strategies	*Clarification Strategies* (Search for independent information; search for commercial information; search for legal, trials)	*Simplification Strategies* (Confidence in the producer; confidence in the retailer; confidence in the state; confidence in associations)

It is worth noting that the term risk reduction strategy has been used in an ambiguous manner. Mitchell and Boustani (1993, p.20-21) use the terms 'risk reliever' and 'risk reduction strategy' interchangeably, whereas Brunel and Pichon (2004) use the term 'risk reduction strategy' to refer to a broader set of activities in which risk relievers can be utilised.

2.8.2 Risk Relievers

The terms risk reliever (McCarthy & Henson, 2004) and risk reducer (Brunel & Pichon, 2004, p.362) have come to be used interchangeably within the literature to refer to "*a procedure or action, initiated by either the buyer or the seller that is used to reduce the perceived risk*" (Brunel & Pichon, 2004, p.362). In the presence of uncertainty, individuals use heuristics to assess the risks associated with a given behaviour (Kahneman & Tversky, 1982, p.32). However, all heuristics used are not valid and may "*lead to large and persistent biases*" (Slovic, 1987, p.281).

The cues used by consumers when seeking to relieve risk may be intrinsic or extrinsic to the product, with preferred cues varying across product categories (McCarthy & Henson, 2005). However, the significance of cues used to reduce risk exposure are open to misinterpretation on the part of the consumer (Grunert, 1997).

[6] Adapted from Brunel & Pichon (2004)

When considering cues, it is worth noting that one product attribute may be related to multiple risk dimensions (Mitchell & Harris, 2005, p.829), e.g. price may represent financial risk and social risk, where it is believed that peers will view the purchase unfavourably.

In arriving at a risk determination, consumers must first determine, drawing on their own knowledge, the risk they perceive as being attached to a particular product. To this effect Mitchell and Greatorex (1989, p.33) view consumers as going "*through a learning curve*" as markets and consumers become more educated, with this learning curve having implications on the products purchased within the category. Mitchell and Greatorex (1989) also propose a relationship between knowledge and risk perceptions, whereby greater knowledge and confidence in a product category reduces the risk perceived by the consumer. A summary of most commonly used risk reducers is presented in Appendix 2.1.

2.9 Integrating Perceived Risks and Perceived Benefits

In the context of goal pursuit and need fulfilment, it is clear that risk and benefit perceptions do not occur in isolation from one another, despite the almost exclusive focus of the perceived risk literature on negative outcomes. Indeed, Mitchell's (1998, p.172) assertion that perceived risk theory "*mandates that the retailer who can offer the lowest-risk products and stores will have a significant competitive advantage*", typifies over emphasis of the role of perceived risk, which pervades the literature and fails to appreciate the complimentary role of benefit perceptions, as has been the case in risk literatures in other domains (Fischhoff et al., 1978). This conceptualisation of risk, concerned exclusively with negative outcomes, conflicts with a large breadth of the motivation literature discussed previously, particularly the VIE model (Van Eerde & Thierry, 1996) and the avoidance/approach motivation view (Elliot, 1999), which encompass both the pursuit of benefits and avoidance of negative outcomes. In this regard, it could be argued that, from a motivational perspective, perceived benefits in motivation studies are akin to goal attainment, whereas perceived risks relate to goal frustration.

In a limited number of instances, authors have integrated the element of benefit into the different risk domains to account for the role of benefits, but this has lacked

consistency and structure. For instance, Mitchell (1998, p.172) asserted that "*performance risk … can be related to the concern that the product or store chosen might not perform as desired and thus not deliver the benefits promised"*. In such instances, benefits are subsumed under risk, as distinct from other streams of risk research, wherein risks and benefits are treated as distinct variables (Alhakami & Slovic, 1994). There is ample evidence to suggest a relationship between perceived risks and benefits (Fischhoff et al., 1978; Alhakami & Slovic, 1994; Frewer, Howard & Shepherd, 1998), such that it appears that individuals are unable to decouple risk and benefit perceptions when evaluating an action or item (Alhakami & Slovic, 1994). Indeed, the relationship between risk and benefit and the impact of this on subsequent attitude formation has been investigated in detail in areas beyond the marketing discipline (Fischhoff et al., 1978).

Although the confluence of risk and benefit considerations has received attention in the food context, research to date has been concerned primarily with consumers' response to risk and benefit communication strategies (Fischer & Frewer, 2009) and the implications of these at a broader societal level (Frewer et al., 2016), including the extent to which information leads to risk or benefit responses (e.g. Frewer, Scholderer & Bredahl, 2003). Yet, even in this domain of research, there has been a tendency towards focusing on risk or benefit in isolation (Frewer et al, 2016). This approach, which is concerned with risk and benefit communication, is distinct from the risk/benefit lens adopted in this study, which frames information search motivation in terms of individuals' risk and benefit orientations and the subsequent impact of these on information search.

Drawing on the interrelatedness of risk/benefit perceptions, the perceived risk literature has alluded to the role of quality in consumers' risk determination process. However, the exact nature of this relationship is not always clear. In the case of Bettman (1973), the term quality as it relates to risk determinations is used in an ambiguous and all-encompassing construct, with the dependency of quality perceptions being unclear. Bettman (1973, p.185) suggests that quality perceptions of a certain product class can influence the perceived inherent risk associated with that product class, thereby positing a complex and dependent relationship between risk and quality perceptions, whereby for instance a higher mean quality level within a product

class reduces overall risk perceived. Given the apparent confounding of risk and benefit in individuals' minds, Alhakami and Slovic (1994, p.1096) suggest that it may be possible to alter risk perceptions by manipulating benefit perceptions and vice versa. This has potential implications for both intervention and marketing based strategies.

The concept of acceptable risk level discussed by Fischhoff et al. (1978) relates closely, at a conceptual level, to the idea of risk tolerance level, as has been advanced elsewhere within the context of perceived risk (Cox & Rich, 1964; Mitchell & Greatorex, 1989, p.34). Acceptable risk has come to be used widely within the perceived risk area and has been subsequently integrated into various perceived risk models (Dowling & Staelin, 1994). Findings from Fischhoff et al. (1978, p.137) suggest that those who focus on benefits, as opposed to risk, have a higher risk acceptance level. This has potential implications for how a product may be presented to consumers, i.e. that benefits should be brought to the forefront of the minds of consumers who are risk orientated in order to increase the likelihood of product acceptance. With this being said there is a clear precedence for exploring the underlying risk and benefit considerations driving motivation within the consumer information search and decision-making context.

Therefore, drawing on both the motivation literature broadly and specific risk and benefits literatures, there is a clear basis for considering the role of risk and benefit perceptions from a motivational perspective. Indeed, previous research conducted in both the risk and benefit literatures has highlighted the respective merit of both of these constructs in marketing efforts, including consumer segmentation, communication and product design. Exploring in tandem the respective roles of risk and benefit considerations in a given decision-making situation may therefore potentially offer new insights into consumer motivation and decision-making.

2.10 Conclusions and Research Directions

This chapter provided a comprehensive review of the motivation construct, illustrating the factors which give rise to motivation, the utility of motivation theory in understanding behaviour enactment and the limitations of motivation in explaining behaviour. Specifically, the interaction between goals and motivation was given

particular attention, given the role of goals in directing and modulating motivational drive and effort expended in behaviour enactment. Drawing on this review, it is clear that any attempt to understand the motivational determinants of label usage within the information search phase of decision-making must account for the endogenous factors impacting usage in order to gain a holistic understanding.

Additionally, the literature highlights the role of individually held beliefs regarding behaviour and behaviour outcomes in influencing motivation over objective measures. This is highlighted in Bandura's (1977) self-efficacy theory, Ajzen's (1991) TPB and the perceived risk literature (Bauer, 1967; Stone & Winter, 1985 in Mitchell, 1999), as well as risk research from other domains of study (Alhakami & Slovic, 1994). This focus on individual level beliefs regarding behaviour and behavioural outcomes aligns to broader paradigm shifts in motivation studies over the last number of decades, which have normalised the use of introspective techniques, thereby allowing for the exploration of these idiosyncratic belief-based constructs (Locke, 1996; Campbell, 1999; Jack & Roepstorff, 2002). Limitations with this approach have also been identified, particularly, habit theory raises questions regarding the efficacy of introspection in capturing and explaining subconscious and habitualised behaviours (see Section 2.6). In particular the author has highlighted potential difficulties underlying Wood and Neal's (2007) habit goal interface, with the ability to discern between participants' accurate introspection and post-hoc justification of behavioural performance presenting an issue for concern, which has methodological implications.

In reviewing the extant motivation literature, there exists a clear basis for explicitly considering motivation from a risk/benefit perspective. Indeed, the risk/benefit paradigm to understand information usage motives within the consumer decision-making process appears to align well with existing motivation research. There is ample evidence to suggest that the motivation construct can be either positively or negatively valenced (Van Eerde & Thierry, 1996; Elliot, 1999; Bjørnebekk & Gjesme, 2009; Arnold & Reynolds, 2012). This is further supported by a large body of evidence which demonstrates the confounding of risk and benefit perceptions in individuals' evaluations and the potential impact of these perceptions in terms of the motives driving consumer behaviour (Fischhoff et al., 1978; Alhakami & Slovic, 1994; Frewer, Howard & Shepherd, 1998). To date, the confounding of risk

and benefit perceptions has been under-explored in the consumer domain, with perceived risk and benefit literatures developing largely independently of one another.

As discussed, risk and benefit perceptions occur throughout the decision-making process (Brunel & Pichon, 2004). The following chapter will focus specifically on the information search and evaluation of alternatives phases of the decision-making process. In particular, focus will now be directed to the role of motivations as it relates specifically to label usage in the context of consumer decision-making, paying heed to the considerations outlined above. Those seeking to incorporate motivation studies into their research must firstly avoid becoming complacent to the discursive variations in terminology use throughout the literature. This review sought to address these variations by clearly demarcating the researchers understanding of the key aspects by clearly defining the motivation construct (see Section 2.2) and delineating the relevant components of motivation (see Section 2.4).

As this review has illustrated, caution must be taken when seeking to use motivation as a means of interpreting and predicting behaviour, with habitual behaviours requiring special attention. Although exhibiting the property of goal-directedness (Ajzen, 1985; Aarts, Verplanken & van Knippenberg, 1998; Wood & Neal, 2007), habits occur on a subconscious level and fall outside the scope of behavioural theories such as TPB which assume conscious deliberative decision-making (Aarts, Verplanken & van Knippenberg, 1998). Indeed, the automaticity and efficiency of habitual behaviours reduces cognitive loading by eliminating the need for constant reoccurring evaluations. In particular, there is much evidence to suggest that food as a product is a low involvement item, and as such many purchases made are automated in nature and have become habitualised over time. The concept of automaticity and subconscious behaviour enactment is further considered in Chapter 3, with methodological proposals to address this limitation of motivation theory presented in Chapter 4.

This chapter has illustrated the endogenous influencers of motivation, Chapter 3 will now proceed to illustrate the exogenous influences, paying special attention to food labelling. The combined relevance of both endogenous and exogenous influencers will then be framed through a discussion of attention and information

processing, to provide a comprehensive overview of label usage motivation, to inform study direction and design.

Chapter 3
Food Labelling, Decision-Making, Cognition & Affect

3.1 Introduction

Drawing on the risk/benefit approach to motivation outlined in Chapter 2, the purpose of this chapter is to explore the role of labels in the context of the consumer decision-making process, through examining the factors which contribute to the usage and non-usage of food labelling information. Given the role of labels in the decision-making process, there has been an increased interest in labelling as a means of communicating product information, particularly nutritional information, owing to an increased prevalence of non-communicable diet-related diseases (Grunert & Wills, 2007; Helfer & Schulz, 2014; Siegrist et al., 2015; Wąsowicz et al., 2015; Ni Mhurchu, et al., 2018). However, labels have been ineffective in enacting dietary change at a population level, with the discrepancy between label penetration and actual usage being the subject of much debate (Gregori et al., 2014).

As an information source, food labels represent one of the various cues that can be used to reduce risk (Brunel & Pichon, 2004) and evaluate quality (Bredahl, 2004), thereby reducing uncertainty and shaping expectations regarding the potential benefits and losses arising from consumption and influencing decision-making (Mawad et al., 2015). This chapter deals specifically with information acquisition and information processing. Building on the endogenous factors influencing label usage discussed in Chapter 2, exogenous factors are explored. Discussion then turns to the role of attention and information processing in consumer decision-making, with particular consideration of the cognitive and affective systems underpinning information processing and decision-making.

3.2 Food Labelling

Although the term ‘food label’ as used in the vernacular is widely understood, there are various definitions within both labelling literature and public policy, which vary in scope. Colloquially, labelling is understood to refer to information affixed to a food product, which aligns with the definition of labelling set out in Regulation (EU) 1169/2011, the primary regulation governing European food labelling:

> *“any words, particulars, trade marks, brand name, pictorial matter or symbol relating to a food and placed on any packaging, document, notice, label, ring or collar accompanying or referring to such food”.*

The labelling definition adopted by Regulation (EU) 1169/2011 views labelling in the 'traditional' sense, i.e. as information affixed to products. In acknowledging the changing role of information provision, the regulation considers the need for adaptability to allow for "*a rapidly changing social, economic and technological environment*" (Reg (EU) 1169/2011, Preamble, 51). However, this falls short of capturing the changing role of labels arising from technological advances, including the adoption of quick response (QR) codes (Narang, Jain & Roy, 2012; Atkinson, 2013; Kim & Woo, 2016), near field communication (NFC) enabled labels (Borrego-Jaraba, 2013; Diageo, 2015) and smart labels (Skinner, 2015), which facilitate a move from 'traditional' labelling to dynamic technology enabled labels. Although this research will follow the definition put forward in Regulation (EU) 1169/2011, which views labelling in the 'traditional' sense, the study will also consider digital sources of information accessible via the label through pull technology, specifically QR codes, to explore changes in how consumers interact with product labels and inform their purchase decisions.

3.2.1 Regulatory Status

The increased interest in product labels among both researchers and health professionals has not gone unnoticed by policy makers, with multiple countries moving towards more rigorous labelling requirements (Kozup, Creyer & Burton, 2003; Miller & Cassady, 2015). In particular, recent changes in EU labelling regulation enacted by Regulation (EU) 1169/2011, which expand on Regulation (EC) 1924/2006 and Regulation (EC) 1925/2006, have moved the European food industry towards harmonisation of food labelling. Globally, however, it is clear that the level of regulation around usage of health-related claims varies widely, with the American Food and Drugs Administration, in particular, being noted as facing clear shortcomings (Amos et al., 2014). Consequently, consumer research in food labelling must recognise the broader legislative environment in which labels exist (Leathwood et al., 2007). Regulation (EU) 1169/2011 (L304/18), seeks to "*achieve a high level of health protection for consumers and to guarantee their right to information*", through reconciling previous regulation and establishing minimum requirements for the provision of information for food products.

In accordance with Article 55 of Regulation (EU) 1169/2011, the regulation applied as of the 13th of December 2014, with the exception of the article relating to the provision of a nutrition declaration, Article 9(1)(l), which came into force on the 13th of December 2016. Given the imminent implementation of the regulation in its entirety at the time of research design, this regulation guided study design, particularly, the design of experimental stimuli as set out in Section 4.3.2.

3.2.2 Label Components

Food labels are comprised of various components and labelling systems, which seek to directly and indirectly inform consumer decision-making. These include, but are not limited to, nutrition facts panels (Blitstein & Evans, 2006; Miller & Cassady, 2012), ingredients lists (Miller & Cassady, 2015), nutrition labelling (Grunert, Wills & Fernández-Celemín, 2010; Hodgkins et al., 2012), health claims (Leathwood et al., 2007), sustainability labels (Grunert, Hieke & Wills, 2014; Grebitus, Steiner & Veeman, 2015), and front-of-pack labels (Bialkova & van Trijp, 2011), including traffic light systems (Maubach & Hoek, 2010), health logos (Hodgkins et al., 2012) and guideline daily allowances (Hodgkins et al., 2012). This section aims to provide a brief overview of the primary label components and relevant considerations in the context of consumer decision-making.

Ingredients List

The product's composition is communicated via the ingredients list. Ingredients are listed in descending order of weight in the product and refer to:

> *"any substance or product, including flavourings, food additives and food enzymes, and any constituent of a compound ingredient, used in the manufacture or preparation of a food and still present in the finished product, even if in an altered form"* (Regulation (EU) 1169/2011, Art. 2: 2f)

Additionally, all primary allergens specified in the Regulation are highlighted in the ingredients list in bold, to highlight to consumers where the source of the allergen lies. Allergens are also repeated separately from the ingredients list in an allergens list. The presence or absence of certain components may be used to make inferences relating to the product.

Nutritional Information

Nutrition labels provide consumers with information relating to the nutritional composition of food products. Typically, nutritional information is located on the back-of-pack (BoP), in the form or nutritional tables or lists (Ni Mhurchu et al., 2018). However, consumers often lack time resources or motivation to engage in this level of information search (Drichoutis, Lazaridis & Nayga, 2006). In recent years, it has also been common for summary information to be located on front-of-pack (FoP) labels (van Herpen & van Trijp, 2011; Siegrist, Leins-Hess & Keller, 2015; Ni Mhurchu et al., 2018). FoP nutritional information may be interpretative, incorporating colours and symbols to facilitate understanding, or non-interpretative, where quantitative nutritional information is provided (Ni Mhurchu et al., 2017). Nutritional values combine textual and numeric information, with the latter typically requiring great cognitive effort (Maubach & Hoek, 2010), although there is no consensus as to which nutrition format is most effective at conveying information (Sanjari, Jahn & Botzug, 2017).

Front-of-Pack (FoP) Labelling

The purpose of FoP labelling is to summarise key nutritional information contained on the back of pack to draw attention to these values such that they will be incorporated into the decision-making process (Watson et al., 2014; Hodgkins et al., 2015). Despite disagreement in the literature relating to the efficacy of various FoP labelling schemes in informing consumer choice and bringing about healthy dietary change (Hodgkins et al., 2012, p.807) FoP labelling has increased in both popularity and prevalence over the last number of years in response to increased efforts to enable consumers to make healthy dietary choices (Grunert, Wills & Fernández-Celemín, 2010). One of the main reasons underpinning the increased prevalence of FoP labels, is their relative effectiveness at capturing attention (Antúnez et al., 2015; Siegrist, Leins-Hess & Keller, 2015) through disrupting normal information search behaviours. However, there are multiple schemes in existence within the European Union which has made classification of FoP labels difficult (Hodgkins, 2012).

It has been suggested that for FoP labels to be effective they should meet three criteria: *ease of use*, inclusion of underlying *nutritional values* and be *non-deceptive* (Grunert & Wills, 2007). As is clear throughout both the literature and legislation, the

concept of the information being accessible and easy to use is a recurring theme. This raises questions regarding consumers' expectations and understanding, including what constitutes common knowledge, and reasonable interpretive abilities on the part of consumers. Indeed, Regulation (EU) 1169/2011 asserts that nutritional information should "*appeal to the average consumer and … be simple and easily understood"*. In both operational and aspirational terms, this objective is problematic as it raises questions as to how an average consumer should be defined and accepts the existence of 'below-average' consumers for whom information is not fully accessible. Mandatory FoP labelling is not required under current regulation, but where nutritional information is repeated in the 'principal field of vision' either the energy value must be reported on its own **or** in conjunction with amounts of fat, saturates, sugars and salt (Regulation (EU) 1169/2011, Article 30). Three main FoP schemes have been identified in the EU: guideline daily amount (GDA), traffic lights (TL) and health logos (Storcksdieck genannt Bonsmann et al., 2010 in Hodgkins et al., 2012).

GDA labels provide information on calories, fat, saturated fat, sugar and salt in grams per serving as a percentage of the daily reference intake of an average adult (Dean et al., 2015). In recent years, GDA labels have been combined with colour coding schemes to increase ease of interpretation. In such instances, they are semi-directive in nature, as they combine numeric data, and directive elements, i.e. colour coding (Bialkova et al., 2014).

Traffic Light (TL) systems

There has been a move towards combining numeric values on FoP labelling with a colour-coded traffic light system (FSA, 2010; Hodgkins et al., 2012). It has been argued that colours have an advantage over other cues as consumers can easily and quickly interpret content (Wąsowicz, Styśko-Kunkowska & Grunert, 2015), with findings suggesting that polychromatic nutritional information is more effective at capturing attention than monochromatic labelling (Antúnez et al., 2015). Indeed, there is a strong body of evidence to suggest that both content and design of food labelling has attention capturing properties (Siegrist, Leins-Hess & Keller, 2015; Oliveira et al., 2016; Peschel, Orquin & Mueller Loose, 2019). The TL system uses colour coding to enable consumers to make quicker decisions regarding the healthiness of food products. Typically, this involves the use of red, amber and green colour codes,

although there are some variations among countries, with France's, 'Nutri-Pass' system using an altered amber, yellow and green approach (Hodgkins et al., 2012).

A number of potential shortcomings associated with the TL system have been noted. These included the impact of connotations around the colour red, which may suggest that the product should not be consumed (Grunert & Wills, 2007), implicit associations regarding the product as a whole arising from use of colour coding (Antúnez et al., 2015) and the potential of products bearing green colour codes to induce a halo effect. This has given rise to concerns regarding the efficacy of such schemes in producing healthier food choices. Furthermore, for any given product, a consumer may be confronted with an array of colours and not exclusively green, amber or red (Hodgkins et al., 2012). Consequently, consumers still need to interact with the label if they wish to evaluate products' overall nutritional value.

Health Claims and Logos

Health logos and claims, as distinct from GDAs, contain no numerical values, as the logo itself identifies that the product has reached some predetermined criteria relating to the nutritional values present and/or the production methods employed (Hodgkins et al., 2012; Miller & Cassidy, 2015). From a time perspective, there is a clear advantage for consumers in using such logos in their decision-making process. In particular, health logos and symbols can reduce the need for consumers to engage in numeric processing, which has been shown to act as a barrier to label usage (Maubach & Hoek, 2010). Furthermore, they can draw immediate attention to product characteristics that may be important to the consumer. However, such labels require consumer trust, particularly when decisions using health logos are made in the absence of knowledge regarding the criteria required for the award of said logo. It has been suggested that for a label or logo to be credible, it must stem from a third-party organisation separate to the manufacturer with no vested interest in sales (Fenko, Kersten & Bialkova, 2016). However, it is uncertain how plausible it is to expect consumers to be aware of the origin of all label certifications and logos, particularly given the multiplicity of schemes, with recent research identifying a total of 901 food label schemes in operation (Ipsos- London Economics EAHC, 2013 in Gracia & de-Magistris, 2016).

Symbols and Logos

In addition to health claims, food labels often incorporate additional logos to communicate product attributes, such as provenance indicators, quality indications, Fairtrade logos (Rousseau, 2015), and sustainability markers (Brach, Walsh & Shaw, 2018). Such labels typically convey credence attributes, which refer to aspects of the product which cannot be assessed by consumers before, during or after purchase (Oude Ophuis & van Trijp, 1995; Brunsø et al., 2005). Trust in the information provided plays a major role in consumers' acceptance of credence labels (Grunert, 2002; Brunsø et al., 2005). However, credence labels have the potential to motivate consumers' purchase decisions (Bernués, Olaizola & Corcoran, 2003). Food credence attributes include 'sustainable', 'healthy' and 'organic' (Oude Ophuis & van Trijp, 1995; Bredahl, 2004). As credence attributes cannot be discerned by the consumer upon consumption, they must be actively communicated to the consumer, most commonly via the product label (Grunert, Bredahl & Brunsø, 2004).

Product attributes which have been communicated through credence labels can be grouped into two categories. The first of these categories relate to labels which pertain to society as a whole such as Fairtrade logos, ecological footprint labels and sustainability logos (Grebitus, Steiner & Veeman, 2015). The second category of credence-based logos act at an individual level and relate to label elements such as health claims, which "*address the relationship between a specific nutrient and a disease or health condition*" (Kozup, Creyer & Burton, 2003, p.20), and intangible product benefits. Similar to TL labels, credence labelling schemes have been noted as having the ability to attract consumer attention through disrupting established search behaviours.

3.2.3 Categorisations

In seeking to categorise the numerous types of information presented on product labels, multiple characteristics have been considered, including the location of information on the package (Grunert & Wills, 2007), the level of aggregation of information (Lytton, 2010) and the directiveness of information and symbols provided (Hodgkins et al., 2012), whereby directiveness refers to "*the degree to which they [labels] provide normative information about healthiness*" (Hodgkins et al., 2009 in

van Herpen & van Trijp, 2011, p.149). The concept of label element directiveness forwarded by Hodgkins et al. (2012) is reflected in van Herpen and van Trijp's (2011) argument that FoP labelling schemes occur on a continuum ranging from detailed information with no conclusions (e.g. nutritional tables) to conclusions with no detailed information (e.g. logos and symbols). Although there are differences in the degree of specificity of the various approaches to developing a labelling taxonomy, in particular the fact that van Herpen and van Trijp's (2011) and Hodgkins et al.'s (2012) approaches focused solely on FoP labelling, while Lytton's (2010) taxonomy focuses on nutrition profile labels, they all have as a common thread the degree of detail of information provided.

The degree of detail of information provided appears to be related to the degree of information processing required by consumers. Indeed, Hodgkins et al. (2012, p.813) found that, with regard to FoP labelling, an inverse relationship exists between label directiveness and information provided, such that summarised information presented conclusions whereas detailed (non-summarised information) required more cognitive effort on the part of the consumer. Given the tendency for summary information to occur in FoP labels and detailed information to be placed on BoP labels, the location-based approach taken by Grunert and Wills (2007), which distinguishes between FoP and BoP information, mirrors to some extent this variation in information detail.

Differences between consumers' preferences for directive and non-directive labelling vary at the consumer level, with those who prefer to make a quick decision responding positively to directive (aggregate) information, while others perceive summary evaluations of a product's nutritional value negatively, as they prefer to receive more detailed information to reach their own conclusions regarding the product (Hodgkins et al., 2012). Potential explanations for this preference include self-efficacy beliefs, trust and a desire for transparency.

Although multiple attempts to categorise label elements in relation to specific label areas have been made, even a fleeting overview of the body of literature around food labelling makes the lack of a common and agreed upon taxonomy for discussing and categorising *all label components* (i.e. the entire label) evident. Indeed, this could

well be explained by the fact that much of the research conducted in the area has tended to focus exclusively on a specific label area (i.e. front-of-pack) or label component (i.e. health symbols) (Blitstein & Evans, 2006; Leathwood et al., 2007; Grunert, Wills & Fernández-Celemín, 2010; Bialkova & van Trijp, 2011; Hodgkins et al., 2012; Miller & Cassady, 2012; Grunert, Hieke & Wills, 2014). The implications of the absence of an agreed upon taxonomy appears in part related to the lack of agreed scope of labelling definitions mentioned previously. Consequently, as is detailed further in Section 4.3.2, this study addresses the absence of such a taxonomy through a label content audit to guide the development of experimental labelling stimuli.

3.2.4 Moving to Dynamic Food Labelling

As alluded to in Section 3.2, the role of labels is changing in line with technological advances. However, despite an increase in manufacturer use of tools such as QR codes (Narang, Jain & Roy, 2012; Atkinson, 2013), NFC enabled labels (Borrego-Jaraba, 2013; Diageo, 2015) and smart labelling (Skinner, 2015), there has been little focus on the role of labelling as a 'dynamic' communication medium. Undoubtedly, the internet has revolutionised consumption culture, although traditional food retailers continue to play a pivotal role in exposing consumers to new food product offerings and acting as one of the primary fora for purchasing decisions (Inman, Winer & Ferraro, 2009; Nielsen, 2017). Consequently, labels will continue to have an important role to play in the future, yet the specific nature of that role may change. There appears to be two primary avenues through which such developments may supplement existing label offerings. Firstly, they can support ongoing marketing efforts, and secondly, they may offer additional information and supplementary resources to support decision-making. This section considers alignment of these developments in labelling to marketing trends and situates them within the broader risk/benefit literature.

Mobile Marketing

In retail environments, shopper-facing technology can result in more informed purchase decisions, benefiting both consumers and businesses (Inman & Nikolova, 2017). However, despite the value of location-based mobile marketing in influencing purchasing decisions (Bues et al., 2017), mobile-led information search activities within the retail environment remain relatively low, particularly within low-

involvement product categories (Holmes, Byrne & Rowley, 2013), despite the reported importance of information and transparency among consumers (Kehagia, Colmer & Chryssochoidis, 2017; Food Marketing Institute, 2018). With new product failure rates in the food sector estimated at between 50-75% (Dijksterhuis, 2016), for both new and existing products to be successful, they must not only meet consumer needs, but effectively communicate their value in a highly competitive marketplace.

QR codes and NFC tags offer a means through which to leverage labelling in the mobile marketing effort. Mobile marketing refers to "*the two way or multi-way communication and promotion of an offer between a firm and its customers using a mobile medium, device or technology*" (Shankar & Balasubramanian, 2009, p.118). Within the retail environment, smartphones have an increasingly prominent role, with usage going beyond simple information search to include mobile payment (de Kerviler, Demoulin & Zidda, 2016), mobile marketing (Shankar et al., 2010) and promotional offers (Hui et al., 2013). Mobile marketing content is delivered through push or pull techniques (Barnes, 2002). Whereas push marketing involves sending a message to a consumer, pull marketing requires the consumer to opt-in to a message (Barnes, 2002; Atkinson, 2013). Although pull marketing techniques require consumers to initiate communication, it has been argued that they offer greater potential in mobile marketing as a less obtrusive (Atkinson, 2013), inexpensive means of transmitting information (Ryu, 2013), which allow consumers greater control over the content they receive (Watson, McCarthy & Rowley, 2013).

Within the context of food labelling, one of the most ubiquitous forms of pull marketing, given their relative inexpensiveness, is QR codes. QR codes are a two-dimensional matrix barcode capable of storing greater amounts of information than traditional barcodes and can be scanned using a smartphone device to access company websites (Ryu, 2013), thereby bridging the gap between online and offline content in multichannel marketing (Okazaki, Li & Hirose, 2012). QR codes were not initially as successful as envisaged, even among more tech savvy consumer segments (Sago, 2011), owing in part to a lack of access to technology and understanding as to their purpose. Nevertheless, recent developments suggest a revival of the QR code with strong performance and more diverse applications in the Chinese market, spreading to America and Europe (Armstrong, 2017). Since their introduction, there has been a

sharp increase in smartphone ownership and a broadening of services offered over the QR platform. Furthermore, research suggests that consumers are now looking for greater transparency in food offerings and express a willingness to switch to products with more transparent manufacturers and look elsewhere when additional information is required (Food Marketing Institute, 2018).

Food is a low-involvement product, with research highlighting that individuals engage in minimal search under low-involvement conditions (Beatty & Smith, 1987). Yet, QR codes (as a form of pull marketing), require increased consumer effort. Previous research indicates that, as a form of pull marketing, QR codes may have more potential for high involvement categories (Narang, Jain & Roy, 2012), thereby raising questions of their merit in the context of food labelling, with perceived consumer utility remaining a matter for debate (Higgins, McGarry Wolf & Wolf, 2014). Involvement, as a concept, has been subject to a number of interpretations, including 'enduring involvement', 'situational involvement' and 'purchase involvement' (Parihar, Dawra & Sahay, 2018). Laurent and Kapferer (1985) view involvement as a multidimensional construct, comprising risk importance, perceived risk, sign value and hedonic value. Drawing on this approach to involvement, this study focuses on a category low in risk involvement. Although items within the food retail context do present varying degrees of risk, these risks are generally of lesser import when compared with other product categories such as electronics, white goods, automobiles, etc.

Considering this revival of QR codes, there is a need to fundamentally reconsider their role and potential to fulfil unmet consumer needs. Particularly, in an era where consumers expect greater transparency across the food system (Kehagia, Colmer & Chryssochoidis, 2017), QR codes could represent one means to enhance consumers' understanding of issues of product provenance and production (Bovay & Alston, 2018). Manufacturers' provision of such information may also positively impact consumer willingness to buy, while reducing purchasing risk.

Additionally, dynamic labelling applications (apps) may offer means of framing information or providing supplementary resources to facilitate decision-making. Many consumer-oriented nutrition tracking applications offer consumers the

ability to interface with physical products to create a digital record of daily nutritional intake. Although recent findings suggest that the accuracy of such apps requires further consideration (Griffiths, Harnack & Pereira, 2018), this interface facilitates the process of self-evaluation. For instance, applications such as MyFitnessPal allow for the setting of nutritional intake goals and continuous monitoring of the impact of food intake on progression towards goal attainment, such as those relating to nutritional and caloric intake. As noted by Bandura and Cervone (1983), monitoring of progression towards goal attainment and feedback can increase motivational drive of goal congruent behaviours (see Section 2.4.2). Given these developments, there is a need to consider the broader informational environment and the implication of ongoing labelling developments on information usage.

Consumer Innovativeness, Risk Aversion and Perceived Risk

In seeking to explain initial low adoption rates of QR codes, the role of knowledge and technological experience have been explored at length in relation to new technologies (McKechnie, Winklhofer & Ennew, 2006) with the technology acceptance model (TAM) being widely used to explore consumer usage of QR codes (Ryu & Murdock, 2013; Higgins, McGarry Wolf & Wolf, 2014). To date, considerations such as perceived information quality, perceived system quality, involvement, generalised personal innovativeness and ease of usage have been addressed (Jong-Hyuok, Somerstein & Eun Seon, 2012; Shin, Jung & Chang, 2012; Atkinson, 2013; Ryu, 2013). Although technological innovativeness is an important factor in determining digital label usage (Rohm et al., 2012), its role in influencing QR code usage has been contested (Ryu & Murdock, 2013).

Despite clear evidence indicating the role of product category specific factors in influencing decision-making and purchasing (Inman, Winer & Ferraro, 2009), little attention has been given to the role of domain-level innovativeness in consumer usage of digital labelling. Domain-specific innovativeness "*reflects the tendency to learn about and adopt innovations (new products) within a specific domain of interest*" (Goldsmith & Hofacker, 1991, p.211) and, therefore, mediates the generalised personality trait of innovativeness and specific innovative behaviours.

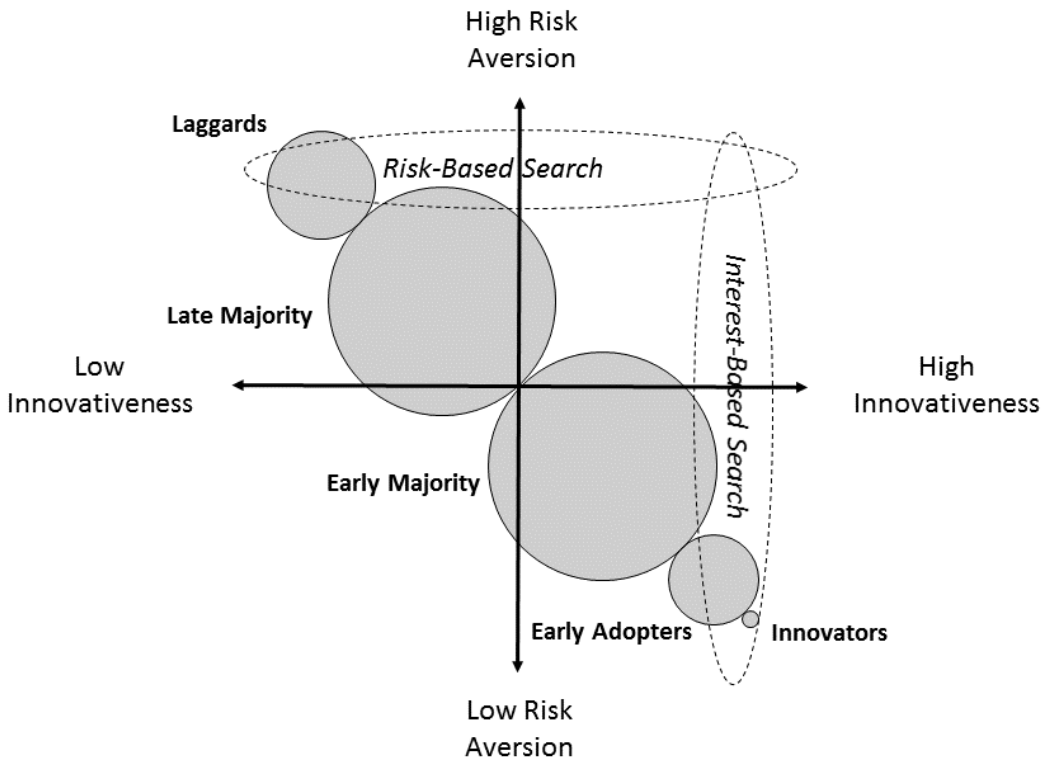
The innovativeness literature presents a unique case for understanding and potentially increasing consumer acceptance and usage of pull marketing (i.e. QR codes) within the low-involvement context. For new purchasing and innovativeness, risk is particularly important, with previous research demonstrating that consumers with higher levels of risk acceptance are more likely to engage in mobile activity related to information provision (Sultan, Rohm & Gao, 2009) and, in instances where perceived risk is higher, likelihood of usage decreases (Hubert et al., 2017). Risk tolerance is generally regarded as being associated with innovativeness, with risk averse consumers generally being less likely to tend towards innovative behaviours (Steenkamp, Hofstede & Wedel, 1999; Matzler, Grabner-Kräuter & Bidmon, 2008), and research demonstrating that laggards are more risk averse (Pettifor et al., 2017). Particularly, risk aversion has been demonstrated to influence consumer decision-making (Moorthy, Ratchford & Talukdar, 1997), with research suggesting that highly risk-averse consumers tend to search for more information in their decision-making process (Bao, Zhou & Su, 2003). In particular, the perceived risk literature highlights that risk importance is also domain-specific and context specific (Mitchell, 1999).

Information provided through pull communication has the potential to reduce uncertainty and subsequent risk. Much of the research concerning innovativeness focuses on adopters of new products, with relatively little attention given to less innovative consumers (laggards). The laggard response to innovations in information provision in the context of purchasing unfamiliar products is also of interest, given the potential of information provided via QR codes to reduce their uncertainty. Consequently, the comparison of category innovators/early adopters and laggards has the potential to shed greater light on the risks and benefits associated with digital label usage.

Concurrent reading of the intrinsically related risk and consumer innovativeness literatures results in a paradox in relation to more effortful pull-marketing information search associated with QR code usage. Although more risk-averse laggard consumers would benefit from the increased information provided by digital labelling, the innovativeness literature suggests that category innovators are far more likely to use diverse information sources in their decision-making (Kim, Hunt & Lancioni, 2015). Similarly, although innovators are more likely to engage with said

information, higher levels of self-confidence and relatively lower levels of risk-aversion suggest they have a lesser need for such information. Consequently, the literature suggests that, laggards and innovators are equally likely to use QR codes, but will use them for different reasons, if at all. This is illustrated in Figure 3.1, which demonstrates how the literature suggests that information search (and QR usage) motives are most likely in the case of heightened risk and heightened levels of innovativeness/curiosity.

Figure 3.1: Risk-Aversion/Innovativeness Framework of Pull Technology Usage in Low-Involvement Context[7]



Whereas the innovation literature suggests that laggards are less likely to adopt such information than innovators, the risk literature, would suggest the converse. Given the relatedness of innovativeness and risk characteristics, this introduces an interesting paradox for pull marketing (i.e. effortful information usage) within the low-involvement context.

[7] Author's own figure.

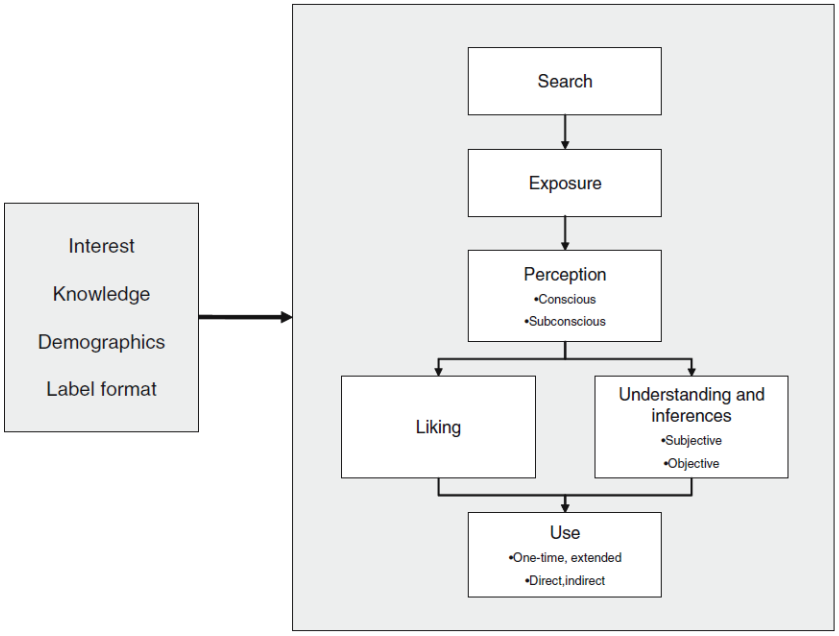
3.2.5 Label Usage

Building on the discussion in Chapter 2, it is assumed that information is sought to ascertain the likelihood of attaining desired outcomes, or to reduce the likelihood of negative outcomes arising from consumption. As an information source, labels should provide clarity in relation to the consequences of consumption. With respect to food, these consequences can either relate to the direct impact on the consumer or broader societal implications.

Continuation of the discussion around food labels and label usage must be prefaced with a discussion on the notion of the term '*usage'* as it relates to labels. Interpretations of this term have varied on multiple dimensions, including the duration of time that the label was observed, the frequency of observations and whether or not label information was incorporated into the purchase decision. For consumers to use label information in their decision-making process, they must be exposed to the label and be aware of it (Grunert, Wills & Fernández Celemín, 2010). Exposure to the information can occur either through the individual actively seeking the information or passively coming upon it (Grunert & Wills, 2007). Having conducted a comprehensive literature review, and building on the classic steps model of consumer decision-making (see Section, 2.8, Figure 2.5), Grunert and Wills (2007) developed a framework of label usage which accounts for both the cognitive and affective dimensions of label usage. In relation to label usage, the information search phase and evaluation of alternatives stage of the EKB model are of particular interest.

Using this approach, the theoretical framework of label usage proposed by Grunert and Wills (2007) seeks to elaborate on the information search and evaluation of alternatives phases through the inclusion of affective and cognitive systems (see Figure 3.2). This is supported by other streams of work which depict information as a stepwise process (Verbecke, 2008).

Figure 3.2: Theoretical Framework of Label Usage[8]



Search

Within this framework, label usage is assumed to begin with information search i.e. purposive activities to seek out information. Grunert and Wills (2007) emphasise the importance of search over accidental exposure, highlighting that effortful search is more likely to produce deeper information processing. However, although label usage can be associated with a premeditated decision to seek out information, usage can also be incidental due to stimuli in the environment capturing attention (Corbetta & Shulman, 2002; Landau et al., 2007) i.e. non-volitional attention. This shortcoming has been addressed in the dual hierarchy of effects model proposed by Grunert and Aachmann (2016), which expands on the theoretical framework of label usage by excluding the term 'search' as a precursor to exposure and rather focuses on the label element itself as preceding exposure, thereby acknowledging the role of both exogenous and endogenous drivers of attention.

Exposure

According to Grunert and Wills (2007), label usage is contingent on exposure, such that information must be available to the consumer for perception to occur. However, the provision of more information in and of itself is not necessarily

[8] Source: Grunert and Wills (2007, p.387)

beneficial to consumers, but rather information which is seen to address consumers' concerns (Verbecke, 2008). Indeed, it has been argued that information abundance as opposed to information shortage, may be a limiting factor in nutritional communication (van Trijp, 2009, p.S44).

Perception

Having been exposed to information, perception may occur at either a conscious or subconscious level (Grunert & Wills, 2007). Food is a relatively low involvement item (Laurent & Kapferer, 1985), where consumption is repeated frequently, meaning that many food decisions are routine and characterised by automated and oftentimes habitual behaviours. The subconscious element of perception is noted as posing a challenge to consumer researchers given that subconscious perception limits the predictive power of self-report measures.

In addition to exposure, perception is contingent on attention to labels, which is influenced by top-down (endogenous) and bottom-up (exogenous) factors (van Herpen & van Trijp, 2011; Antúnez et al., 2013; Ares et al., 2013; Bialkova et al., 2014, p.67), whereby endogenous factors relate to an individual, and exogenous factors relate to the characteristics of the stimuli and environment. Van Herpen and van Trijp (2011, p.148) assert that exogenous factors capture attention whereas endogenous factors drive attention through motivational relevance. Attention in decision-making is discussed in Section 3.3.

Liking and Understanding

Grunert and Wills (2007) identify the role of 'liking' and 'understanding' in guiding consumers' usage of labelling. There is a long-standing tradition in (consumer) behaviour research of exploring the cognitive and affective determinants of information processing and behaviour (Ellis & Ashbrook, 1988; Forgas 1995; Evans, 2003; Baddeley, 2012; Sanjari, Jahn & Boztug, 2017). Given the importance of these systems, a more thorough discussion of information processing and the respective roles of cognition and affect follows in Section 3.4. However, in the context of this discussion concerning label usage, this framework provides a useful means of considering affect and cognition, as it accounts for the influence of both in influencing information processing.

Usage

Label usage occurs at the information search phase, and can be influenced by factors relating to the product category, general needs, individual preferences and concerns and the context in which a purchase decision is made (Maubach & Hoek, 2010). Grunert and Wills (2007) identify two dimensions for considering usage: the extent of usage (one-time vs extended) and the usage application (direct vs indirect). Direct effects relate to the impact of usage on the label-bearing product, whereas indirect effects relate to the impact of usage on all other products. In the case of indirect effects, labels can be considered as formative tools which shape future decisions within the food category. In particular, label usage may result in participants being exposed to new information which will influence future purchasing decisions.

Label usage has also been demonstrated to vary across consumer groups and product categories (Grunert et al., 2010). There are consistent findings within the literature which suggest that nutrition label use is higher among women than men (Nayga, 1996; Blitstein & Evans, 2006), among those with higher education (Blitstein & Evans, 2006; Helfer & Shultz, 2014) and those with low time pressure (Helfer & Shultz, 2014). Furthermore, findings suggest that label usage is more likely for products which are considered as healthier. For example, using an assortment of products, Grunert et al. (2010) found that those purchasing in the yogurt category were most likely to use labels due to healthy associations surrounding the product category.

In the context of label usage and information processing, this framework highlights the multiple research streams which contribute to the understanding of label usage and information processing. In particular, it highlights four main concerns for those considering label usage;

1. the mechanisms through which information is assimilated (i.e. attention and perception),
2. the role of cognitive systems in information processing,
3. the role of affective systems in information processing, and
4. the role of contextual factors related to both the individual consumer and the broader environment.

Building on the previous discussion concerning motivation, the following sections seek to further consider these aspects of label usage and their implications from a research design perspective.

3.3 Attention

Chapter 2 sought to consider the endogenous factors influencing consumers' motivation to engage with food product labelling. There is strong evidence to suggest that motivation influences attention and information processing. As highlighted by Dweck, Manfels and Good (2004, p.41), there are "*qualitatively different motivational frameworks, driven by people's beliefs and goals, that affect basic attentional and cognitive processes*". Having considered the factors influencing consumers' usage of information, specifically endogenous (top-down) factors related to motivation and exogenous (bottom-up) factors related to stimuli within the retail environment (i.e. labelling), discussion will now turn to consider the nature of this interaction, looking specifically at the role of attention in information acquisition.

Attention is ordinarily defined as "*selectivity in perception"* (Orquin & Muller Loose, 2013, p.191) and can be viewed as a set of mechanisms which "*select, modulate, and sustain focus on information most relevant for behaviour"* (Chun, Golomb & Turk-Browne, 2011, p.73), which maximise the utility of limited cognitive resources. A major limitation of attention research is the broad familiarity of the term within the vernacular, which has resulted in the field being understudied and underdeveloped.

In a comprehensive review of the attention literature, Chun Golomb and Turk-Browne (2011) identified the basic characteristics and functions of attention, namely *selection*, which involves the allocation of resources to a target object, *modulation*, which involves the processing of the target object and *vigilance*, which refers to the ability to sustain attention over extended time periods. These functions of attention are undertaken in the presence of limited cognitive resources and an abundance of information within the environment, with the goal of these processes being to balance these two considerations of resource constraints and information abundance.

Sensory processing is important in gaining attention and can occur across the five modalities, i.e. vision, hearing, touch, smell and taste (Chun, Golomb, & Turk-

Browne, 2011). Consequently, attention can take many forms, including visual attention (Antúnez et al., 2013; Siegrist, Leins-Hess & Keller, 2015), auditory attention (Schmitt, Postma & de Haan, 2000) and olfactory attention (Tham, Stevenson & Miller, 2011). For this study, discussion will focus exclusively on visual attention.

Broadly speaking, attention and perception are considered prerequisites to information processing (Grunert & Wills, 2007). However, capturing the attentional dimension of information acquisition during consumers' interaction with visual stimuli is difficult (Bojko, 2013). In seeking to address this problem, recent developments in the area of food labelling have seen a rise in application of eye-tracking technology (Graham, Orquin & Visschers, 2012; Ares et al., 2013; Siegrist, Leins-Hess & Keller, 2015; Ashby et al., 2016). The measurement of attention is discussed in greater detail in Chapter 4, but for now, visual attention itself is discussed.

Overt and Covert Attention

Broadly speaking, from a physiological perspective, attention can be divided into two types: overt and covert. Overt visual attention brings the stimulus into the fovea, and can be observed in the form of physical movements, whereas covert attention occurs where objects are outside of the fovea (Orquin & Mueller Loose, 2013). Given the nature of current eye-tracking equipment, which directs and tracks infrared beams on the fovea, only overt attention is measurable by eye-tracking technology. This being said, many studies have demonstrated a link between eye-movements and covert visual attention (Kowler et al., 1995; Deubel, & Schneider, 1996).

Volitional and Non-Volitional Attention

In considering label usage, the limitation of viewing search as a prerequisite to usage was introduced in the context of Grunert and Wills' (2007) framework (see Section 3.2.5). Specifically, this stems from instances where attention is driven by environmental stimuli. Volitional and non-volitional attention, also referred to as active and passive attention (Hikosaka, Miyauchi & Shimojo, 1993) or voluntary and involuntary attention (Landau et al., 2007), represent fundamentally different attentional processes, with findings suggesting that voluntary and involuntary

attention are governed by different neural mechanisms (Corbetta & Shulman, 2002; Landau et al., 2007; Prinzmetal et al., 2009).

Non-volitional attention is driven by environmental stimuli (Hikosaka, Miyauchi & Shimojo, 1993) or sensory stimulation (Corbetta & Shulman, 2002). This effect is familiar in everyday life, with Corbetta and Shulman's (2002, p.207) vernacular typology of stimuli being "*attention-grabbing"* providing perhaps the most accessible and relatable means through which to consider non-volitional attention. In the context of labelling, recent research, particularly in the area of labelling design, has focused on the efficacy of various labelling formats in capturing attention (van Herpen & van Trijp, 2011; Antúnez et al., 2015; Siegrist, Leins-Hess & Keller, 2015). To this end, non-volitional attention can be considered as representing instances whereby environmental stimuli disrupt search behaviour.

Volitional attention has been simultaneously defined as being goal-directed and endogenous in nature (Corbetta & Shulman, 2002). However, as previous discussion has highlighted, not all behaviours require the conscious pursuit of goals (Wood & Neal, 2007). With this being said, considering volitional attention as being antithetical to non-volitional attention, i.e. not driven by sensory stimulation, we can consider volitional attention as representing attentional mechanisms driven by internal, endogenous processes, which may or may not be automated. Corbetta and Shulman (2002) note that the prior knowledge regarding stimuli such as location, motion and colour facilitate detection of relevant information. This process depends on a *perceptual set*, the ability to represent anticipated incoming information in advance and a *motor set*, which represents prior knowledge of the type of movements required to attend to information relevant stimuli.

3.4 Information Processing

Moving on from attention and perception, which involve the assimilation of information into cognitive systems, discussion will now turn to focus on information processing, adopting a cognitive psychology perspective. At the offset, it is worth noting the breadth of approaches and conceptualisations of information processing theories within the area. The purpose of this review is not to provide an exhaustive summary of these, nor to attempt to identify an optimal approach to understanding

information processing, but rather to give structure to this literature and identify key issues for consideration. With this in mind, despite a wide range of views within the area of cognitive psychology, Huitt (2003) identifies four general principles, which guide cognitive psychologists' view of information processing, and will serve to frame this discussion:

1. Mental systems have a limited capacity.
2. A control mechanism is required to oversee the encoding, transforming, processing, storage, retrieval and application of information.
3. There is a two-way flow of information, with information gathered from external stimuli and held in memory used to make sense of our environment.
4. Humans are genetically prepared to process and organise information in specific ways.

Cognitive systems are not invariant in their function and may be influenced by individuals' motivational and emotional states (Dai & Sternberg, 2004). Information processing and inference-making have been researched to bridge the gap between new and existing information. However, inference-making may result in conclusions beyond those intended by information providers (Grunert, Scholderer & Rogeaux, 2011, p.270). The impact of information processing on interpretation of food labels and claims has been discussed at length within the literature and has been shown to strongly influence consumer decision-making (Leathwood et al., 2007; Ares et al., 2014; Mawad et al., 2015; Miller & Cassady, 2015; Sütterlin & Siegrist, 2015). However, given consumers' limited capacity to process all available information (Mawad et al., 2015), interpretation must rely on information available and existing knowledge (Lähteenmäki, 2015), which have the potential to lead to false associations and misinterpretations (Leathwood et al., 2007). Additionally, consumers regularly use product category information when evaluating unfamiliar products within a category (Loken, 2006). Although much attention has been given to information processing and motivations to use information in enacting dietary change (Miller & Cassady, 2012), the motivations underlying label usage and information acquisition have gained far less attention.

In considering information processing the following sections address key three areas relating to the means through which information is interpreted by consumers. Firstly, considering the nature of cognitive systems, an overview of key theories of cognition and their defining features is presented. Having considered the means through which information is assimilated and processed, we then consider the role of understanding and knowledge in transforming information inputs. Finally, in recognition of the shift from cognitive reductionism discussed in Section 2.2, this section concludes by considering the role of affect in information processing.

3.4.1 Theories of Cognition and Memory

Within cognitive psychology there exists a vast array of theories accounting for different elements of information processing. This section aims to provide an overview of the dominant theories and approaches within the area and highlight the important commonalities across approaches.

Dual Processing Theory

Dual processing theories of reasoning and information processing assume the existence of two fundamentally different ways of processing informational inputs (Kahneman, Slovic & Tversky 1982; Evans, 2003; Kahneman, 2003; Mukherjee, 2010; Sanjari, Jahn & Boztug, 2017), which have come to be referred to as System 1 and System 2 (Stanovich & West, 2000). System 1 processing has been described as intuitive, fast, automatic and experiential (Evans, 2003; Mukherjee, 2010), whereas system 2 is viewed as deliberative, analytical and rational (Mukherjee, 2010; Evans, 2011).

Although system 1 and system 2 have been viewed as either analogous or related to unconscious and conscious processing respectively, this has been contested (Evans, 2011). System 1 is heuristic in nature (Sanjari, Jahn & Boztug, 2017). To this end, Evans (2011) notes that System 1 processing may often result in emotive, affective or intuitive responses, which are conscious, despite the underlying motives being inaccessible. As system 1 is less cognitively involved, this form of information processing places fewer constraints on working memory resources. However, in the presence of low-subject matter fluency or the absence of a dominant option, system 2 processing may be activated (Sanjari, Jahn & Boztug, 2017). System 2 processing may

rely on reason or deep processing, is slower, consciously controlled and rule-based and is correlated with cognitive ability (Evans & Stanovich, 2013; Sanjari, Jahn & Boztug, 2017).

In recent times, the originators of the system 1/system 2 lexicon have called for a change in nomenclature, reflective of broader trends within the information processing literature. They argue that type 1 and type 2 processing is more appropriate (Evans & Stanovich, 2013) as this is more reflective of the nature of the underlying systems, where system 1 and 2 respectively encompass numerous mental systems, which process information in the manner outlined above.

Working Memory

An important facet of information processing and cognition theory relates to individuals' ability to retain and retrieve information, such that a meaningful discussion concerning information processing requires an appreciation of these storage and retrieval processes. Early memory research centred around the concept of short-term memory (STM) as a means of accounting for limits of human cognition. However, as noted by Gruszka and Necka (2017), the concept of STM has been replaced by the working memory (WM) concept introduced by Miller, Galanter and Pribram (1960) and later developed by Baddeley and Hitch (1974). In the context of food label usage, the concept of WM is a useful means through which to further our understanding. Although various conceptualisations of WM exist, it can generally be viewed as "*a hypothetical cognitive system responsible for providing access to information required for ongoing cognitive processes"* (Gruszka & Nęcka, 2017, p.777).

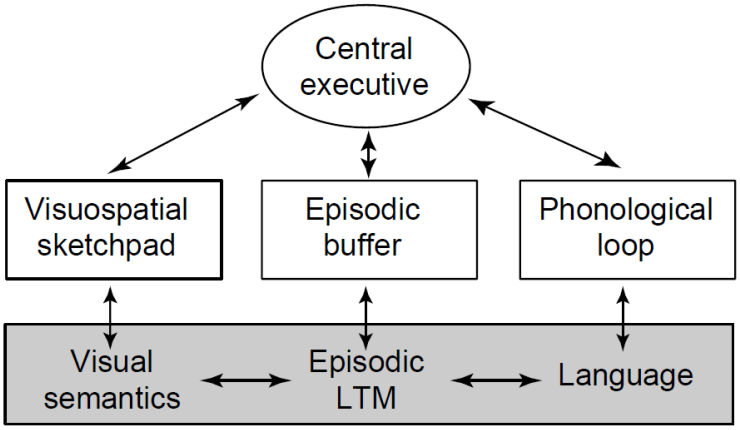
Baddeley and Hitch's (1974) WM conceptualisation views working memory as a multicomponent system comprised of various subordinate systems (the phonological loop and the visuospatial sketchpad) which facilitate interfacing with long-term memory (LTM). These conceptualisations partially explain divergent product evaluations and account for the limited cognitive capacity of consumers which often result in counterproductive decision-making. Initially, WM was viewed as comprising a central executive, responsible for allocating limited attentional capacity

and controlling the two subordinate systems: the visuospatial sketchpad and the phonological loop.

The central executive was assumed to be capable of "*attention focus, storage, and decision making*", thereby interfacing between the visuospatial sketchpad, the phonological loop and LTM (Baddeley, 2012, p.13). The phonological loop was conceived as a modular system capable of maintaining information through vocal or sub-vocal rehearsal, while the visuospatial sketchpad performs a similar function as the phonological loop, but for visual information (Baddeley, 2000). Both systems were viewed as being active stores capable of combining information.

This model was later developed to include the episodic buffer (Baddeley, 2000, p.421), which is "*a limited-capacity temporary storage system that is capable of integrating information from a variety of sources"*. In particular, the episodic buffer acts as a means of linking the subsystems in WM to perception and LTM (Baddeley, 2012). This model builds on the previous conceptualisation through accounting for the mechanisms through which the information passes through the sub-systems in WM and information in LTM. This is represented graphically in Figure 3.3.

Figure 3.3: Baddeley's Working Memory Framework[9]



Priming Theories

Priming theories are concerned with the ways in which primes activate associations in memory and cue information retrieval. As noted by Minton, Cornwell and Kahle (2017, p.310) primes are items which are used to "*manipulate or increase*

[9] Source: Baddeley (2000, p.421)

knowledge activation", whereas targets are "*what a prime is applied to in an effort to produce specific outcomes*". McNamara (2005, p.3) defines priming as "*an improvement in performance in a perceptual or cognitive task relative to an appropriate baseline, produced by context or prior experience*". Two general bodies of priming theory exist: *prospective priming theories* and *retrospective priming theories*. Prospective priming theories view the prime as activating knowledge and influencing response to a target, whereas retrospective theories assert that priming does not occur until exposure to a target has occurred (Minton, Cornwell & Kahle, 2017, p.310). Both the prospective approach and retrospective approach are discussed below through spreading activation theory and compound cue theory respectively.

Spreading Activation Theory

Quillian's (1967) spreading activation theory is noted as being the first theory of priming (Minton, Cornwell & Kahle, 2017) and is an approach in the study of memory for considering the semantic networks of associations held by individuals. Spreading activation theory of semantic memory network assumes that memory networks are comprised of interconnect nodes which represent concepts (McKoon & Ratcliff, 1992), with the strength of cognitive units and the connection between units assumed to increase through practice (Anderson, 1983). Primes are assumed to activate nodes in memory (Quillian, 1967) with individuals more likely to use activated, rather than non-activated nodes in target response (Minton, Cornwell & Kahle, 2017).

There are three core aspects of spreading activation theory *encoding, retention* and *retrieval* (Anderson, 1983). It is assumed that cognitive units are encoded in working memory, with a probability of said units being encoded into long-term memory. With regards to retention, it is assumed that information traces are not lost but trace strength may decay over time. Spreading activation theory also assumes an overlap in contents of working memory and long-term memory (Anderson, 1983). Specifically, retrieval of information from long-term memory is assumed to occur through activation of associated elements in the network of elements and units, with attention to units within a network influencing the degree to which activation spreads throughout the network (Anderson, 1983). Those adopting a spreading activation approach have suggested that consumers may also "*over-process*" information,

whereby they create associations between information acquired and existing knowledge which results in interpretations beyond those intended by the provider of the information (van Trijp, 2009, p.S42).

Compound Cue Theory

As opposed to spreading activation theory, which assumes that primes activate nodes within a network, compound cue theory assumes that the prime and target are stored together in short-term memory. As such, compound cue theory assumes that items join together in short-term memory to form a compound cue (McKoon & Ratcliff, 1992). When presented with a prime and target, this compound cue in STM is matched to existing compounds in LTM (Minton, Cornwell & Kahle, 2017). The compound cue is assumed to have a degree of familiarity, which determines the strength of associations of the compound in STM with items stored in LTM.

In summary, although explanations of the nature through which cues are recalled and activated varies among the cognitive theorists presented, there appears to be consensus with regards to a number of key elements. Namely, there is agreement that cognitive systems are responsible for the storage and activation of information within cognitive networks. Additionally, although taxonomic variations exist, environmental stimuli (i.e. cues) can activate networks of meaning and interface with information held in finite information stores (i.e. working memory, formally short-term memory) and long-term memory.

3.4.2 Understanding and Knowledge

Having considered the processes whereby information is assimilated and processed, it is worth considering the interpretative dimensions of information, looking specifically at the respective roles of understanding and knowledge in the formation of evaluations.

Objective and Subjective Understanding

Despite a substantial interest in consumers' understanding of food and nutritional labelling (Cowburn & Stockley, 2005; Grunert & Wills, 2007; Antúnez et al., 2015), there is a lack of consensus within the literature as to what constitutes understanding in the context of nutrition and health information (van Trijp, 2009). Broadly speaking, understanding can be viewed as a matter of inference-making

(Kardes et al., 2004 cited in Grunert & Wills, 2007). There have, however, been distinctions made between different types of understanding, most notably between "*objective and subjective understanding*" (Grunert & Wills, 2007, p.387).

There is merit in the consideration of both objective and subjective understanding within the context of consumer behaviour research. Particularly, from a diet and health perspective, consumers' objective understanding of labelling information has attracted significant attention given the implications of this understanding on reaching healthy purchasing decisions (Ducrot et al., 2015; Liu, Hoefkens & Verbeke, 2015; Grunert & Aachmann, 2016). Yet, as illustrated elsewhere throughout this review, individuals' personally held beliefs may also significantly impact behavioural outcomes, such that the role of subjective understanding cannot be disregarded. Subjective understanding refers to "*the meaning the consumer attaches to the perceived label information and covers also the extent to which consumers believe they have "understood" what is being communicated*" (Grunert & Wills, 2007, p.387). In conflating the terms understanding and knowledge, Park and Lessig (1981, as cited in Brucks, 1985, p.2) suggest that "*subjective knowledge provides a better understanding of decision makers' systematic biases and heuristics than does objective knowledge*". This distinction between objective and subjective knowledge, including discrepancies between the two, provides a useful means for considering other forms of knowledge, and variations in decision-making outcomes and knowledge structures.

Procedural and Declarative Knowledge

A common distinction within knowledge research is between procedural and declarative knowledge (Page & Uncles, 2004). Procedural knowledge refers to "*knowledge of rules for taking action"* (Brucks, 1986, p.58) and is comprised of a system of scripts which represent sequences of actions or behaviours employed to complete a given task, thereby providing behavioural routines when intentions are formed (Bruwer, Li & Reid 2002; Brunsø, Scholderer & Grunert, 2004). Declarative knowledge, however, refers to information held in relation to objects or processes, which is somewhat static in nature and descriptive (Brucks, 1986; Page & Uncles, 2004). Knowledge, including procedural and declarative knowledge, is domain specific (Brucks, 1986) and as such, in the context of consumer behaviour, both

concepts have been considered at the product category level (Weitz, Sujan & Sujan, 1986). Cumulatively, procedural and declarative knowledge can influence the type of information assimilated in to the decision-making process, and the means through which this assimilation occurs.

Knowledge Structures

A major challenge for consumer behaviour researchers is accounting for differences in product evaluations among consumers presented with similar information. As illustrated above, knowledge held can vary across individuals. Discrepancies in product evaluations can be attributed in large part to idiosyncratic differences arising from variations in information processing abilities, understanding, and self-efficacy beliefs. However, one area of interest in relation to knowledge is variation in cognitive structures. To this end, there have been many attempts to understand the structures underlying individuals' associations in memory (i.e. networks of meaning), with Gutman's (1982) means-end chain (MEC) theory offering one potential explanation in this regard. Resting on largely similar assumptions as those in the area of cognitive psychology discussed in Section 3.4.1, MEC theory posits that consumers create categories of products based on dichotomies, with personally meaningful categories forming levels or a hierarchy of structures (Gutman, 1982). Through experiences and understanding, consumers come to form associations between product attributes and consumption outcomes such that individual knowledge hierarchies are constructed in memory. Previous research in the food domain has used MEC theory to identify networks of meanings activated by products to understand the associations held in relation to products and identify dominant commonalities in associations across consumer segments. Areas of application include vegetarian products (Apostolidis & McLeay, 2016), genetically modified food (Bredahl, 1999; Boecker, Hartl & Nocella, 2008), fair trade products (de Ferran & Grunert, 2007), wine (Fotopoulos, Krystallis, & Ness, 2003), ready meals (Sorenson & Henchion, 2011) and organic food (Zanoli & Naspetti, 2002).

A fundamental assumption of MEC theory is that consumers' purchase of products is tied to their values. MEC seeks to link concrete product attributes to abstract values through self-relevant consequences to uncover the values underlying purchasing behaviour. This attribute-consequence-value (A-C-V) link forms the

structure of a means-end chain. In MEC theory two types of attributes are identified, concrete and abstract attributes, which relate to the tangible and intangible characteristics of the product respectively (Gutman, 1982; Costa, Dekker & Jongen, 2004). Attributes are considered in relation to their ability to produce self-relevant consequences, which are anticipated outcomes arising from consumption. Consequences can be both function and psychological in nature (Mulvey et al. 1994; Costa, Dekker & Jongen, 2004) and can occur directly from consumption or indirectly from other's reactions to consumption related decisions (Gutman, 1982). The final component of the A-C-V link relates to values. Drawing on the work of Rokeach (1973), Gutman's (1982) MEC theory distinguishes between instrumental and terminal values. Whereas instrumental values are considered with desired modes of conducted, terminal values address desired end-states (see Section 2.4.1). In MEC theory values are assumed to provide consequences with their positive or negative valence (Gutman, 1982).

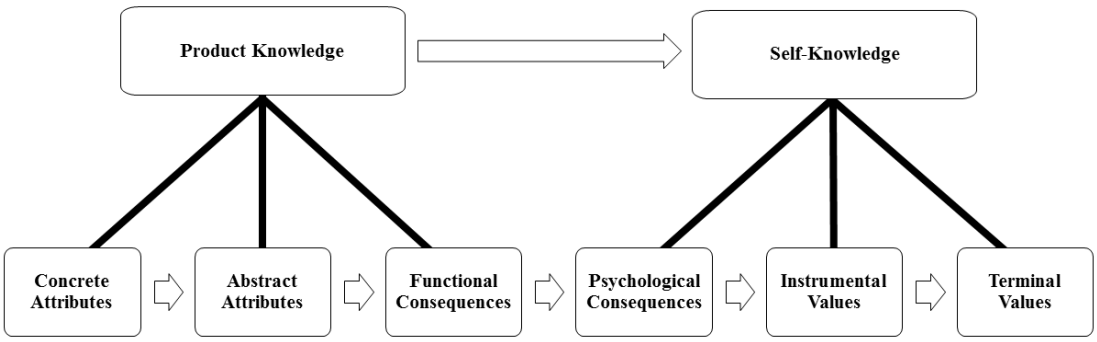
MEC has been used previously in consumer-oriented food product design for the purpose of effectively communicating product benefits (Costa, Dekker & Jongen, 2004) and to better understand consumer decision-making (Olson & Reynolds, 2001). In many instances, the distinction between risk and benefit perceptions are unclear due to the chosen lexicon, with the consumer's individual disposition becoming unclear. For example, greater efficiency and reduced time loss, in practical terms, have the same outcome, however the way in which the consequence is framed, highlights a difference between benefit seeking and risk avoidance behaviour. The MEC tool can be used to tease out this distinction.

The MEC model has been identified as a useful tool in benefit-based market segmentation (Botschen, Thelen & Pieters, 1999), drawing on the well-established premise that consumers are concerned with the benefits product attributes can deliver, rather than the attribute themselves (see Haley, 1968; Lai, 1995; Kotler & Armstrong, 2004). As discussed, there has been a tendency within the consumer behaviour and marketing literatures to look in isolation at the benefits and risks associated with a purchase occasion. As highlighted in Section 2.9, this appears to run contrary to findings from other disciplines which highlight the confounding of risk and benefit considerations in the evaluation process. Therefore, here forth the term 'consequences'

of consumption, as opposed to the more excluding term 'benefits', will be used, as this suggests the potential for both positive and negative outcomes arising from a consumption situation.

The MEC model is illustrated in Figure 3.4. An important facet of this model discussed by Mulvey et al. (1994) is the role of both product and self-knowledge in understanding and uncovering MEC relationships. At the lower end of abstraction MEC links rely on consumers' individual knowledge relating to characteristics and functional consequences of the product offering i.e. product knowledge. However, as the level of abstraction increases, MEC understanding and development of MEC links are dependent on consumers' understanding of their own values and the more abstract, psychological implications of their behaviour (i.e. self-knowledge). The combination of both of these knowledge types increases the potential for variations across consumer knowledge structures and the difficulty associated with uncovering MEC links.

Figure 3.4: Means-End Chain Structure[10]



3.4.3 Affect

Although initially conceived as being antithetical to rational thinking (Forgas, Chan & Laham, 2001), recent research has demonstrated that affect systems play an important role in guiding information processing (Zeelenberg & Pieters, 2006). To this end, Adolphs and Damsio (2001, p.45) proposed "*affective processing to be an evolutionary antecedent to more complex forms of information processing; … higher cognition requires the guidance provided by affective processing"*. However, there is a clear lack of coherent understanding concerning the respective roles of affect and cognition in information processing and decision-making. Initial tripartite separation

[10] Based on Mulvey et al. (1994)

of affect, cognition and conation suggest the existence of independent systems. However, recent research suggests that affect and cognition interact in the decision-making process. Given the potential of labelling to elicit affective responses which have potential implications for information processing, affect merits consideration within this discussion, particularly given the potential of visual stimuli and branding to elicit affective responses.

Affect refers to "*the positively- or negatively-valenced subjective reactions that a person experiences at a given point in time*" and may represent immediate reactions to situational cues or the residue of thoughts regarding past or future events (Wyer, Clore & Isbell, 1999, p.3). Generally speaking, affect is viewed as comprising two 'affective states' (Linnenbrink & Pintrich, 2004): *moods* and *emotions* (Forgas, 1995), which are noted as varying in terms of their duration and intensity (Linnenbrink & Pintrich, 2004). Emotions can be viewed as "*relatively intense, short-lived and usually highly conscious affective states*" (Forgas, Chan & Laham, 2001, p.226), whereas moods are more insidious, enduring and subtle. Moods, as distinct to emotions, are assumed to have no salient antecedent cause or referent, such that they have little cognitive content (Forgas, 1995). Additionally, moods are "*more transient, last longer, and do not have a clear object"* (Zeelenberg & Pieters, 2006, p.121).

Linnenbrink and Pintrich (2004) note that affect research typically focuses on the valence dimension, considering positive and negative affect, thereby failing to consider the role of affect in arousal and activation. Indeed, in the context of food labelling, affect has been considered in the context of 'liking/disliking' responses (e.g. Hodgkins et al., 2012). In building on the understanding of consumer processing of labelling information, this discussion will proceed to move beyond the valence of affect to consider its interaction with cognition.

Affect as an Influencer of Cognition

Linnenbrink and Pintrich (2004) identify two major approaches to understanding the role of affect in cognition. The first relates to the means through which affect influences storage and retrieval of information and includes Bower's (1981) associative network theory of memory and emotion and Forgas' (1995) affect infusion model. The second approach to affect and cognition relates to the means

through which affect influences information processing and includes the resource allocation model proposed by Ellis and Ashbrook (1988) and the affect-as-information model proposed by Schwarz (1990).

Bower (1981), drawing on the work of Quillian (1967) and Anderson (1976) outlined in Section 3.4.1, assumed that human memory can be conceived of as an associative network of semantic concepts and schemata. Bower (1981) suggests that emotions are represented within the networks as nodes, such that when these emotion nodes are activated above a threshold, automatic activation of associated nodes within the network can occur. Consequently, Bower's theory suggests that a person's mood can activate network nodes congruent with their mood, such that a person who is in a positive mood will be more likely to retrieve positively valenced information from their network (Linnenbrink & Pintrich, 2004). This premise appears quite intuitive in nature, with the assertion that positive moods will result in positive orientations having an appealing resonance. However, as Linnenbrink and Pintrich (2004) note, Bower's theory produced inconsistent results, which Forgas (1995) sought to address through the affect infusion model.

The Affect Infusion Model (AIM) is a multi-process approach to understanding the role of valence effects, motivational effects and appraisals effects on judgement. 'Affect infusion' refers to "*the process whereby affectively loaded information exerts an influence on and becomes incorporated into the judgemental process, entering into the judge's deliberations and eventually colouring the judgmental outcome"* (Forgas, 1995, p.39). According to this model, mood is only infused into thinking in instances where elaboration and construction of knowledge is required (Linnenbrink & Pintrich, 2004). The AIM model identifies multiple mechanisms of affect infusion, including the *affect-priming principle*, whereby affect may influence judgements through influencing attention, encoding and retrieval and the *affect-as-information principle*, whereby affective systems aid in the evaluation of a target (Forgas, 1995).

Turning to consider the impact of affect on information processing, the resource allocation model proposed by Ellis and Ashbrook (1988) and drawing on the concept of limited processing capacity, assumes that emotions may increase

information processing burden and deplete attentional resources. The assumption that negative and positive emotions drain information processing capacity has gained support within the literature (Ellis, Seibert & Varner, 1995; Meinhardt & Pekrun, 2003). In essence, the resource allocation model suggests that both positive and negative emotions lead to task-irrelevant thoughts which overload working memory, and have a detrimental impact for more cognitively demanding tasks (Linnenbrink & Pintrich, 2004).

Similarly, Schwarz's (1990) affect-as-information theory posits that affect influences information processing. Schwarz's theory proposes that negative mood states signal the presence of a problem which leads individuals to focus on details, as opposed to positive mood states, resulting in heuristic processing of information. Linnenbrink and Pintrich (2004) note that the use of heuristics during positive mood states arise from an evolutionary bias which suggest that effort is not required.

In light of the interrelatedness of cognition and affect in decision-making (Zeelenberg & Pieters, 2006), the study of information processing can be viewed as requiring an appreciation of both cognitive and affective systems in order to understand allocation of attentional resources and subsequent information processing.

3.5 Conceptual Framework

Synthesising the key observations presented in Chapters 2 and 3, a conceptual framework of the extant motivation and risk/benefit literatures as they relate to contemporary labelling research is presented in Figure 3.5. Drawing on the work of Grunert and Wills (2007), which builds on the EKB model presented in Section 2.8, this framework considers label usage in terms of attention, perception and information processing.

In line with the extant literature, attention is assumed to be influenced by exogenous and endogenous factors (Corbetta & Shulman, 2002; Dweck, Manfels & Good, 2004; van Herpen & van Trijp, 2011; Bojko, 2013; Antúnez et al., 2015). Here, exogenous factors relate to external stimuli such as labelling stimuli and the retail environment, while endogenous factors, relate to internal factors including motivation (and its antecedents and influencers) as well as habits. Exogenous factors are noted as influencing label usage directly, through capturing attention (Corbetta & Shulman,

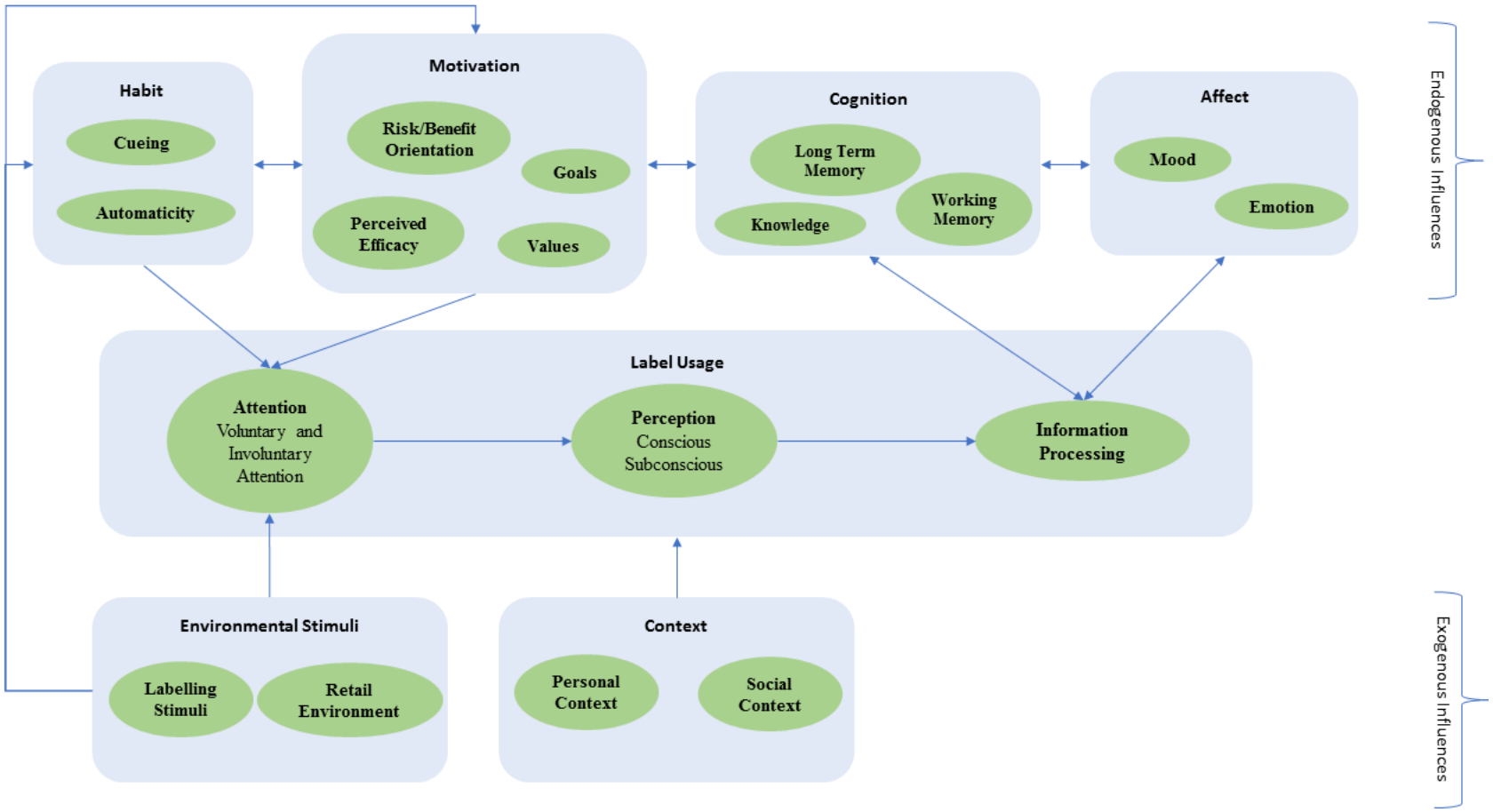
2002), and indirectly, through activating endogenous processes such as habits and goals (Wood & Neal, 2007).

In acknowledging the interpretivist approach underpinning the various bodies of literature considered in this review, context is also considered as modulating the label usage process, with personal and social context considered as permeating through the process.

In line with Grunert and Will's (2007) framework, perception is considered as occurring on either a conscious or subconscious level. This reflects the broader motivation and information processing literatures, which address conscious goal-directed behaviour, while also accounting for the role of subconscious and automated processes such as routinized and habitual behaviour (Wood & Neal, 2009; Orbell & Verplanken, 2010; van't Riet et al., 2011; Neal et al., 2012).

Where information processing occurs, this is assumed to be influenced by both cognitive and affective systems, with motivational states influencing the extent to which these systems are activated. These cognitive and affective systems are assumed to work in the service of goal attainment, which as discussed in Chapter 2, may include the attainment of benefits (i.e. benefit-orientation) or the avoidance of loss (i.e. risk-orientation). Additionally, in line with the broader cognition and affective literatures, both cognitive and affective response are assumed to contribute to the processing of information. This conceptual framework serves to guide the development of both research phase 1 and research phase 2 study design, as outlined in Chapter 4.

Figure 3.5: Conceptual Framework of Endogenous and Exogenous Influencers of Label Usage



3.6 Conclusions and Research Directions

Building on the discussion concerning the endogenous influencers of label usage presented in Chapter 2, this chapter introduced exogenous influencers of behaviour (i.e. food labels), and highlighted the role of food labelling in influencing attention and information processing. In so doing, this chapter provides an overview of the information acquisition process from attentional drivers, through to attention, perception and information processing.

Labelling has been demonstrated to both facilitate and disrupt information search behaviours. While harmonisation of labelling content allows consumers to establish expectations and information search routines, labelling formats can also capture attention, thereby disrupting said routines. Additionally, this review considered the changing role of labelling, highlighting the shift from traditional labelling to more dynamic technology enabled labels. In particular, innovations such as QR codes and NFC tags, which represent a more effortful form of information search, raise questions with regards to their potential utility in the decision making-process, with the extant literature presenting a paradox with regards to the role of risk and benefit perceptions in consumer adoption.

As noted in Chapter 2, constructs such as perceived self-efficacy, expectancy, goals and context influence motivation and behaviour and are activated either purposefully by the individual or through environmental stimuli. However, many of these constructs necessitate the combination of external and internal sources of information, thereby requiring consumers to engage in information processing. Hence, this chapter aimed to provide an overview of the primary influences of this process. Drawing on relevant bodies of literature, concepts such as knowledge, cognition, memory and affect were explored and ongoing debates within these disciplines were presented.

Priming theory illustrated means through which both external (exogenous) stimuli (Anderson, 1983; McKoon & Ratcliff, 1992), and internal (endogenous) factors such as goals and emotional states (Forgas, 1995) can activate knowledge structures. These knowledge structures are assumed to encompass networks of association between semantic items (Quillian, 1967; Anderson, 1976) which can be

idiosyncratic in nature. Gutman's (1982) means-end chain theory was also discussed within this context as a means through which commonalties across idiosyncratic networks can be accounted for at a group level. This will be further elaborated on in Chapter 4.

In seeking to reconcile the key bodies of research of relevance in the context of consumers' label usage motivation, a conceptual framework was proposed (see Figure 3.5). This conceptual framework highlights the complexity of the label usage process in its entirety. The intersection between attention, volition and consciousness provides an enduring challenge to researchers seeking to fully capture and account for the psychological processing underlying consumer interactions with marketing stimuli. This chapter sought to illustrate the intersectionality of cognitive and affective systems and in so doing, provided an inventory of considerations to address in the subsequent study design. Chapter 4 proceeds to address the key considerations arising from the literature review process and outlines the means through which the factors considered above were addressed through a multi-phased research study design.

Chapter 4
Methodology

4.1 Introduction

This chapter seeks to provide an overview of and rationale for the methodological considerations and study design employed to address the study's research objectives. Discussion in this chapter seeks to provide an understanding of the philosophical underpinnings and paradigms guiding study design and data collection. Furthermore, ensuring rigour and transparency are key to achieving good quality research and credibility of findings. This chapter provides an overview and justification of the techniques applied in designing the study, recruiting participants and collecting and analysing data, while identifying and addressing study limitations.

4.1.1 Research Objectives

Considerations relating to methodological decisions and study design should be informed by the questions which the researcher seeks to answer and by the researcher's own philosophical stance. This research is rooted in the consumer experience, particularly as it relates to consumers' interaction with information provided on food product labels. As such, decisions related to methodology and study design sought to explore consumer experience and concerns in context.

In light of the conceptual framework of label usage presented in Chapter 3, for this research it was necessary to gain an understanding of consumer behaviour which captured the nuances of interaction with labelling stimuli. This led to the development of three primary study objectives:

Research Objective 1: To map the influence of consumers' personal endogenous dispositions (including risk/benefit orientations) and exogenous factors on label usage and information processing.

Research Objective 2: To assess the impact of risk/benefit orientations on associations in memory activated through label usage.

Research Objective 3: To evaluate the impact of domain-specific innovativeness on understanding, interpretation and perceived utility of digital labelling, enabled through pull marketing, in adding consumer value.

In turn, these research objectives gave rise to three research questions, with RQ1 being address in phase 1 and RQ2 and RQ3 being addressed in phase 2 and informed by phase 1 findings.

RQ1: How and to what extent do endogenous and exogenous factors influence attention to labelling stimuli and subsequent information processing?

RQ2: Does product category innovativeness/risk aversion influence associations activated through label usage?

RQ3: Does understanding, interpretation and perceived utility of QR codes vary across innovators/early adopters and laggards?

The following sections outline the key philosophical underpinnings of the research and provide details of the study design considerations in light of these research objectives and with regard to the epistemological and paradigmatic stance adopted by the researcher.

4.1.2 Philosophical Underpinnings

Guba and Lincoln (1994, p.105) assert that "*questions of method are secondary to questions of paradigm*", whereby a paradigm can be viewed as "*the basic belief system or worldview that guides the investigator*" (ibid) or as "*shared beliefs within a community of researchers who share a consensus about which questions are most meaningful and which methods are most appropriate for answering those questions*" (Morgan, 2007, p.53). Paradigms can be viewed as "*the net that contains the researcher's epistemological, ontological, and methodological premises*" (Denzin & Lincoln, 2008, p.31). The importance of a clear understanding of one's basic world view, i.e. philosophical stance, prior to selection of methods for data gathering cannot be ignored, particularly given the potential for researchers' values to play a role in influencing the research direction, data collection and analysis (Saunders, Lewis & Thornhill, 2009, p.107). The paradigm underlying a particular research activity can have "*widespread impacts on the conduct of inquiry*" (Morgan, 2014, p.1051) and it is for this reason that an understanding and acknowledgement of the researcher's own

epistemological and ontological orientations are pivotal in justifying the choice of position taken and mitigating the potential of these to impact on the researcher's work.

Ontology is concerned with the nature of reality and has fundamental implications on the researcher's view of the world and subsequent assumptions underpinning research. Broadly speaking from an ontological perspective, a distinction can be made between objectivism and subjectivism. Whereas objectivism argues the view that social entities exist in a reality external to social actors, the subjectivist view holds that social phenomena are created through interactions and perceptions among social actors (Saunders, Lewis & Thornhill, 2009).

Epistemology refers to the nature of the relationship between the knower and what can be known (Guba & Lincoln, 1994) and concerns what constitutes acceptable knowledge within a given field of study (Saunders, Lewis & Thornhill, 2009, p.112). Epistemologically speaking, research within the social sciences is often presented as a choice between the dichotomously opposed research traditions of positivism and interpretivism, with nuanced adaptions and intermediary positions acting as a point of departure for more precise discussion of the researcher's philosophical stance, as it relates to the nature of both research and knowledge. Historically, positivism (including post-positivism) and interpretivism have been conceptualised as occurring at opposite ends of the paradigm spectrum, creating a dualism in the philosophies underpinning social research (Morgan, 2014).

Positivism

In relation to social research, the positivist position maintains that social observations should be treated in much the same way as physical phenomena and asserts that a separation of the observer and the observed is possible (Johnson & Onwuegbuzie, 2004). In particular, the positivist position asserts that "*social research should adopt scientific method*" (Teddlie & Tashakkori, 2009) and has advocated for the application of techniques traditionally associated with the natural sciences within the social sciences. The positivist tradition has, at its core, the belief in the existence of an objective world independent of its observer and has, consequently, been aligned to quantitative research. As such an important feature of the positivist approach is that

research is conducted, as far as possible, in "*a value-free way*" (Saunders, Lewis & Thornhill, 2009, p.114).

Interpretivism

Interpretivism is broadly viewed as the antithesis of the positivist philosophy (see Gray, 2004; Saunders, Lewis, & Thornhill, 2009; Bryman & Bell, 2011) with the justification for interpretivist enquiry resting on the premise that "*the basic fault of every form of positivism in social sciences is the belief that the act of interpretation can be circumvented"* (Berger & Kellner, 1981, p.127).

Specifically, interpretivism calls for researchers to understand the role of humans as social actors and, in so doing, draws a distinction between the natural and social worlds and calls into question the appropriateness of measures used in the natural sciences, when conducting social research (Gray, 2004; Saunders, Lewis & Thornhill, 2009). Interpretivism can be viewed as the broad basis of qualitative research, as it is concerned with "*how the social world is interpreted, understood, experienced, produced or constituted*" (Mason, 2002, p.3). More specifically qualitative research and qualitative methods can be understood as "*an umbrella term covering an array of interpretive technique which seek to describe, decode, translate, and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world*" (van Maanen, 1979, p.520).

As distinct from the positivist philosophy, the interpretivist view allows for multiple realities which are constructed through interactions between social actors and their environment. Consequently, the assertion that the researcher is a value-free agent is neither possible nor desirable to those operating within the interpretivist paradigm. Specifically, the interpretivist perspective holds the belief that our interpretation of the world is subjective and fundamentally constructed through interactions with our physical and social environment. To this end, Morgan (2014, p.1048) states that "*on one hand, our experiences in the world are necessarily constrained by the nature of that world; on the other hand, our understanding of the world is inherently limited to our interpretations of our experiences*."

Pragmatism

Philosophical underpinnings have tended to be polarised, with positivism occurring at one end and interpretivism at the other. However, pragmatism, which has become aligned to the mixed methods research approach (Teddlie & Tashakkori, 2009), has come to occupy an intermediary position between the more polarised positivist/post-positivist and interpretivist positions. Pragmatism holds that:

> *"the most import determinant of the epistemology, ontology and axiology you adopt is the research question … if the research question does not suggest unambiguously that either a positivist or interpretivist philosophy is adopted, this confirms the pragmatist's view that it is perfectly possible to work with variations in your epistemology, ontology and axiology"* (Saunders, Lewis & Thornhill, 2009, p.109).

A central argument against pragmatism, and the mixed methods approach with which it has become aligned, rests on the incompatibility thesis, which holds that qualitative and quantitative methods paradigms cannot, and should not, be mixed due to fundamental differences in the paradigms which underpin them (Johnson & Onwuegbuzie, 2004; Teddlie & Tashakkori; 2009). Indeed, the prevailing view of incompatibilists is that incompatibility arises at the level of epistemological paradigms rather than at the level of practice (Howe, 1988). This argument stems from the view that research paradigms and research methods are inextricably linked, which, in turn, means that the mixing of paradigms results in incompatible methods being used (Howe, 1988; Teddlie & Tashakkori, 2009). However, as noted by Howe (1998), the incompatibility view is based on the perceived incompatibility of the positivist and interpretivist paradigms, thereby disregarding the potential role of alternative paradigms in offering a means to justify the mixing of methods. With this in mind, the incompatibility theory has been countered through the adoption of the pragmatist view (Teddlie & Tashakkori, 2009), which holds that the research question(s) should be the main determinant of methods used. Although the pragmatist view has been accused of "*holding truth hostage*" to what works (Howe, 1988, p.10), there have been arguments in favour of the mixing of research methods. An overview of the key aspects of the interpretivist, positivist and pragmatist paradigms is presented in Table 4.1 below.

Table 4.1: Paradigm Contrast Table[11]

	Interpretivist Paradigm	***Positivist Paradigm***	***Pragmatist Paradigm***
Methods	Qualitative	Quantitative	Both Qualitative and Quantitative
Logic	Inductive	Hypothetico–deductive	Both inductive and hypothetico-deductive
Epistemology	Knower and known are interactive, inseparable.	Knower and known are independent, a dualism.	Both objective and subjective points of view depending on stage of research cycle.
Axiology	Inquiry is value bound.	Inquiry is value free.	Values important in interpreting results.
Possibility of causal linkages	All entities are in a state of mutual, simultaneous shaping so that it is impossible to distinguish causes from effects.	There are real causes, temporally precedent to or simultaneous with their effects.	Causal relations, but they are transitory and hard to identify; both internal validity and credibility important.
Possibility of generalisation	Only time- and context-bound working hypotheses are possible.	Time- and context-free generalisations are possible.	Ideographic statements emphasized; both external validity and transferability issues important.

The research which was conducted here is rooted in the social constructionist tradition, which posits that knowledge is actively created through interactions between social actors and their environments, such that a separation of the knower and the known is not possible. Specifically, social constructionism is based on the assumption that "*the terms by which the world is understood are social artifacts, products of historically situated interchanges among people*" (Gergen, 1985, p.267). This contrasts with the positivist stance which espouses the view that an independent and objective reality exists and can be discovered.

In addressing some of the methodological limitations associated with the various constructs under investigation, in certain instances it was deemed necessary to borrow tools more closely linked with the positivist stance. In particular, such methods

[11] Adapted from Teddlie and Tashakkori (2009, p.88)

were used to address the limitations of self-report and introspective tools in capturing subconscious behaviour (see Section 4.3). However, the overarching epistemological position adopted by the research is that of interpretivism, which is reflected in the subsequent application of research methods illustrated within this chapter.

As discussed in Chapters 2 and 3, and illustrated in the conceptual framework of extant labelling literature (Figure 3.5), label usage is influenced by endogenous and exogenous factors including motivation, knowledge, self-efficacy, purchasing context and environmental stimuli among others. These constructs have been repeatedly demonstrated as being context dependent and idiosyncratic in nature. For this study, a qualitative approach was adopted, as this was deemed to best address the research questions which sought to identify and explore in depth the phenomena under investigation. Qualitative research is "*underpinned by the belief that knowledge, and the processes which lead to its production are context specific*" (Lyons, 2007, p.4).

4.1.3 Ensuring Quality of Research

Researchers seeking to ensure quality and rigour of research outputs arising from qualitative enquiry are confronted with a vast array of terms, principles and concepts borrowed from various disciplines, with oftentimes fuzzy boundaries. Morrow (2005, p.251) proposes that the criteria for trustworthiness in qualitative research are "*closely tied to the paradigmatic underpinnings of the particular discipline in which a particular investigation is conducted*". Consequently, the standards applied, and their real-world implications, are contingent on the philosophical underpinnings which guide a given piece of research, a proposition which has gained traction within the qualitative research community (see Patton, 2002). This can be summed up thusly: "*Qualitative researchers who frame their studies in an interpretive paradigm focus on trustworthiness as opposed to the conventional, positivistic criteria of internal and external validity, reliability, and objectivity*" (Bowen, 2008, p.148). However, in seeking to ensure credibility of qualitative research, a multitude of terms and concepts have emerged. Creswell and Miller (2000, p.124) summarise the problem: "*readers are treated to a confusing array of terms for validity, including authenticity, goodness, verisimilitude, adequacy, trustworthiness, plausibility, validity, validation, and credibility"*.

As qualitative research differs fundamentally from quantitative work, it is neither plausible nor desirable to apply the same standards of validity. Peer review and debriefing have been indicated as a means of reviewing and improving the veracity and validity of qualitative research. Creswell and Miller (2000, p.129) argue that peer debriefing plays an important role in establishing credibility throughout the research process whereby "*a peer reviewer provides support, plays devil's advocate, challenges the researchers' assumptions, pushes the researchers to the next step methodologically, and asks hard questions about methods and interpretations*".

Furthermore, qualitative research should aim to be reflective of participants and their individual voices. Whittemore, Chase and Mandel (2001, p.350) argue that *authenticity* of qualitative research is important in ensuring validity, highlighting the importance of conducting research which "*reflects the meanings and experiences that are lived and perceived by participants*". A summary of the key elements of trustworthiness in qualitative research, and associated considerations, are presented in Table 4.2, as set out by Miles, Huberman and Saldana (2013).

Table 4.2: Criteria for Assurance Quality in Qualitative Research[12]

Positivist	**Interpretivist**	**Considerations**
Objectivity	Confirmability	Neutrality, freedom for unacknowledged biases, explicitness about biases
Reliability	Dependability / Auditability	Process consistency, stability over time across researchers and methods, congruency between methods and research questions
Internal Validity	Credibility / Authenticity	Credibility, verisimilitude, context rich, coherence
External Validity	Transferability / Fittingness	Generalisability, abstraction
Utilization	Application / Action	Practical implications or recommendations

With this in mind, decisions made in relation to study design, data analysis and interpretation were subject to iterative peer debriefing and review. A summary of measures taken to ensure adherence to principles of good research practice for study phase 1 and phase 2 is provided in Section 4.4.2 and Section 4.6.2 respectively.

[12] Adapted from Miles, Huberman & Saldana (2013, p.310-315)

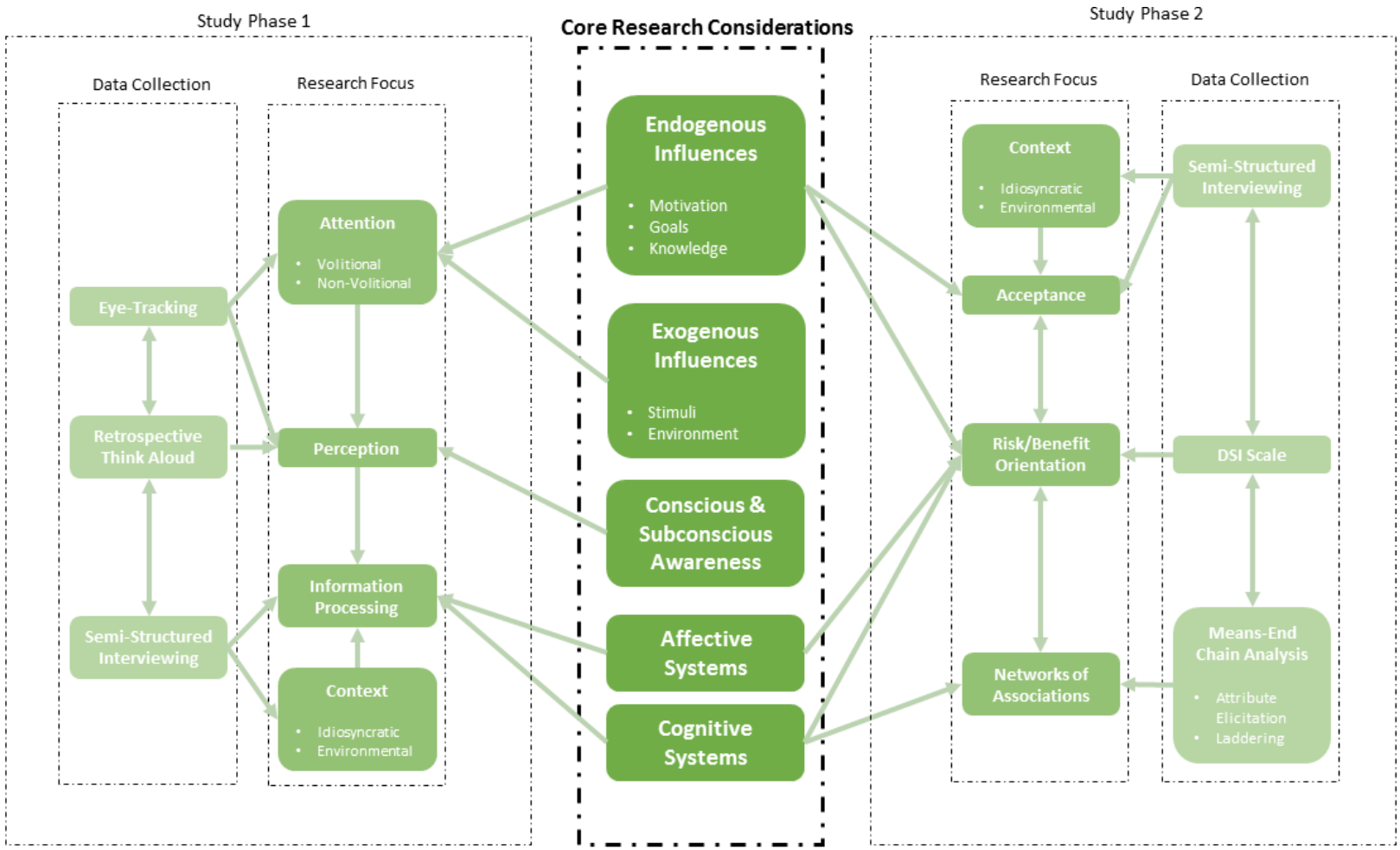
4.2 Study Design Overview

In seeking to reconcile key findings within the literature with current methodological approaches, and the research objectives for both research phases, a number of key concepts within the literature were identified. In light of the research objectives outlined in Sections 4.1 and with due regard to the literature, core research considerations were identified, which encompassed endogenous and exogenous influencers of attention and behaviour, conscious and subconscious processing, and cognition and affect systems. These guided the focus of research within each phase and the subsequent methodological considerations. Figure 4.1 provides a study design overview outlining the relationship between the literature (core research considerations), the research objectives (research focus) and the methodological approach adopted (data collection), drawing particular attention to the relationship between the literature, research objectives and methodological considerations throughout both research phases.

The core research considerations outlined in Figure 4.1 draw on the key aspects of the conceptual framework of label usage presented in Figure 3.5. The research focus of phase 1 reflects the central strand of the conceptual framework presented in Figure 3.5, considering *attention*, *perception* and *information processing* and the role of endogenous and exogenous influencers in this process, to address RQ1. The core research considerations of research phase 2 presented in Figure 4.1 consider in greater detail the role of risk/benefit orientations in cognition and affect to address the interrelatedness of endogenous influencers outlined in the conceptual framework of label usage derived from the literature. In so doing, this phase addresses RQ2 and RQ3.

Having provided an overview of the study design and its relationship with the literature review, the following sections proceed to outline in greater detail this relationship, including the study design considerations and implications.

Figure 4.1: Study Design Overview



4.3 Research Phase 1: Study Design and Data Collection

This section provides an overview of the first phase of data collection which sought to build on existing literature to establish the factors impacting consumers' motivation to use labels in their purchase decision-making process and address the first research objective:

> ***Research Objective 1:*** To map the influence of consumers' personal endogenous dispositions (including risk/benefit orientations) and exogenous factors on label usage and information processing.

Specifically, this section describes the development of stimuli required to identify salient attributes, in addition to the various considerations involved in the experimental design of the first phase of data collection, specifically the design of an eye-tracking experiment. It concludes by addressing the use of semi-structured in-depth interviews as a means to elaborate on findings from the eye-tracking experiment. The distinction between quantitative and qualitative methods has been characterised as a trade-off between breadth and depth, with qualitative methods allowing for "*careful attention to detail, context and nuance*" (Patton, 2002, p.227). This section will describe and justify the design of research phase 1, including the rationale underlying the exclusion of alternatives.

4.3.1 Data Collection Process: Overview and Justification

As illustrated in Chapters 2 and 3, both the motivation and consumer behaviour literatures demonstrate that decision-making is influenced by both endogenous (top-down) and exogenous (bottom-up) factors. Given the research objectives outlined, it is first necessary to identify salient label elements/attributes utilised in the decision-making process before exploring their significance within this process. Through exploring the role of attributes, which have been determined to be salient to consumers through elicitation, as opposed to those believed to be salient by the researcher, the subsequent discussion around label elements used in the decision-making process is believed to be more relevant. When seeking to define the motivation construct (see Section 2.2), it was noted that motivation cannot be observed in isolation from the phenomenon under investigation (Dai & Sternberg, 2004). In this instance, the

motivation object is the food product label. It is for this reason, that labelling stimuli are required during this phase to identify the label elements used in the decision-making process and probe the reasons underlining subsequent product evaluations. In addition to exogenous factors, label usage and purchase decisions are influenced by endogenous factors including considerations such as self-efficacy, knowledge, understanding and motivation. The role of such factors can be explored through multiple means, which are outlined below.

The following sections detail the data collection methods employed for the first research phase. The section begins by illustrating and justifying the data collection methods for label usage and proceeds to outline the means for gathering data relating to endogenous and exogenous influencers. This section concludes with an overview of study design considerations (Table 4.4) and data collection protocol (Figure 4.3).

Measuring Label Usage

In line with the research objectives set out in Section 4.1, it is necessary to determine consumers' usage and non-usage of label information. A variety of approaches have been used for this purpose. In particular, a distinction has been made within labelling research between so-called 'subjective' and 'objective' measures of label usage (Miller et al., 2015).

'Subjective' Measures of Label Usage

Within the literature, 'subjective' or self-reported measures of label usage rely on participants to account for their own usage (Miller et al., 2015) and include questionnaires (Rebollar et al., 2015), interviewing and surveys (Bialkova, Grunert & van Trijp, 2013). Recently, these label usage measures have come under criticism as they are subject to a number of limitations which have impacted the credibility and accuracy of findings, and as such they have been deemed poor indicators of usage (Graham, Orquin & Visschers, 2012; Ares et al., 2013) as they have insufficient construct validity (Visschers, Hess & Siegrist, 2010). In particular, in relation to label and nutritional information usage, a substantial variation in the proportion of consumers reporting use of nutritional information has been noted (van Trijp, 2009) and it is widely accepted that self-reported measures are subject to over-reporting (Cowburn & Stockley 2005; Grunert & Wills, 2007; Graham & Jeffery, 2011) and

misreporting, due to consumers' lack of awareness of their usage (Graham, Orquin & Visschers, 2012). Indeed, over-reporting arising from self-reported measures of label usage has been estimated to be as high as 50% (Grunert, Will & Fernández-Celemín, 2010).

In particular, the use of self-reported measures of label usage are impacted by the propensity of participants to answer questions in a socially desirable manner, i.e. subjectivity bias (Grunert, Wills & Fernández-Celemín, 2010; Visschers, Hess & Siegrist, 2010; Grunert et al., 2010). As discussed in Chapter 2, decision-making and attention do not always occur on a conscious level (Wood & Neal, 2007), particularly where behaviours have become automated and habitualised over time. Given that consumers are oftentimes unaware of their viewing of particular label elements, this further exacerbates the limitation of self-reported measures of attention (Ares et al., 2013). Finally, participants may simply misremember their actual usage in the time between usage and reporting (Graham, Orquin & Visschers, 2012). This effect can be particularly pronounced where the time between viewing and reporting increases.

In addition to the post-hoc measures of label usage discussed above, think-aloud protocols are also available in the assessment of label usage. Think-aloud protocols require the participant to verbalise their thought processes while viewing a given stimuli or conducting a given task and are a means through which to "*gain insight of the user's cognitive processes during the use of a product"* (Hyrskykari et al., 2008, p.1). These protocols have proven quite effective in user experience (UX) studies, particularly in the context of software design and usage (Guna et al., 2006; Hyrskykari et al., 2008; Elling, Lentz & de Jong, 2011). Two variants of think-aloud protocols exist: concurrent think-aloud protocol (CTA), which requires the participant to verbalise their thoughts during a task, and retrospective think-aloud (RTA), which requires participants to recreate their thought processes after task completion. The respective merits of these approaches and their suitability in the context of this study are elaborated later in this section when outlining study design considerations.

'Objective' Measures of Label Usage

Given the limitations of self-reported measures, there has been a movement towards the use of so-called 'objective' measures of attention in the area of food

labelling research, in particular, eye-tracking methods (Bialkova & van Trijp, 2011; Ares et al., 2013). Eye-tracking research is aligned to the behaviourist school of thought which posits that behavioural measures can be used to understand underlying cognitive processes (see Section 2.2). Eye-tracking research rests on the eye-mind hypothesis (Bojko, 2013, p.13) which holds that gaze is typically associated with that which one pays attention to and, as a consequence of this, to that which one thinks about. However, the extent to which eye-movements are truly reflective of underlying mental processes has been contested. For instance, Anderson, Bothell and Douglass (2004, p.230) assert that "*eye-movements do not necessarily reflect mental processes, but they do reflect ongoing processes to the extent that the processes depend on the encoding of information*". This issue is summarised by Bojko (2013, p.14) thusly: "*fixation does not always indicate attention*". However, attention does require observation of the stimuli. Furthermore, attention does not definitely indicate subsequent processing of viewed stimuli. For these reasons, further exploration of eye-tracking results is necessary. Additionally, participants may scan certain information which does not ultimately contribute to the decision which is made, or may observe information without processing it (Jiang, Potters & Funaki, 2016). As such, although eye-tracking facilitates research into the unconscious mechanisms underlying product purchasing behaviour (Rebollar et al., 2015), it is acknowledged that, while perception is a prerequisite for information processing (Grunert & Wills, 2007; Grunert & Aachmann, 2016), it does not necessarily result in information processing.

Therefore, despite eye-tracking being a potential means through which to capture unconscious behaviour, the sole use of eye-tracking methods in the area of decision-making raises concerns. In particular, the use of eye-tracking data in order to *make inferences* relating to the decision-making strategy used by the participants is problematic (Ashby et al., 2016), as such interpretations are subject to the same potential shortcomings and unsubstantiated conjecture which resulted in the decline in the behaviourist school of decision-making research in the first instance (see Section 2.2). To this effect, many recent studies using eye-tracking methods can be regarded as being more closely aligned to the approaches to motivation studies adopted during the behaviourist period, which saw an exclusion of introspective techniques.

Consequently, the absence of introspective data, which is better suited to understand the motivational component of label usage, is a major potential limitation of contemporaneous eye-tracking research. Hyrskykari et al. (2008, p.1) summarise the problem thusly: "*although eye-tracking tells us what users look at, it does not tell us why*". To this end it has been argued that self-reported measures of label usage may capture more of the motivational component of label usage than objective measures do (Miller et al., 2015). This suggests a need for introspection in order to determine the motivations underlying label usage arising from eye-tracking outputs.

With this in mind, and in line with the constructionist approach underpinning this research, eye-tracking outputs were further explored through the use of an RTA protocol and semi-structured interviewing. It has previously been suggested that interviewing participants regarding the eye-tracking results using a retrospective think-aloud protocol may facilitate the interpretation of eye-tracking data (Graham, Orquin & Visschers, 2012). Furthermore, as highlighted in Section 2.2, the radical behaviourist position (i.e. Skinnerian perspective which gave rise to the development of operant conditioning), tacitly acknowledges the roles of memory and internal processes in relation to behavioural outcomes. As such, there also exists a precedent within the behaviourist school of thought for the integration of these paradigms. However, to date the author is not aware of research employing such an approach in the food labelling domain. Discussion will now turn to focus on the use of semi-structured interviews and retrospective think-aloud (RTA) protocols as a means to elaborate on findings from the eye-tracking experiment.

Semi-Structured Interviewing

To address the limitations of the eye-tracking methods discussed, further exploration of the cognitive processes underlying the participants' attention to the experimental stimuli was conducted using a retrospective think-aloud protocol and semi-structured interviewing.

It has been argued that semi-structured interviewing is a useful tool for both adding to and generating theory (Wengraf, 2001) and is "*suited for the exploration of the perceptions and opinions of respondents regarding complex and sometimes sensitive issues and enable probing for more information and clarification of answers*"

(Barriball & While, 1994, p.330). In particular, the semi-structured interview approach affords the interviewer a certain degree of structure while at the same time allowing enough flexibility to respond to issues which require further probing in the context of participant responses. The interview schedule for research phase 1 (see Appendix 4.4) incorporates a retrospective think-aloud (RTA) protocol, which is discussed below.

Integrating a Think-Aloud Protocol

For this study, a think-aloud protocol was employed to identify and explore the cognitive processes which guided label usage during the eye-tracking experiment. Although previous studies have used a concurrent think-aloud (CTA) protocol for label usage research (see Higginson et al., 2002), this has greater potential to disrupt normal search behaviour through increasing the cognitive activity required (Elling, Lentz & de Jong, 2011; Bojko, 2013). Furthermore, in the context of the habitualised behaviours one would expect to see in relation to product labelling, it has been argued that "*automated processes are hard to transfer into think-aloud*" (Hyrskykari et al., 2008, p.2). Additionally, with respect to the eye-tracking experiment, a CTA protocol could potentially negatively impact the eye-tracker calibration as a result of additional head movement.

As such, a cued retrospective think-aloud protocol (RTA) was integrated into the interview schedule, with interviews taking place approximately ten minutes after participants completed the eye-tracking task to allow the researcher time to review eye-tracking data. RTA is a form of process tracing which focuses on the sequence of cognitive events which occur during participant interaction with information stimuli (Kuusela & Paul, 2000). The cued RTA has been demonstrated to be a reliable data collection tool for both simple and complex tasks (Guan et al., 2006). The main considerations relating to the use of CTA and RTA are summarised in Table 4.3.

Table 4.3: Concurrent vs. Retrospective Think-Aloud[13]

	Concurrent Think-Aloud	Retrospective Think-Aloud
Impact on Session Duration	CTA is more efficient at gathering feedback and results in a shorter session.	RTA increases the time spent on tasks, as task execution and verbal reporting are sequential.
Impact on Verbalisations	By reporting tasks in real time, participants cannot forget what they were thinking while performing the task.	Participants may not be able to recall all of their thoughts during the task. RTA should be administered after task. Memory cues are advisable.
Impact on Performance	CTA interferes with performance and affects measures and can often extend task duration and affect task success rate. CTA may increase participants' cognitive workload and disrupt task.	RTA should not interfere with participant behaviour. If participants are aware of RTA, they may try to complete the task more thoughtfully.
Impact on Eye Movements	May affect the realism of eye movements as verbalisations produce more fixations and longer analysis.	RTA has no impact on eye-movements. If participants know what to expect after the task, they may approach it differently.

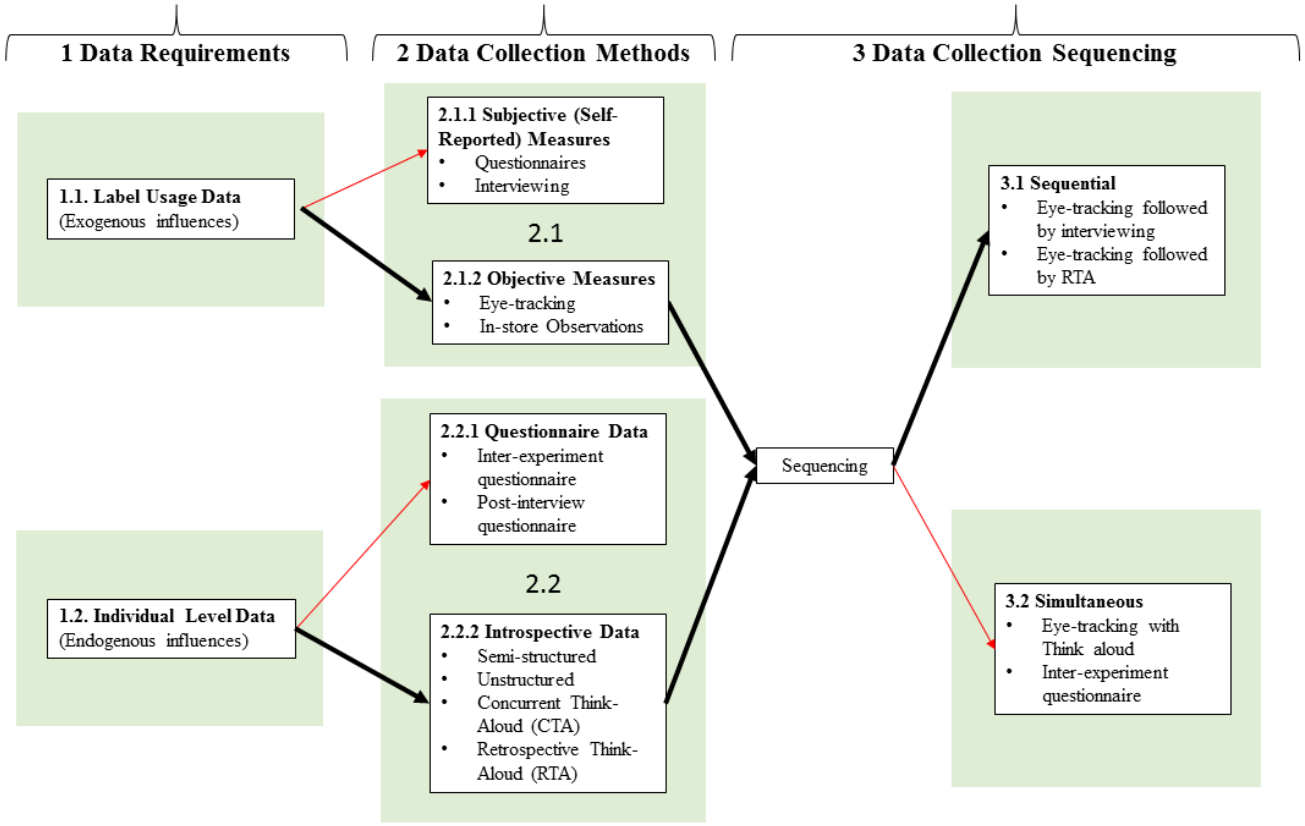
One of the potential disadvantages associated with the use of RTA over CTA is the temporal distance between stimulus viewing and reporting of thoughts during the eye-tracking task. This distance is noted as having the potential to result in data loss owing to participants' inability to recall their thought processes. This can be overcome through the use of memory cues, oftentimes referred to as cued-RTA (Bojko, 2013) or stimulated-RTA (Guan et al., 2006; Hyrskykari et al., 2008). In the context of the eye-tracking study, there were a number of memory cues available, however these can be broken into two categories: the original stimuli, and stimuli with data overlays from the eye-tracking experiment.

Although gaze-cued RTA (i.e. RTA with data overlays on a stimuli) has been argued as a more effective data collection tool than CTA, it has been noted that gaze replay has the potential to interfere with verbal reporting during RTA arising from "*participants' initial surprise and fascination with the speed and jumpiness of eye*

[13] Adapted from Bojko (2013, p.109)

movements" (Bojko, 2013, p.111). Indeed, this observation was borne out in the instrument pilots where participants were asked to observe their own viewing behaviour. In order to mitigate the potential of participants becoming distracted during the RTA protocol, a stimulus-cued RTA was administered whereby participants were provided with the original stimulus and asked to recount their viewing and thoughts. Where discrepancies or omissions occurred between the participants' reporting and the gazepaths generated from the eye-tracking session, these were discussed with participants during the post-RTA discourse. The gazepaths and gaze videos were available to the researcher during the RTA exercise to identify any discrepancies and omission, thereby allowing for a cued-RTA which was not disrupted by participants being overloaded with information in the form of gaze replays. This increased the trustworthiness of data collected by allowing for further probing and scoping of potential participant derived errors in reporting. The primary study design decision touchpoints for this research phase are illustrated in Figure 4.2 and summarised in the accompanying Table 4.4.

Figure 4.2: Phase 1 Study Design Decision Touchpoints[14]



[14] Heavy lines denote options pursued across alternatives, while red lines depict the option not chosen. Within box alternatives are presented to demonstrate decision touch points in data collection options.

Table 4.4: Research Phase 1 Design Considerations[15]

1 Data Requirements		
Decision	**Description**	**Key Considerations & Rationales**
1. Qualitative Data	Rich data which helps to identify and explore the idiosyncratic and contextual factors which influence motivation	• Behaviourist approaches neglect introspection and fail to capture the motivational factors underlying behaviour. • Research from the perceived risk/benefit and decision-making literatures suggest that risk and benefit considerations are idiosyncratic, time and context dependant. Although a framework for understanding these exist, the relative saliency of these vary across contexts. • Existing literature does not account for the nature of the interaction of risk and benefit perceptions as they relate to label usage, thereby necessitating further exploration.
1.1 Label Usage Data (Exogenous Influences)	Data relating to the label elements used in the decision-making process	• The motivation construct cannot be observed in isolation from the phenomenon under investigation (Dai & Sternberg, 2004). • Exploration of the factors underlying label usage requires understanding of the information used by participants. • Decision-making is demonstrated to be influenced by both endogenous (motivations, goals, beliefs) and exogenous (stimuli and environment) factors.
1.2 Individual Level Data (Endogenous Influences)	Data relating to the role of personal factors in influencing label usage and decision-making	• Label usage, and information processing in general, are influenced by personal factors including self-efficacy beliefs, knowledge, involvement, goals etc.

[15] Decision section numbering corresponds to numbering in Figure 4.2.

Table 4.4 Research Phase 1 Design Considerations (continued)

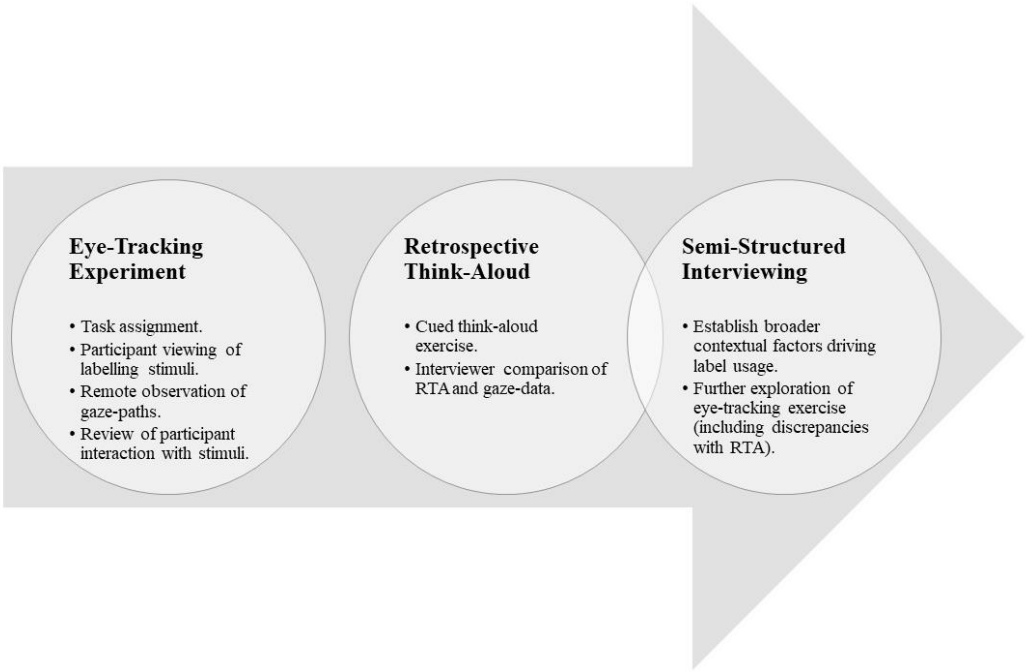
2 Data Collection Methods		
Decision	**Description**	**Key Considerations & Rationales**
2.1 Label Usage Data Collection	Data relating to participants' attention to labels presented	• Determining the specific label elements used in the decision-making guides interview process.
2.1.1 Subjective	Self-reported measures requiring participants to introspect	• Habitual behaviours enacted on a subconscious level and therefore cannot be reported by the individual (Graham, Orquin & Visschers, 2012). • Errors of omission: participants may forget label elements used in their decision-making (Visschers, Hess & Siegrist, 2010). • Errors of commission: participants may, due to a subjectivity bias, alter their reported label usage (Grunert, Wills & Fernández-Celemín, 2010).
2.1.2 Objective Measures	Eye-tracking methods	• Eye-tracking captures the subconscious component of label viewing • Addresses the potential for errors of omission by capturing all usage data. • Provides visual representation of label usage in real-time, to aid in interview preparation.
	In-store observations	• Can provide information as to whether consumers are viewing labels and duration of time spent. • Lack of granular data • Information related to specific label elements read must be elicited through self-reported measures.

Table 4.4 Research Phase 1 Design Considerations (continued)

Decision	Description	Key Considerations & Rationales
2.2.2 Introspective Data	Retrospective Think-Aloud (RTA)	• Offers a solution to the think-aloud protocols shortcomings. • Has been demonstrated as being useful in the context of usability and user experience (UX) studies.
	Semi-structured interviews	• Objective measures of label usage such as eye-tracking fail to capture the motivational component of usage. • Non-usage of semi-structured interviews means that motivations must be inferred from eye-tracking (e.g. Visschers, Hess & Siegrist, 2010). This introduces the potential for researcher bias. • Introspective techniques have proven more effective at identifying the motivational component of behaviour (Miller et al., 2015). • Allows for further probing and elaboration and offer a greater degree of flexibility to respond to participant-specific eye-tracking findings. • Use of think-aloud during eye-tracking procedure has been noted as biasing results, diminishing the role of subconscious actions and highlighting to the participant what they are doing thereby reintroducing the potential for subjectivity biases.
3 Data Collection Sequencing		
3.1 Sequential	Collecting eye tracking data, followed by interviewing (i.e. RTA)	• Reduces the risk of biasing the eye-tracking results presented by CTA. • Helps to elaborate cognitive processes and decisions made during the experiment. • Some information may be forgotten between viewing labels and interviewing. • Allows interviewer to prepare questions guided by eye-tracker output.
3.2 Simultaneous	Eye-tracking data and user thoughts collected simultaneously (i.e. CTA)	• CTA may bias eye-tracking results through making the user consciously aware of the viewing behaviour. • Inter-experiment questionnaires require greater interaction with the software, keyboard use may result in participant moving head too much and adversely affect calibration.

Based on the decision touch points outlined in Figure 4.2, a sequential data collection approach is outlined which begins with eye-tracking data collection, the findings of which are integrated into the instruments for interviewing (see Appendix 4.4). This data collection process is outlined in Figure 4.3.

Figure 4.3: Research Phase 1 Data Collection Protocol



Prior to data collection, a pilot study was conducted with two participants to ensure the effectiveness of the protocol for explaining the eye-tracking procedure, to refine the data collection instruments and to identify any potential technical issues. Each pilot involved debriefing of the participants to ensure clarity. Piloting of the study instruments resulted in some minor changes to both the participant task assignment outline when explaining the eye-tracking experiment and task assignment in addition to some minor amendments to the interview schedule. Given that changes were made to both the interview schedule and task assignment outline during the pilot study, this data was not considered for inclusion in the final analysis.

4.3.2 Experimental Stimuli

In choosing appropriate label stimuli for the eye-tracking experiment, it was decided to use bespoke labels in line with previous research (Antúnez et al., 2013; Oliveira, 2016). Although existing labels offer a more ‘straightforward’ solution to the

problem of selecting appropriate stimuli, there are a number of limitations associated with this approach. This decision was made to reduce the familiarity effect, which can arise through the use of known brands, packaging or products. Furthermore, and in line with recommendations put forward by Orquin, Ashby and Clarke (2016), labels were designed to ensure sufficient distance between label elements considering the accuracy levels of equipment used.

Given the role of product category specific goals and information in influencing information search, this study focused on a single product category, yogurt. Yogurt was selected as a case food as it serves multiple consumer goals, such as enjoyment, health and convenience. Consequently, the category encompasses purchasers from all age groups and consumer types (Bord Bia, 2015). In particular, the heterogeneity of the yogurt market, coupled with the diversity of usage occasions, including use as a standalone food item, a snacking item and cooking ingredient (Bord Bia, 2015), makes yogurt a particularly interesting case food, as it represents a means of achieving a multitude of potential consumer goals. Additionally, yogurt is generally viewed as a healthy product, including in the Irish context (Bord Bia, 2015), with prior research indicating that consumers are more likely to use labelling information in instances where the product category is perceived as healthy (Grunert, Wills & Fernández-Celemín, 2010). As such, research suggests that label usage is more likely in this category, and as such, will provide richer data than categories where label usage is less likely.

In designing the experimental stimuli, a number of constraints were placed on label design. In line with previous studies (Antúnez et al., 2013), labels were designed in compliance with existing regulations (Regulation (EU) 1169/2011) and incorporated those pieces of information and presentation styles which were present in the marketplace and with which consumers were familiar, in order to best represent the current labelling environment. These decisions were made to ensure that labels used were representative of the market, thereby reducing the need for participants to negotiate unfamiliar labelling conventions (Antúnez et al., 2013). Additionally, labels were designed to avoid familiarity effects arising from associations with existing brands. In line with previous studies, all mandatory information was included on the label (Mawad et al., 2015).

Given the absence of a clear taxonomy of food labelling discussed in Section 3.2.3, as well as product category specific variations in labelling information, representativeness was achieved through a content audit of labels available on the Irish marketplace. Yogurt FoP and BoP labels were recorded (photographed) across three major supermarket chains resulting in a total of 38 units of analysis (food labels), including own brand labels. Information content and density were recorded. Across the 38 units of analysis a total of 65 content codes were initially generated based on manifest content. Once all labels had been coded, similar content was identified and was grouped together. After merging similar content, a total of 49 content codes remained. These codes are detailed in Table 4.5, including their frequency of occurrence across FoP and BoP labels for the 38 units of analysis. Information density was subsequently assessed, whereby information density can be understood to refer to the number of occurrences of coded information present on a given label, i.e. number of codes per label. FoP label density ranged from 5 to 16 content codes with $\bar{x}$=10.55. BoP label density ranged from 7 to 22 content codes with $\bar{x}$=12.87. The information density per product (i.e. the sum of FoP and BoP information) ranged from 13 content codes to 32 content codes with $\bar{x}$=23.42. Based on the content audit, low information density was set at between 12-18 label elements per product, medium information density was set at 19-25 information elements per product, and high information density was set at between 26-32 information elements per product.

Table 4.5 Labelling Audit Codes and Frequency of FoP/BoP Occurrence (n=38)

Category	Code	FoP	BoP
Mandatory Particulars	1. Brand Name	38	13
	2. Name of Product	38	21
	3. Allergen Information	1	37
	4. Use by Date	38	1
	5. Storage Directions	29	28
	6. Ingredients List	1	37
	7. Nutritional Information/Declaration	1	37
	8. Manufacturer Contact Details	1	37
	9. Net Weight	20	31
	10. Provenance	12	5
FoP Nutrition	11. Traffic Light System	10	0
	12. RDA	27	3
	13. Summary Nutrition Information (Energy Only, Energy & Others)	28	3
Does not contain/free from	14. Gluten Free	2	10
	15. GM Free	1	2
	16. Fat Claim (Low-fat, Fat-Free, 0% Fat, Less than X% Fat)	19	6
	17. Lactose Free	0	1
	18. No Added Sugar	2	1
	19. No Refined Sugar	1	0
	20. No Additives	1	1
	21. No Artificial Claims (Sweeteners/Flavours/Colours/Preservatives)	5	5
Claims	22. Health Claim (Lowers Cholesterol, Strong/Healthy Bones, Supports Immune System)	5	3
	23. Calorie Claim	6	0
	24. Organic Claim	4	2
	25. Natural Claim	11	3
Product Description	26. Flavour(s)	38	14
	27. "New"	5	0
	28. Live	4	2
	29. Bio	4	0
	30. Product Description	2	18
	31. Soya	2	0
	32. Skimmed Milk	0	1
	33. Sustainable	0	2
	34. Suitable for (Vegans, Vegetarians)	1	31
	35. Source of (Protein, Calcium, Vitamin D/B6, Fibre)	11	4
	36. Reduced Sugar	2	0
	37. Cultures	5	4
	38. Plant-based	0	2
	39. With Plant Stanols	2	0
Additional Information	40. Award/Certification	1	4
	41. Recycling Information	0	29
Usage Guidelines	42. Usage Recommendation(s)	0	4
	43. Medical Recommendation(s)	0	1
Online Portals	44. Social Media Logo (Facebook, Twitter, Pinterest)	0	16
	45. Website Invitation	0	10
	46. QR Code	0	2
Retail Information	47. Pots not to be sold separately	3	7
	48. Bar Code	1	35
	49. Promotional Offer	2	0

Drawing on the findings from the label content audit, a total of 5 labels were designed with total label density ranging from 18 to 32 content codes. All mandatory information, as set out in EU 1169/2011, was presented on the label. Findings from the label content audit were discussed within the research team prior to label design to ensure face validity of the content audit. Label design criteria was then determined through populating the labels with content codes in proportions similar to those present in the content audit[16]. Furthermore, all labels were designed to accommodate the degree of accuracy of the eye-tracking software being used (between 0.5-1.0 degrees of visual angle). Preliminary designs were reviewed by the research team to ensure accuracy of information presented on the label, with recommendations arising from this discussion incorporated into the final designs. Information density and dispersion of information across FoP and BoP labels can be seen in Table 4.6. In choosing the label elements for inclusion, mandatory particulars (as set out in Regulation (EU) 1169/2011) were distinguished from optional label elements. Phase 1 label designs are presented in Appendix 4.2.

Table 4.6: Label Density of Phase 1 Labelling Stimuli

	Mandatory Information[17]		**Optional Information**		**Total Information**		
	FoP	**BoP**	**FoP**	**BoP**	**FoP**	**BoP**	**Entire Label**
Label 1	5	7	6	6	11	13	24
Label 2	5	7	9	11	14	18	32
Label 3	4	6	7	7	11	13	24
Label 4	5	8	7	6	12	14	26
Label 5	4	5	2	7	6	12	18

4.3.3 Eye-Tracking Experimental Design

The following sections aim to provide an overview of the various decisions made in designing the eye-tracking experiment for research phase 1 and provide an overview of the experimental setup.

[16] Given the special focus on digital labelling (i.e. QR codes) in this study, QR codes were presented in a higher frequency than observed in the content audit. Instead of being presented on 1 label, they were presented on three (see Appendix 4.2) to observe whether participants did or did not consistently observe these.

[17] Variations in the sum of mandatory information across products arose as a result of repetition of some elements of mandatory information across FoP and BoP labels for individual products, such as inclusion of the product name on the front and back of the label, reflecting findings from the content audit.

Technical Specifications

To gather eye-tracking data, a remote eye tracking system (Gazepoint GP3) was located beneath a computer monitor, with an accuracy of 0.5-1.0 degrees of visual angle and recording frequency of 60Hz. Labels were presented on a Dell P2314 23-inch LCD monitor with 1920 x 1080 resolution using the Gazepoint Analysis UX Edition software package. Participants were seated approximately 60cm from the computer monitor in line with technical specifications from the hardware provider. Prior to the experiment a 9-point calibration was conducted in order to achieve a greater degree of accuracy than the standard 5-point calibration. Analysis of eye-tracker output was conducted using the Gazepoint Analysis UX Edition. Participants' progress during the experiment was monitored remotely by the researcher using the Gazepoint Remote Viewing Module. This allowed for real-time visual analysis of label usage during the experiment, facilitating the preparation of resources for the subsequent post-experiment semi-structured in-depth interviews.

Calibration of Eye-Tracking Equipment

Prior to the experiment being conducted, participants completed a 9-point calibration procedure. Although this requires more time than a 5-point calibration, it offers a greater degree of accuracy. This trend towards the use of 9-point calibration is also reflected in recent eye-tracking research (Visschers, Hess & Siegrist, 2010; Orquin, Ashby & Clarke, 2016) although 5-point calibration continues to be used (Antúnez et al., 2013; Mawad et al., 2015; Oliveira et al., 2016). The Gazepoint Control Module allows the researcher to assess the degree of accuracy through real time fixation tracking over a predefined, information-neutral screen, which is populated with fixation crosses. Where participants were within the accuracy range of the Gazepoint GP3 hardware (0.5-1.0 degrees of visual angle) calibration was deemed acceptable. Where this was not achieved, the process was repeated until the desired degree of accuracy was attained.

Despite advances in eye-tracking technology, not every individual is 'trackable'. In particular, it has been noted that difficulties in tracking participant eye-movements can occur in instances where participants have conditions that affect eye movements such as strabismus (Bojko, 2013). Additionally, eye-tracking has been noted as being more difficult for older participants who may have age-related eye

conditions, such as droopy eye-lids, which lead eye-lashes to obstruct gaze recording (Bojko, 2013). It was not possible to record eye-movements for one participant due to insufficient accuracy in the calibration task.

Task Assignment

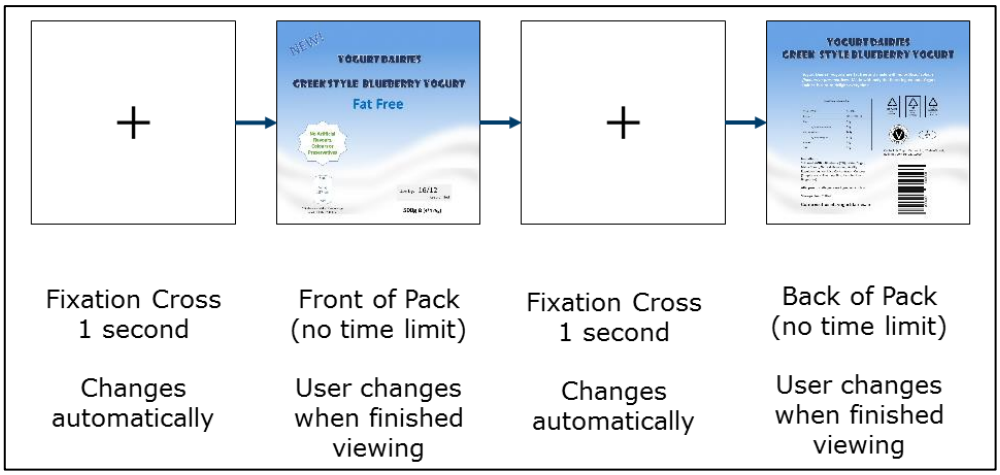
As noted by Rebollar et al. (2015, p.252), previous eye-tracking studies in the food labelling domain have focused on goal-oriented attention (see Visschers, Hess & Siegrist, 2010; Antúnez et al., 2013) whereas others have focused on stimulus-driven attention (see Ares et al., 2013; Wąsowicz et al., 2015). In the context of goal-oriented attention, it is worth noting that the focus to date has been on the impact of particular goals, such as health goals and taste goals, on label usage. However, to the best of the author's knowledge, no studies have been undertaken in the area of eye-tracking in order to determine the goals and motives driving label usage. For this reason and with the research objectives in mind, it was determined that the task set to participants should be open-ended, so as to not assign a particular goal prior to the experiment and thereby potentially biasing results. It has also been argued that eye-tracking, as opposed to interview-based data collection, offers the researcher greater ability to avoid revealing the purpose of the study, which may otherwise emerge during interviewing (Visschers, Hess & Siegrist, 2010). This is due to the ability of the experimenter to require participants to complete the eye-tracking task without the need for prior interviewing, and potential inference-making on the part of the participant.

Stimulus Presentation

When commencing the eye-tracking experiment, in line with previous work and common practice within the area, a fixation cross was presented prior to presenting the stimuli to the participant (Ares et al., 2013; Antúnez et al., 2013; Bialkova et al., 2014). The purpose of this is to ensure consistency across experiments and, in instances where the software program presents the stimuli before experiment commencement, as is the case with the Gazepoint Analysis UX software, this has the added function of preventing the participant being exposed to the stimuli prior to eye movements being recorded. There is no agreed duration for the display of a fixation cross in the literature, with durations of 200 milliseconds (Mawad et al., 2015; Oliveira et al., 2016), 500 milliseconds (Bialkova et al., 2014) and 1 second (Antúnez et al., 2013; Ares et al., 2013) being employed. Drawing on the pilot study conducted, a

fixation cross was presented before each stimulus for a duration of 1 second, as this allowed sufficient time for participants to reorient to the fixation crosses prior to stimulus presentation. An abridged overview of this process is presented in Figure 4.4.

Figure 4.4: Stimulus Presentation Order



Time Available for Task Completion

In line with previous research, and given the open-ended nature of the task assigned, no time limit was placed on the viewing of the labelling stimuli (Visschers, Hess & Siegrist, 2010; Antúnez et al., 2013; Ares et al., 2013; Mawad et al., 2015; Siegrist, Leins-Hess & Keller 2015). This allows for the experimental setup to be more representative of a typical shopping visit, whereby participants decide how much time to spend viewing the label, while also accounting for variations in interest and cognitive ability. Although there have been some studies which have placed time limits on the viewing of stimuli in eye-tracking experiments (Rebollar et al., 2015; Oliveira et al., 2016), such limits are typically placed in order to ensure attention for immediate viewing is captured. As with other programs, participants were required to press a button (keyboard space bar) once they decided that they had finished viewing the stimulus, in order to progress to the next image (e.g. Antúnez et al., 2013).

Remote Viewing of Eye-Tracking Experiment

During the eye-tracking experiment the researcher observed participants eye-movements in real time. The researcher was seated behind the participant, out of participants' field of view with their back facing them. Eye-tracking data was streamed remotely to a second computer, which was not visible to participants during the

experiment. This allowed for the researcher to observe experiment progress without causing distractions to the participants during the exercise.

4.3.4 Retrospective Think-Aloud Protocol

To address the limitations of eye-tracking stemming from the lack of introspection, a cued retrospective think-aloud (RTA) protocol was integrated into the semi-structured interview schedule (see Section 4.3.1). The RTA allowed for greater exploration of attention through differentiation of attention occurring incidentally, or as a result of effortful search, with the latter believed to result in more in-depth information processing and behavioural consequences (Grunert & Wills, 2007).

Following a number of brief introductory questions to establish typical information search behaviour, participants completed the RTA exercise. Subsequently, participants engaged in a broader discussion, as part of a semi-structured interview, to establish the label specific and personal factors influencing decision-making within the food category and assess the extent to which wider contextual factors influenced and guided typical search behaviour. During the interviews, discrepancies between information provided in the RTA and eye-tracking were explored and noteworthy observations from the eye-tracking experiment were discussed to adhere to the principles of data adequacy throughout the data collection process (Morrow, 2005).

4.3.5 Semi-Structured Interviews

To elaborate on findings from the eye-tracking experiment and address potential limitations of eye-tracking discussed previously, participants were interviewed after the eye-tracking experiment. As mentioned, this semi-structured interview sought to establish contextual factors associated with individual label usage and incorporated a RTA protocol to trace the sequence of cognitive events during usage of the label information presented in the eye-tracking exercise. Patton (2002, p.341) argues that interviewing is a tool which can be used where observation is not possible, and therefore "*allows us to enter into the other person's perspective*". Of course, this view must be qualified with the caveat that the interview itself may lead to certain perspectives being pursued which are not of the same relevance or significance to the respondent as to the researcher.

A semi-structured interviewing approach was chosen as this allowed for greater exploration than fully-structured interviews afford (Wengraf, 2001). Additionally, objective label usage measures have been noted as missing out on the motivational component of behaviour when compared with self-reported usage measures. To further explore the concepts underlying the usage of label elements in the eye-tracking experiments, semi-structured depth interviews were conducted with participants immediately after the eye-tracking exercise.

There are a number of considerations which are important when using this approach to data collection, in particular that the semi-structured interview format affords the researcher a degree of flexibility in dealing with participants' responses. Interviewing, as a data collection tool, has been described as a co-production process between the interviewer and interviewee (Wengraf, 2001, p.3). Although this approach offers a number of advantages which align themselves to qualitative research, the flexibility offered may result in greater uncertainty for the researcher during the process. In seeking to manage uncertainty, two pilot interviews were conducted prior to data collection, and an interview schedule was prepared to guide interviews (see Appendix 4.4).

In relation to interview data, there are a number of different issues which need to be addressed. These relate primarily to *reliability, bias, and validity/generalisability* (Saunders, Lewis and Thornhill, 2009). In line with previous reference to social-desirability bias in the use of self-reported measures of label usage, there is also the potential for interviewee or response bias (i.e. participants providing inaccurate or false information) during the interview process, given the nature of interviewing as an intrusive process. Turning to the issues of generalisability of findings arising from interview data, Saunders, Lewis and Thornhill (2009, p.328) argue that *"an attempt to ensure that qualitative, non-standardised research could be replicated by other researchers would not be realistic or feasible without undermining the strength of this type of research"*. This being said, transparency, as it relates to the interview process, is no less important. Indeed, many have called for greater transparency given the oftentimes subjective nature of interviewing in general. With this in mind, oversight of interview data and subsequent coding was achieved through peer debriefing as outlined in Section 4.4.2.

4.3.6 Participant Recruitment and Sample Size

Sampling in qualitative research is concerned more so with sampling adequacy than with issues of generalisability or representativeness typical of quantitative research (Bowen, 2008). In qualitative research, the focus is on obtaining a wide spectrum of views, perspectives and experiences concerning the phenomena under scrutiny in order to obtain "*information-rich cases"* (Patton, 2002, p.230) with which to further uncover the nature of the given phenomena. As such "*sampling procedures in qualitative research are not so rigidly prescribed as in quantitative studies*" (Coyne, 1997, p.23), which seek to make generalisations for the population of interest and therefore require samples which are representative of the population and large enough to produce statistically significant results. To this end, Patton (2002, p.230) argues that "*nothing better captures the differences between quantitative and qualitative methods than the different logics that undergird sampling approaches"*.

With this in mind and given the research objectives outlined in Section 4.1, participant recruitment for the first phase of data collection sought to involve individuals from as diverse backgrounds as possible, albeit in line with the recruitment criteria described below. For this study, purposive maximum variation sampling was employed. Achieving sample heterogeneity was deemed important owing to the structure of the yogurt market and the impact of diverse consumer experiences on label usage and interactions. Although achieving a great deal of heterogeneity can be problematic for smaller samples, it has been argued that this sampling strategy can prove effective as "*any common patterns that emerge from great variation are of particular interest and value in capturing the core experiences and central, shared dimensions of a setting or phenomenon"* (Patton, 2002, p.235). That is to say, patterns which emerge among diverse participants are fundamental to understanding the consumer experience.

Achieving Saturation

The term saturation, as it relates to qualitative research, has in the past been criticised as being poorly defined and lacking clear direction in terms of operationalisation. As highlighted by O'Reilly and Parker (2013), the presence of disparate interpretations and operationalisations of the saturation concept can be traced

to adaptions in the meaning of saturation from its origins in grounded theory research. As such, researchers refer to theoretical saturation, data saturation, thematic saturation or simply saturation more broadly (*ibid*).

Broadly speaking, saturation has been defined as "*the point in the research when all concepts are well defined and explained*" (Corbin & Strauss, 2008, p.145) and, more specifically, has been noted as entailing "*bringing new participants continually into the study until the data set is complete, as indicated by data replication or redundancy*" (Bowen, 2008, p.140). However, in line with the interpretivist perspective which underpins much qualitative research, it has been argued that "*each life is unique and in this sense data are never truly saturated as there will always be new things to discover*" (O'Reilly & Parker, 2013, p.194). With this being said, for the purpose of transparency and maintaining research quality, it has been argued that the oftentimes poorly defined and ill-demonstrated concept of saturation "*should be supported by an explanation of how saturation was achieved and substantiated by clear evidence of its occurrence*" (Bowen, 2009, p.137).

For this study, saturation was achieved with 17 participants. As outlined in Section 4.4.2, data analysis was conducted using a constant comparative approach with the reliability and consistency of data coding reviewed by members of the research team. Through this iterative process of data coding, it was observed that no new themes or subthemes emerged during the coding process for the final 4 participants, indicating that theoretical saturation had been achieved.

Recruitment Criteria

Criteria for the recruitment of participants were dictated by two separate considerations: the research objectives outlined in Section 4.1 and the nature of the equipment used in the gathering of data. Clearly defined inclusion and exclusion criteria were established prior to recruitment. In relation to the eye-tracking process, given the nature of the eye-tracking methodology and the respective equipment, participants were required to have normal or corrected to normal vision. Participants' quality of vision was determined based on self-reporting. In relation to the research objectives set out previously, participants were required to meet the following criteria:

- Participant is a purchaser within the yogurt category.
- Participant is responsible for the majority of household purchases.
- Participant is at least 18 years of age.
- Participant has normal or corrected to normal full colour vision.

Participant eligibility was established by means of a screening questionnaire (see Appendix 4.1), which was administered to all prospective participants.

Recruitment Method

The aim of sampling for phase 1 was to achieve sample heterogeneity in order to reflect current consumers and purchasers within the yogurt category in Ireland (see Bord Bia, 2015). Sample heterogeneity was achieved through purposive quota-based maximum variation sampling using an extended network approach. Participants were recruited through the researchers' personal networks. A minimum of two degrees of separation were maintained with a maximum of one participant recruited from a given network route. Participants were not recruited through other participants in the network, i.e. a snowballing approach was not used in this study.

Relevant sampling criteria and their respective prevalence within the sample are outlined in Table 4.7. Participants were informed as to the nature of the study and participation requirements. Where participants were interested in taking part in the study, a screening questionnaire was administered by the researcher in order to assess eligibility and fulfil the quota requirements. Where prospective participants were eligible and fell within the quota requirements, contact information was gathered and participants were contacted to arrange for a meeting. Participants were provided with a study information sheet prior to agreeing to participate (see Appendix 4.6) and were asked to sign an informed consent form prior to participation (see Appendix 4.7). All participants were provided with a €30 voucher upon study completion. Prospective participants were made aware of the existence of an incentive for study completion during the initial contact and prior to completion of the screening questionnaire.

Full ethical approval for the first research phase was sought from the University College Cork Social Research Ethics Committee (SREC). Approval was granted in October 2016 (see Appendix 4.5). Participant recruitment and data collection were undertaken between October 2016 and February 2017.

Although no major ethical concerns were envisaged as arising from the study, collecting data from human subjects necessitates an ethical approach to data collection to ensure no unintended harm occurs to study participants. Key concerns prior to data collection included the need to ensure participant anonymity and data security. Participant anonymity was ensured through using pseudonyms and omission of identifying participant information in reporting (e.g. where details such as participants' place of employment, residence etc. were disclosed by the participant). Additionally, there was a need to ensure that probing conducted during the interview process did not cause distress to participants arising from topics of a sensitive and personal nature, which participants may feel uncomfortable discussing. Prior to interviewing participants were reassured that they could withdraw from the study at any time before or during the study, including withdrawing permission to use data collected up until two weeks after participation. Participants were also provided with an information sheet (see Appendix 4.6) and consent form (Appendix 4.7) outlining these details.

Table 4.7: Phase 1 Sampling Criteria and in Sample Prevalence

Variable	**Frequency (Total participants: *n=17*)**	
Age	18-35	7
	36-50	6
	51-64	3
	65+	1
Gender	Male	8
	Female	9
Employment Status	Employed	8
	Student	4
	Unemployed	3
	Retired	2
Relationship Status	Single	8
	Married	5
	Separated/Divorced	1
	Widowed	1
	Cohabiting	2
Purchasing Frequency	Weekly	13
	Less than weekly/more than monthly	3
	Monthly	1
Children	No Children	8
	At least one Child	9
Health Concern	Presents with diet-related Health Concern	4
	Presents with no diet-related Health Concern	13

4.4 Research Phase 1: Data Analysis Techniques

In line with the principles of dependability and auditability outlined by Miles, Huberman and Saldana (2013), this section provides an overview of the qualitative data analysis applied to the eye-tracking and interview data. It highlights the means through which data analysis was conducted and the measures put in place to ensure the quality of analysis, the accuracy of application of data analysis tools and transparency within the analysis process.

4.4.1 Eye-Tracking Data Analysis

The type of qualitative data analysis applied to eye-tracking data is determined by the nature of the task which participants have been required to complete. Where open-ended tasks are used, it has been argued that the best strategy is to use eye-tracking "*only for observational purposes and to inform the moderator's prompts and probes rather than for more formal analysis aiming to narrow down causes of usability issues*" (Bojko, 2013, p.262). Visual analysis of eye-tracking data can take various forms, utilising heatmaps, gaze plots (also known as fixation paths/scan paths), bee swarms and opacity maps. Bojko (2013, p.216) notes that these data visualisations vary on three primary dimensions: the amount of data shown (individual or aggregated), the format of the visualisation (static or dynamic) and the type of information shown (spatial and/or temporal), as summarised in Table 4.8.

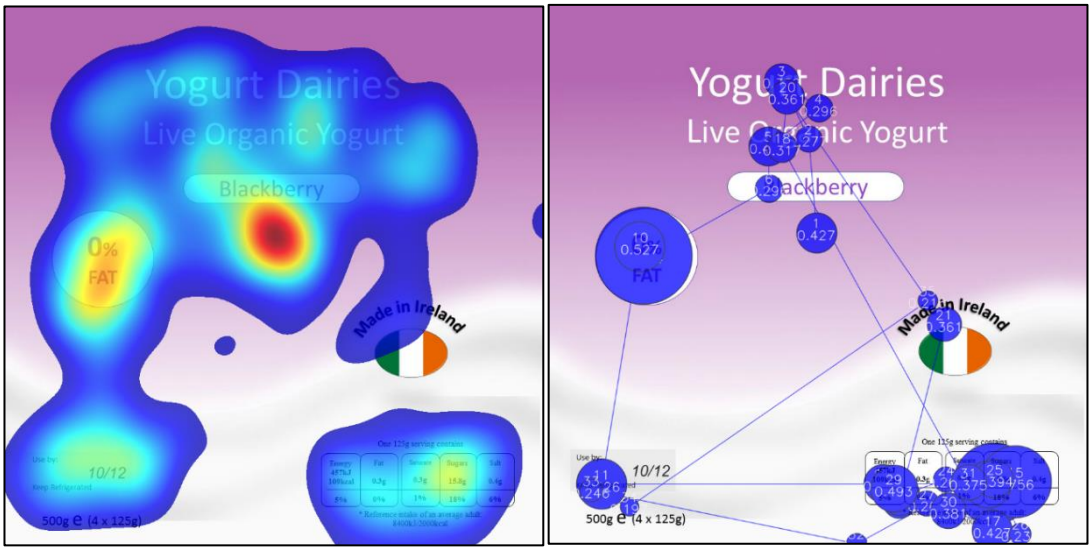
Table 4.8: Comparison of Eye-Tracking Visualisations[18]

Output / Visualisation	Amount of Data Shown	Format of Visualisation	Type of Information Shown
Gaze plot/Scan path	Individual	Static	Spatial & temporal
Gaze Video	Individual	Dynamic	Spatial & temporal
Bee Swarm	Individual & Aggregate	Dynamic	Spatial & temporal
Heatmap	Aggregate	Static	Spatial only
Focus Map/ Gaze Opacity Map	Aggregate	Static	Spatial only
Dynamic Heatmap	Aggregate	Dynamic	Spatial & temporal

[18] Adapted from Bojko (2013, p.218)

Heatmaps are useful only to the extent that they give an impression of the data offering a preliminary high-level overview and are an efficient tool for communicating the results generated from eye-tracking tasks. A gaze plot is "*an image showing an individual's fixations represented as dots, and saccades represented as lines*" where the size of dots is proportional to the duration of the fixation (Bojko, 2013, p.218). As the dots are numbered, to signal the order in which their respective gaze spots were observed, gaze plots (as opposed to heatmaps), provide both temporal and spatial information, thereby affording the researcher an overview the information observed during the viewing session, the order in which information was viewed and whether the information was revisited. Figure 4.5 illustrates the difference between a heatmap (left) and a gaze plot (right) generated for the same eye-tracking data.

Figure 4.5: Heatmaps vs. Gaze plots



In line with suggestions made by Bojko (2013, p.222), real time gaze videos were streamed to the researcher during the viewing sessions, using the Gazepoint Remote Viewer software package. Real time streaming of gaze videos allowed the researcher to develop probes and questions based on participants' viewing during the eye-tracking session. During the RTA, gaze plots were available to the researcher to compare RTA and eye-tracking findings.

4.4.2 Interview Data Analysis

A thematic analysis approach was taken to analysing interview data. It has been argued that thematic analysis is a useful and flexible method in qualitative research,

however, according to Braun and Clarke (2006, p.77) it is "*poorly demarcated, rarely acknowledged, yet widely used".* Consequently, thematic analysis was conducted in line with recommendations put forward by Braun and Clarke (2006), as this approach offers a structured manner through which to conduct such analysis, thereby ensuring adherence to principles of credibility and dependability. Braun and Clarke (2006) identify six phases of analysis which offer the researcher greater structure when seeking to code, analyse, interpret and report findings.

Phase 1: Familiarisation with Data

One of the key principles of ensuring the adequacy of qualitative research, particularly in the interpretivist paradigm, is acquiring a nuanced understanding of the experiences and context of participants to authentically reflect their experiences (Whittemore, Chase & Mandle, 2001). Familiarisation is an important step in ensuring data analysis is undertaken with an understanding of the broader context in which participants operate. Data familiarisation was ensured through multiple means, including primary data collection, development and reviewing of field notes, replaying and transcribing of audio recordings and collation of all data for each participant, including data pertaining to screening questions, eye-tracking experiments, RTA protocols and semi-structured interviewing. Data was collated in the NVivo11 programme to increase visibility of data for each participant and provide a holistic overview. This process provided a nuanced understanding of participants' context, prior to commencing with data coding.

Phase 2: Generating Initial Codes

During the initial coding phase, both semantic and latent content was coded. In line with recommendations put forward by Braun and Clarke (2006), a broad approach to coding was taken whereby coding was conducted to allow for as many themes as possible. Using the NVivo11 programme, coding definitions were constantly applied to codes to ensure consistent application across the data set and to ensure transparency, dependability and auditability in the coding process. A constant comparison approach was adopted, whereby coded content was constantly revisited and recoded to ensure consistency as codes developed and new considerations emerged. Initial codes were generated for a subset of 10 interviews, which formed the basis for the first round of searching for themes.

Phase 3: Searching for Themes

Drawing on these initial codes, preliminary themes were identified with the relationships between themes and emergent constructs considered. Qualitative research relies on the researchers' own evaluation and interpretation, thereby introducing the potential for bias. In ensuring the veracity and trustworthiness of the coding process, a coding workshop was held to discuss themes. The supervisory team were provided with full interview transcripts, a complete code book of codes developed during this analysis phase, which comprised all themes and subthemes, and a sample of coded extracts, which were representative of the preliminary themes and subthemes. The initial themes, sub-themes, respective definitions and data which the themes represented were discussed through an internal peer-review process. In line with recommendations from Braun and Clarke (2006), diagrammatic representations of themes and subthemes were provided to facilitate this discussion. The relevant data files stored in NVivo11 also aided tracing of code development both prior to and during the internal review process. Areas for further consideration were discussed, codes were refined and rationales for decisions taken were provided, challenged and justified within the research team. Following this discussion, the remaining content was coded using a constant comparative approach and recommendations were implemented.

Phase 4: Reviewing Themes

Drawing on discussion arising from themes initially observed, data were recoded, and themes were reconsidered. Observations throughout the data analysis process identified areas of potentially relevant literature which were addressed to structure the data analysis process. Overlapping concepts were merged or reconstructed as appropriate, with relevant literature helping to frame the data analysis process. Reviewing of themes was facilitated through generation and discussion of diagrammatic representations within the research team, with a view towards preparing the data for reporting.

Phase 5: Defining and Naming Themes

During this stage, a series of preliminary reports were generated to highlight the nature and structure of the themes identified, their relationship with other themes and their relevance within the existing body of literature. Themes were supported

using relevant evidence from within the data set, including quotations and heat maps from the eye-tracking experiment. Through reviewing of multiple iterations of finding reports, the definitions and names of themes were refined to accurately represent the underlying data, and reflect the various bodies of literature to which the data aligned.

Phase 6: Producing Report

Drawing on previous discussions within the research team, a final report was generated to reflect the data, the literature and the means through which the data analysis process and findings arising from this process contributed to our understanding of the motivation phenomenon, in the context of label usage. In ensuring the quality of this research, a journal article reporting the primary findings from the first research phase was prepared and submitted for peer review to the journal *Appetite* (see Dissemination of Research). Subsequent feedback from the journal's peer review process was incorporated into the analysis in order to improve the quality and credibility of the final themes.

Throughout the various stages data analysis was facilitated by computer aided qualitative data analysis software (CAQDAS). CAQDAS is a useful tool to show progression of the analysis process for qualitative studies and can be used to demonstrate transparency and rigour of analysis (Gibbs, Friese & Mangabeira, 2002; Richards, 2002; Hoover & Koerber, 2011), while providing a more holistic overview of the data being analysed. The NVivo 11 program was an important tool in this study as it facilitated integration of eye-tracking and interview data.

In line with the criteria for assessment of quality of qualitative research set out in Section 4.1.3, an overview of measures taken to ensure adherence to principles of research quality in study phase 1 is presented in Table 4.9 below.

Table 4.9: Ensuring Adherence to Research Quality (Phase 1)

Stage	Consideration	Research Quality Criteria	Protocol
Label Content Audit	Data Collection	Transferability	• Sampling of product labels across three major supermarket chains in Irish marketplace (see Section 4.3.2).
	Content Audit	Credibility	• Peer debriefing and discussion of results.
		Dependability	• Iterative review of code application through second round coding of labels.
Participant Recruitment	Eligibility	Auditability	• Establishment of criteria for quota-based sampling and reporting of prevalence within sample.
	Recruitment	Confirmability	• Use of extended networks ensuring minimum of two degrees of separation between researcher and participant. • Maximum of one participant recruited per network route to prevent biasing of participants.
	Disclosure	Ethical Research Conduct	• Provision of Study Information and receipt of informed consent. • Ethical approval from university's Social Research Ethics Committee (see Appendix 4.5).
Labelling Stimulus Design	Design Criteria and Content	Confirmability	• Application of findings from label content audit to establish inclusion criteria for labels.
		Dependability	• Discussion of designs in research team and iterative review of design to ensure accuracy and representativeness.
Study Design	Interview Protocol Design	Confirmability	• Development of interview schedule and iterative process of discussion and redesign in research team. • Piloting of research instrument and redesign of instrument.

Stage	Consideration	Research Quality Criteria	Protocol
Data Collection	Eye-Tracking Experiment	Confirmability	• Development of oral protocol for eye-tracker calibration, explanation of experiment and within experiment task assignment (see Appendix 4.3). • Protocol for recording observations of participant gaze-paths during experiment.
		Credibility	• Real-time monitoring of eye-movements and gazepaths during experiment to ensure ongoing calibration of eye-tracking camera.
		Dependability	• Detailed disclosure of data collection procedure (see Section 4.3)
	Retrospective Think-Aloud Protocol	Credibility	• Comparison of RTA results with eye-tracking findings. With subsequent exploration of recording. • Use of protocol for recording observations of participant viewing of experimental stimuli.
	Semi-Structured Interviewing	Authenticity	• Immersion in data to ensure nuanced reporting accounting for individual's context.
		Dependability	• Establishment of and adherence to study protocols (see Appendix 4.4).
Data Analysis	Thematic Analysis	Credibility and Authenticity	• Integration and simultaneous comparison of eye-tracking, RTA and interview data, facilitated through NVivo11. • Constant comparison coding. • Iterative discussion in research team including engagement with primary data, discussion of themes. • Refining and rewriting, generation of research reports and iterative process of improvement and integration with relevant literature.
	CAQDAS	Transparency	• Use of qualitative data analysis software to increase transparency of analysis process within research team.

4.5 Research Phase 2: Study Design and Data Collection

This section provides an overview of the second research phase. In line with the risk/benefit prism adopted in understanding consumer motivation, this phase of analysis sought firstly establish the role of individuals' risk/benefit orientations in influencing information search and the networks of meaning activated by food labels in order to address research objective 2:

Research Objective 2: To assess the impact of risk/benefit orientations on associations in memory activated through label usage.

In so doing, this second phase was concerned with the cognitive implications of risk/benefit motivations on consumers' knowledge networks. As such, phase 2 sought to add to our understanding of the interactions between endogenous factors as set out in the conceptual framework presented in Figure 3.5. To understand the impact of risk and benefit orientations, the consumer innovativeness literature was considered to identify risk averse and benefit oriented segments (see Section 3.2.4). Consequently, two consumer segments were considered, innovators/early adopters and laggards. The purpose of this phase was to identify networks of meaning held by these two consumer segments and delineate any substantive difference underlying said meanings networks and their implications on label usage.

As discussed in Section 3.2.4, shifting trends in food labelling, specifically, the digitisation of food labelling facilitated through pull marketing, has been under-researched to date. In considering the extant literature, a conceptual framework of pull marketing usage was presented in Figure 3.1. Aligned to the risk/benefit prism adopted in this research, this framework highlights the theoretical paradox which these more effortful forms of communication present when considered through the risk/benefit and innovativeness lens. As such, this research phase also aims to reconcile this apparent paradox, as outlined in research objective 3:

Research Objective 3: To evaluate the impact of domain-specific innovativeness on understanding, interpretation and perceived utility of digital labelling, enabled through pull marketing, in adding consumer value.

These research objectives led to the development of two research questions which built on phase 1 findings and reengagement with the literature arising from these findings and guided the second research phase.

RQ2: Does product category innovativeness/risk aversion influence associations activated through label usage?

RQ3: Does understanding, interpretation and perceived utility of QR codes vary across innovators/early adopters and laggards?

4.5.1 Data Collection Process: Overview and Justification

Study design was influenced by a reengagement with the literature arising from key issues identify through phase 1 findings. In particular, phase 1 suggested that differences in attention, decision-making strategies and product evaluation outcomes were strongly influenced by idiosyncratic associations between label elements and their consequences. However, upon closer inspection, variations appear to also coincide with the presence of approach and avoidance motivation. As discussed in Section 2.3, avoidance and approach motives are related to benefit and risk orientations. Consequently, laggards and innovators/early adopters were recruited to represent category risk aversion and benefit-seeking activities in line with the discussion provided in Section 3.2.4. In addressing the role of associations and risk/benefit orientations, a combination of means-end chain analysis and semi-structured interviewing was employed. Both approaches, design considerations and their respective methods will now be discussed.

Means-End Chain Theory

As set out in Section 3.4.2, MEC theory assumes that values play a dominant role in guiding consumer decision-making and that consumers, in seeking to manage the breadth of products available to them, create categories or sets of products to reduce complexity (Gutman, 1982). Specifically, MEC theory seeks to identify the cognitive structures which link product attributes to individually held values via self-relevant consequences (Costa et al., 2004). As illustrated in the literature review derived conceptual framework of label usage (see Figure 3.5), cognition and cognitive systems influence label usage and information processing, however knowledge structures and the associated networks of meaning can vary across individuals (see

Section 3.4.2). MEC theory offers a means of understanding and capturing these variations to identify commonalties arising from the interaction of exogenous stimuli and endogenous knowledge structures thereby helping to address RQ2 and gain insights within the context of the conceptual framework guiding this research.

The MEC approach has been adopted in a range of studies within the food domain (Boecker, Hartl & Nocella, 2008; Santosa & Guinard 2011; Gandia et al., 2018). At its core, data collection in MEC studies has two dimensions. Firstly, it is necessary to identify the personally salient attributes which form the basis for distinguishing products within a given category through a process of *attribute elicitation*. Secondly, having identified the personally salient attributes, it is necessary to identify the networks of meaning held by the individual with respect to these attributes, using a *laddering* technique. The following sections outline these steps.

Attribute Elicitation

The purpose of attribute elicitation is to "*to bring to the surface concepts from the (individual) consumer's knowledge structure relevant to the perception of stimuli within a particular product category* (Steenkamp & van Trijp, 1997, p.154). Elicitation of personally salient attributes is more powerful than questioning consumers on all available attributes, as this may result in spurious results. An array of elicitation techniques is available to researchers; however, the main techniques are summarised in Table 4.10.

Table 4.10: Attribute Elicitation Techniques[19]

	Procedure	Application	Strength	Limitations
Triadic Sorting	Participant is presented with triple combinations of the product. For each triple combination participant is asked for an important attribute on which two products are alike and the third is dissimilar.	Mapping Cognitive Structure	• Produces more concrete attributes • Higher between product differentiation	• More complex • Time consuming
Free Sorting	Participant is presented with an array of products and required to form groups which in some important aspect are the same.	Mapping Cognitive Structure	• Groupings can consist of as many products as desired • Produces more concrete attributes • Less time consuming	• Requires larger number of product stimuli • Lower between product differentiation
Direct Elicitation	Participant is asked to identify the attributes most important to them when choosing among assortment of products presented. No sorting required.	Exploration	• Less time consuming • Ease of administration	• Produces fewer concrete attributes than other elicitation techniques
Ranking	Participant is required to order products according to preference and provide rationale for ranking presented.	Predicting Preferences	• Higher between product differentiation	• More time consuming • Higher participant burden

Given phase 2 research objectives, a free sorting task was deemed most appropriate, as this is best suited for the identification of cognitive structures, including in the case of low involvement products (Bech-Larsen & Nielsen, 1999). Additionally, free-sorting is less burdensome than triadic sorting and ranking exercises and requires a shorter time commitment than triadic sorting.

In terms of generating product stimuli for the attribute elicitation exercise, there is a lack of clarity in terms of the number of stimuli participants should be presented for a given elicitation task. For instance, Grunert, Beckmann and Sørensen (2001, p.71) state that for free sorting tasks "*respondents are provided with a larger number of products, typically on a set of cards*", without providing any practical

[19] Author's own table based on work by Bech-Larsen & Nielsen (1999)

guidance for researchers. Santosa, Abdi and Guinard (2010) used 25 olive products for a free sorting task for olive oil products. Similarly, Faye et al. (2004) asked consumers to sort 26 samples varying along 3 factors, while Kanwar, Olson and Sims (1981) suggest that participants are presented with between 20-30 products for free sorting activities.

Drawing on these studies, a total of 20 product labels were generated by the researcher (see Appendix 4.14). Findings from the label content audit from the first research phase were leveraged to ensure the representativeness of labels designed (see Section 4.3.2). Labels were designed in accordance with the protocol used in phase 1, with all labels carrying the same fictitious brand, to mitigate any potential familiarity effect arising from the use of known brands. Prior to data collection, label designs were reviewed within the research team to ensure the accuracy of information presented on the labels and to ensure a reasonable distribution of attribute combinations across the 20 stimuli. Following this review process, amendments to the stimuli were agreed upon and implemented, with finalised designs being confirmed prior to commencing data collection. The FoP and BoP for each experimental stimulus were presented side by side on cards which were given to participants to sort during the attribution elicitation portion of the interview (see Appendix 4.16). Each product was numbered and the respective numbers for each grouping formed by participants was recorded. When reviewing interview transcripts this facilitated an overview of the groupings formed and the context for the discussion held with participants.

Participants were provided with the full array of stimuli at the start of the interview. All cards were spread out in front of participants in a randomised order, while participants were asked to sort these into groups. No time limit was placed on the sorting task. Sorting duration ranged from 2.5 to 18 minutes, with participants requiring on average 6.5 minutes to form groups.

Laddering Interviews

Laddering is an interview technique applied in MEC studies and is used for "*eliciting the higher level abstractions of the constructs people use to organize their world*" (Bourne & Jenkins, 2005). Building on the attributes identified in the attribute elicitation exercise, laddering is used to *"develop an understanding of how consumers*

translate the attributes of products into meaningful associations with respect to self" (Reynolds & Gutman, 1988, p.12) through uncovering the A-C-V links which underpin MEC theory. In the case of laddering, two approaches are available *hard laddering* and *soft laddering* (Grunert & Grunert, 1995; Costa et al., 2004).

Hard laddering (also known as paper and pencil laddering) is more highly structured and requires participants to generate and confirm associations within individual ladders, i.e. A-C-V links (Costa et al., 2004) and uses a questionnaire approach, rather than semi-structured interviewing (Russel et al., 2004). Consequently, hard laddering is particularly appealing where financial and time constraints exist (Zanoli & Naspetti, 2002). However, it has been argued that the hard-laddering technique is powerful in reducing potential interviewer biases which may arise in the case of soft laddering.

Conversely, soft laddering allows for an unrestricted flow of speech, with the relationships between elements within the means-end chain being establish subsequent to interviewing (Costa et al., 2004). Where soft laddering is adopted MECs are generated on an individual basis using an established interview protocol (Phillips & Reynolds, 2009). Consequently, soft laddering allows participants to provide multiple explanations for the significance a particular attribute or consequence has for them individually. It has also been argued that soft laddering is a more powerful approach for low involvement product categories as the probing which this approach encompasses is useful where weaker cognitive structures exist (Zanoli & Naspetti, 2002). This notion is also echoed by Grunert and Grunert (1995, p.223) who assert that soft laddering is more appropriate in instances where "*the degree of knowledge of the respondent about the product area is either low or high – because the interviewer can detect such processes and steer the interview accordingly"*. In the context of this study, where category innovators/early adopters and laggards are recruited, it was anticipated that a marked distinction in knowledge would occur across the sample. For these reasons, this research adopted a soft-laddering approach as this appears best suited to the sample. This approach can be seen in Phase 2 Interview Schedule Part 1 (see Appendix 4.16).

Semi-Structured Interviewing

Findings from the laddering interview were further explored through the use of semi-structured interviews, which followed the laddering exercise. Questions pertaining to this element of the data collection are outlined in Phase 2 Interview Schedule Part 2 (see Appendix 4.16). The purpose of this was to explore the role of individual level factors in the construction of the networks of associations to allow further qualitative comparison between participant segments. Furthermore, in elaborating on findings from the first research phase and addressing RQ2, these interviews sough to identify and explore differences relating to participants' usage of digitally enabled labels and the potential of these to encourage engagement with a wider brand community. Questions relating to this portion of the interview schedule sought to establish interaction in wider brand communities online, across 'innovators/early adopters' and 'laggards' (see Section 4.5.2) and explore the potential of such brand communities in adding value for these consumer segments building on the proposed framework of label usage presented in Figure 3.2 (see Section 3.2.5). In line with the social constructionist approach, typical food behaviours, food purchasing motives/behaviours and personally salient information considered in the immediate decision-making context were discussed, to understand and explore participant interaction with these technologies and broader online communities. The approach afforded participants the opportunity to share their everyday shopping and usage experiences and understand their usage context. In other words, the conversation was set in the context of their everyday lives.

4.5.2 Participant Recruitment and Sample Size

This section provides an overview of the recruitment criteria and methods applied for the second research phase. Full ethical approval for the second research phase was sought from the University College Cork Social Research Ethics Committee (SREC). Approval for this phase of the research was granted in September 2017 (see Appendix 4.5). Participant recruitment and data collection were undertaken between September 2017 and February 2018. Similar ethical considerations to those pertaining to research phase 1 (see Section 4.3.6) were applicable in the context of research phase 2. Given that ethical considerations present in this phases reflect those present in phase 1 the same steps were taken to ensure an ethical approach to data

collection, including the anonymisation and ensuring that participants were fully informed of the study details and their rights (see Appendix 4.13) before providing informed consent (see Appendix 4.15).

Recruitment Criteria

MEC analysis is best suited for application to homogenous samples (Grunert & Grunert, 1995; Bredahl, 1999; Veludo-de-Oliveira, Ikeda, & Campomar, 2006). As noted by Robinson (2014) psychological sample homogeneity can be achieved using quantitative data from questionnaires or tests employed as sampling tools. In this instance, sample homogeneity was achieved using the domain-specific innovativeness (DSI) instrument, which measures the psychological construct of innovativeness. As such, two distinct segments were identified, with participants within each segment being homogenous with respect to their domain-specific innovativeness.

In considering innovation measurements, multiple innovation scales were initially considered, including Raju's (1980) innovativeness scale, Baumgartner and Steenkamp's (1996) exploratory product acquisition scale, Goldsmith and Hofacker's (1991) domain-specific innovativeness (DSI) scale and Kirton's (1976) innovators-adaptors inventory. However, with the exception of the DSI instrument, these scales were deemed inappropriate as they failed to account for category specific variations in innovativeness (see Roehrich, 2004), which is important given the idiosyncratic nature of the MEC process. The advantage of the DSI scale, is that it acknowledges and accounts for variations in innovativeness across product categories and domains, recognising that global innovativeness and category specific innovativeness can vary across individuals. As a 6-item questionnaire, the DSI scale also allowed for more expedient identification of eligible candidates when compared with the other scales considered. The ability to quickly identify eligible participants during the screening questionnaire was important in increasing recruitment levels as it allowed the researcher to immediately identify potential participants for the interview stage and provide relevant study details.

The DSI scale uses a 5-point Likert scale, with scores ranging from 6 to 30 (see Appendix 4.12), and has been demonstrated to be a valid self-report measure of category innovativeness (Flynn & Goldsmith, 1993; Goldsmith, 2000). In this study

'Innovators/Early Adopters' and 'Laggards' were recruited from the upper and lower ends of the scale respectively. Participants recruited to the 'laggards' segment required a score of ≤12, whereas participants recruited to the 'innovators/early adopters' segment required a score of ≥24 to be deemed eligible. This is in line with previous scale usage (Goldsmith, 2001).

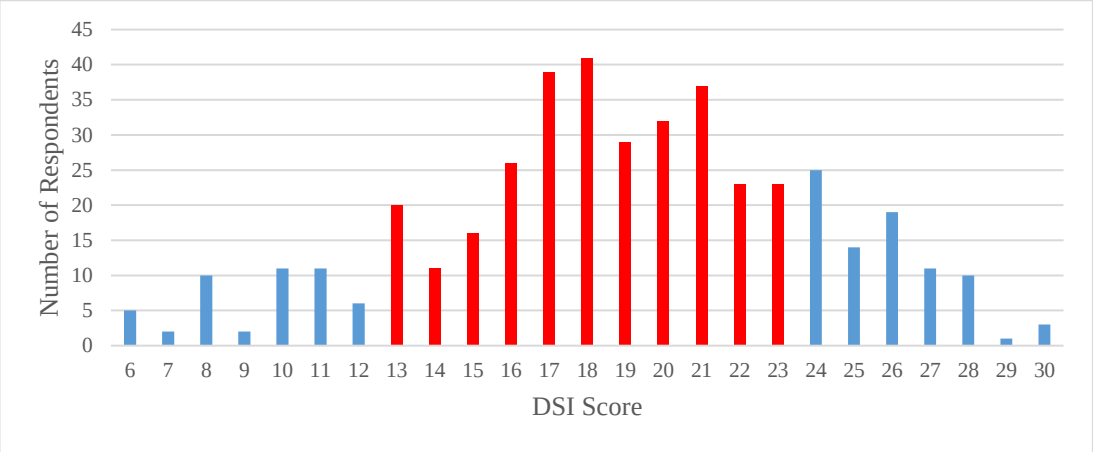
Recruitment Method

Participant recruitment occurred across three food retail outlets in the Cork city and county areas between September and November 2017. The cumulative prevalence of innovators/early adopts and laggards within a given population is estimated at approximately 32% (Rogers, 2003). Assuming a recruitment rate of 30% for eligible participants a minimum sample size of n=400 was estimated for population screening. In-store recruitment was conducted to maximise the potential audience for the screening questionnaire, while increasing the efficiency and effectiveness of the screening process, by reaching individuals responsible for household purchasing decisions. In order to increase the effectiveness of in-store recruitment and reach as broad a potential sample as possible the times and days of recruitment across sites was varied, with recruitment occurring on weekdays, weekends, mornings, afternoons and evenings. This strategy was adopted to reflect differences in shopping patterns, times and days across shoppers and limit the potential for certain demographic groups being overrepresented during the screening phase. Store management also provided advice in this regard, informing the researcher of the times and dates when various demographic groups were more likely to shop e.g. families, those in employment, retired purchasers etc.

Purchasers were approached prior to entering the retail outlet and were invited to participate in the study. Purchasers were provided with an overview of the study (see Appendix 4.10) and where interested, participants were invited to complete a screening questionnaire (see Appendix 4.12) and accompanying consent form (see Appendix 4.11). Eligible participants were invited to provide their personal contact details to arrange for participation at the interview stage. At this stage, participants were also presented with study details for the interview phase (see Appendix 4.13) Firstly, the screening questionnaire aimed to gather demographic information to ensure a spread of respondents in the interview phase. Secondly, the questionnaire

sought to identify domain-specific laggards and innovators/early adopters within the yogurt category through means of the DSI instrument. A total of 430 valid responses were received, with participants scoring ≤12 recruited to the 'laggards' and participants scoring ≥24 recruited to the 'innovators/early adopters' (Goldsmith, 2001), resulting in 130 (30.4%) eligible participants, 47 laggards (11%) and 83 innovators/early adopters (19.4%). These figures are broadly in line with the prevalence of innovators/early adopters and laggards one would expect to observe within the population as set out in Rogers' (2003) diffusion of innovation model (see Figure 4.6). The disparity in rates of innovators/early adopters and laggards in the sample is most likely due to a self-selection bias typical of consumers within the respective segments. This self-selection bias was anticipated given that laggard consumers, by definition, are less involved in the product category and consequently less likely to engage. In addressing the limitation associated with this recruitment approach, an equal number of laggards and innovators/early adopters were invited to the interview stage to ensure equal representation of both segments in both the MEC analysis and semi-structured interviewing.

Figure 4.6: Survey Respondents by DSI Score (n=430)



A total n=38 participants were recruited to the study, with n=19 participants in each segment. This sample size is congruent with previous studies using a MEC approach (Roininen et al., 2006; Sorenson & Henchion, 2011; den Uijl et al., 2015). Additionally, through the iterative data analysis process described in Section 4.6, theoretical saturation was achieved, as evidenced through data replication and redundancy prior to completing analysis of all participant data. An overview of the

sample comprising the subsequent interview phase is provided in Table 4.11. Women were proportionally more represented in both the initial screening and final sample, however this may also reflect the continued role of women as household shoppers within the Irish context, with women continuing to represent the majority of grocery shoppers in Ireland (Bord Bia, 2017, p.203),

Table 4.11: Phase 2 Sample Composition

Laggards *(n 19)*	Female *(n 12)*	36-50 *(n 1)*
		51-64 *(n 6)*
		65+ *(n 5)*
	Male *(n 7)*	36-50 *(n 1)*
		51-64 *(n 4)*
		65+ *(n 2)*
Innovators/Early Adopters *(n 19)*	Female *(n 16)*	18-35 *(n 1)*
		36-50 *(n 4)*
		51-64 *(n 9)*
		65+ *(n 2)*
	Male *(n 3)*	36-50 *(n 1)*
		51-64 *(n 2)*

4.6 Research Phase 2: Data Analysis Techniques

This section provides an overview of the means-end chain analysis applied to the laddering data and the thematic analysis applied to the interview data. It highlights the means through which data analysis was conducted and the measures put in place to ensure the accuracy of application of data analysis techniques and the quality of analysis conducted. Discussion concludes with an overview of the protocols employed to identify and address potential biases within this research phase and ensure adherence to principles of quality in qualitative research.

4.6.1 Overview of Means-End Chain Analysis

Content Analysis

As MEC aims to map the cognitive structures across a given sample, this requires the identification of commonalities across the sample, which is achieved through content analysis. Content analysis is "*a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts*

of their use" (Krippendorff, 2004, p.18). Kassarjian (1977) identifies three key features of content analysis, namely objectivity, systematization and quantification.

Hsieh and Shannon (2005) draw a distinction between traditional, quantitatively oriented content analysis, which focuses primarily on manifest content, and summative content analysis which also accounts for latent content. This distinction has clear implications in the context of MEC analysis and subsequently establishing coding reliability. Whereas manifest content analysis involves "*analyzing for the appearance of a particular word or content in textual material*" (Hsieh & Shannon, 2005, p.1283-1284), latent content analysis involves "*the process of interpretation of content"* (ibid). As such, latent content analysis moves beyond simple quantification of textual data to summative evaluations of underlying meanings conveyed in the text. In the context of MEC, it is necessary to analyse latent content, as participants seldom explicitly articulate the more abstract concepts associated with the higher levels of the means-end chain, such as instrumental and terminal values. The consideration of latent content in MEC analysis accounts for the construction of knowledge, understanding and values within the social environment, allowing MEC to capture this dimension and offer greater richness of data than other quantitative techniques. This distinction between manifest and latent content is also addressed by Kassarjian (1977) who distinguishes between *words* and *themes* as units of analysis for the purpose of content analysis, with the latter requiring the coder to reduce sentences into their component themes. For MEC, this involves identifying content relative to the 6 categories of elements which form a MEC, namely concrete attributes, abstract attributes, functional consequences, psychological consequences, instrumental values and terminal values (see Section 3.4.2). Given the nature of the elements of the MEC, both manifest and latent content were coded.

Ensuring reliability is a key aspect of content analysis, with reliability typically demonstrated through measurement of inter-judge reliability (Kassarjian, 1977). To this end, Perrault and Leigh's (1989) index of reliability and Cohen's Kappa are widely used to assess the reliability of coding across coders (Zanoli & Naspetti, 2002; Jung & Kang, 2010; Bieberstein & Roosen, 2015). However, there are some arguments against the use of second coders. For instance, Grunert, Beckmann and Sørensen (2001) argue that second coders may have insufficient background and

context information leading to discrepancies in coding and subsequent intercoder reliability measures. As such, they contend that, in some instances, a transparent iterative coding approach may be appropriate, given the innate understanding the lead researcher has of their own data. Other approaches to establishing coding reliability include peer debriefing and discussion subsequent to first round coding (Bieberstein & Roosen, 2015). For this study, a subset of 4 interview transcripts was independently coded by a second coder. Cohen's Kappa was calculated for content codes in blocks relating to the six elements of the MEC, with coefficient values ranging from κ=0.65 to κ=0.81, thereby indicating a good degree of inter-judge reliability.

Implication Matrix Generation

The second phase of the MEC analysis involves the consolidation of content codes and their respective linkages. This was achieved using an implication matrix, which "*serves as a method of bridging the gap between the qualitative and quantitative aspects"* of MEC analysis (Veludo-de-Oliveira, Ikeda, & Campomar, 2006, p.634). Specifically, the implication matrix is a square matrix, whose size reflects the number of content codes generated in the analysis of laddering data. The matrix is populated to reflect the direct and indirect relationships between matrix elements, across the sample, in order to establish the linkages between the various constructs identified during the content coding stage. Direct links represent relationships between matrix elements where no intermediary element exists, whereas indirect links refer to links where another element occurs between two other elements in a linkage.

The implication matrices for innovators/early adopters and laggards were constructed using the NVivo11 programme. Ladders for each individual participant were constructed using the content codes identified. Within NVivo11, each linkage in individual participants' Hierarchical Value Maps (HVM) was assigned a unique identifier. Two content codes were applied to each unique identifier to represent the ends of each linkage, with this procedure being repeated across the entire dataset for both direct and indirect links. Subsequently, a matrix coding query was used to extract the implication matrices of direct and indirect links for the laggard and innovator/early adopter segments respectively.

Hierarchical Value Mapping

HVMs are a means of graphically representing the linkages between elements in the implication matrix. In generating a HVM, it is necessary to establish a cut-off point to determine which linkages (direct and indirect) are depicted in the HVM. The cut-off point reflects the frequency with which a linkage occurs across the sample. Increasing the cut-off level reduces the complexity of the HVM by including only linkages which occur more frequently. However, there is a lack of clarity as to how a cut-off point should be established, with a certain level of subjectivity pervading. Grunert and Grunert (1995) argue that cut-off levels should be chosen to retain relevant information while ensuring that maps are useable. Although this principle appears to guide cut-off point selection (see Apostolidis & McLeay, 2016), it is highly determined by the researcher's own subjective evaluation of the data. For instance, de Ferran and Grunert (2007, p.224) tested multiple cut-off levels and subsequently chose the cut-off level that "*lead to the most informative and interpretable solution*".

Therefore, in line with previous studies, in establishing a cut-off point, the HVMs for various cut-off points were generated to assess the trade-off between complexity and breadth of information provided. Research within the food domain was also reviewed to establish the prevailing standard, with studies adopting a soft-laddering approach, using cut-off points ranging from 3 to 5 (Urala & Lähteenmäki, 2003; Roininen, Arvola, & Lähteenmäki, 2006; Boecker, Hartl, & Nocella, 2008; Sorenson & Henchion, 2011; Arsil, Li & Bruwer, 2016; Apostolidis & McLeay, 2016). Having reviewed the implication matrix and HVMs arising from different cut-off points, a cut-off point of 3 was used to ensure manageability of the emergent HVMs and breadth of information. As the HVM accounts for all linkages across the sample, it can be viewed as "*an aggregate map of cognitive structures*" (Olson & Reynolds, 1983 *in* Grunert & Grunert 1995). To this end, Grunert and Grunert (1995) argue that, although the ladders obtained from individual participants are not an estimate of their cognitive structure, the aggregation of ladders across a group is a more telling estimation of the underlying cognitive structures, as they reveal more of the interrelatedness across associations.

4.6.2 Overview of Thematic Analysis

Interviews were transcribed and analysed using thematic analysis, in line with the procedure set out by Braun and Clarke (2006) and outlined in Section 4.4.2. The same steps were adopted for this research phase, with the exception of the review process. For this stage, after an initial subset of interviews had been coded, and preliminary themes were identified, a second coder was responsible for blind coding the interview transcripts. The blind coder was provided with transcripts and a coding manual and blind coded these transcripts. Once themes had been identified at coding stage 3, the relevant data files stored in NVivo11 also aided tracing of code development both prior to and during the internal review process. Areas for further consideration were discussed, codes were refined and justifications for decisions taken were provided, challenged and justified within the research team. Following this discussion, the remaining content was coded using a constant comparative basis and recommendations were implemented.

In ensuring the quality of this research, a journal article reporting part of primary findings from the second research phase was submitted for peer review to the *International Journal of Retail & Distribution Management* (see Dissemination of Research) and has been accepted for publication. Feedback from this peer review process was incorporated into the analysis to improve the quality and credibility of findings presented. An overview of measures taken to ensure adherence to principles of good research practice in study phase 2 is presented in Table 4.12 below.

Table 4.12: Ensuring Adherence to Research Quality (Phase 2)

Stage	Consideration	Research Quality Criteria	Protocol
Participant Recruitment	Eligibility	Auditability	• Establishment of eligibility criteria and reporting of prevalence within sample (see Section 4.5.2).
	Recruitment	Confirmability	• Established protocols to ensure consistent provision of information to consumers to reduce potential bias through researcher-participant interactions (see Appendix 4.10).
	Disclosure	Ethical Research Conduct	• Provision of Study Information and receipt of informed consent.
Labelling Stimulus Design	Design Criteria and Content	Representativeness	• Application of findings from label content audit to establish inclusion criteria for labels (see Section 4.5.1).
		Credibility	• Discussion of designs in research team and iterative review of design to ensure accuracy and representativeness.
Data Collection	Attribute Elicitation	Confirmability	• Development of oral protocol for task assignment (see Appendix 4.16)
		Dependability	• Randomised presentation of labelling stimuli. • Consistent adherence to process of recording groupings to ensure accurate probing during laddering interview.
	Laddering	Dependability	• Establish probing protocols to explore salient attributes.
			• Confirmation of attribute-consequence-value links perceived by participants to ensure accuracy of researcher interpretation.
	Semi-Structured Interviewing	Authenticity	• Immersion in data to ensure nuanced reporting accounting for individual's context.
		Dependability	• Establishment of and adherence to study protocols (see Appendix 4.16).

Stage	Consideration	Research Quality Criteria	Protocol
Data Analysis	Content Analysis	Credibility	• Second coder used to review the application of latent and manifest content codes across a subset of the data. • Inter-judge reliability established through measurement of Cohen's kappa. • Iterative process of discussion and coding undertaken until inter-judge reliability was determined to reach an adequate level ($0.65 \geq \kappa \geq 0.81$).
		Dependability	• Full reporting of data analysis protocol (see Section 4.6.1).
	Thematic Analysis	Credibility and Authenticity	• Constant comparison coding. • Use of second coder to establish consistency of application of codes and representativeness of codes applied to data. • Iterative discussion in research team including engagement with primary data, discussion of themes. • Refining and rewriting, generation of research reports and iterative process of improvement and integration with relevant literature.
		Transparency	• Use of qualitative data analysis software (NVivo 11) to increase transparency of analysis process within research team.

4.7 Limitations

Transparency and trustworthiness in qualitative research require researchers to openly acknowledge the limitations of their research, in relation to both the findings presented and the methodological approach taken. The following sections provide an inventory of potential study limitations for each of the study phases.

4.7.1 Phase 1 Limitations

In this study, immediate interactions with food labelling were restricted to an experimental setting, with the trade-off between experimental control and ecological validity necessitated by eye-tracking methods. Consequently, this limits the ecological validity of this study phase. Although attempts to re-establish broader contextual factors through subsequent semi-structured interviewing were made, further exploration of this kind, in the context of a real-world retail environment may prove beneficial in furthering this research area. Although some efforts have previously been made to situate eye-tracking in a real-world setting (Clement, 2007), there is a need, as highlighted in this research and elsewhere (Miller et al., 2015), to include introspective techniques, to more accurately and wholly reflect the consumer experience and capture the motivational dimension of food choice and label usage.

As noted, the use of RTA, when compared with CTA introduces the potential for data loss, through participants omitting thought processing during the eye-tracking experience, as a result of forgetting. Measures were introduced to reduce the likelihood of such data loss occurring, in particular, simultaneous observation of eye-tracking experiment allowed the researcher to more expeditiously review eye-tracking findings, thereby reducing the duration of the intermission between eye-tracking experiments and conducting the RTA protocol. Additionally, the use of visual cues during the RTA promoted participants' ability to recall thought processing during the experiment.

4.7.2 Phase 2 Limitations

Given the nature of both the recruitment method and participants recruited to this research phase, there was a potential self-selection bias within the sample. Particularly, the number of laggards electing to complete screening questionnaires and subsequent interviewing was reflective of the low-involvement nature of these

participants in the product category. Furthermore, the sample was comprised predominantly of those in the age range of 51+. Although the aim of this research phase was to ensure subsample homogeneity as it relates to domain specific innovativeness, a broader spread of age groups across the sample would have been desirable, particularly for the semi-structured interviewing which followed the laddering interview. Within the context of the semi-structured interview, there is the potential for bias to be introduced through the social dimensions of this research approach. As recruitment and interviewing were conducted by the same researcher, this introduces potential biases prior to and during the interview process. In seeking to limit the potential of such biases, protocols were established. During the screening and recruitment process, a formalised script for outlining details of the study was employed (see Appendix 4.10) and a study information sheet (see Appendix 4.13) was provided to eligible participants to reduce information asymmetries across participants and associated biases. Within the interview context, a detailed interview schedule was developed to ensure consistency across participants (see Appendix 4.16).

As noted, the lack of guidance in the literature for establishing cut-off points in the generation of HVMs poses a challenge to researchers within the field. Particularly the emergent HVMs may give a false sense of objectivity which does not reflect the nature of the analysis of laddering data. Conversely, the lack of clarity within this area reflects the interpretivist underpinnings of the research. In order to address this potential limitation, transparency of data analysis protocol was provided and prevailing standards within the research area guided sample size selection and subsequent cut-off point selection to ensure consistency with previous research.

4.8 Conclusion

This chapter has provided a detailed overview of the study design, data collection and analysis conducted to ensure transparency and demonstrate research quality. A number of limitations relating to the study design were identified and the potential impact of these on interpretation of findings was discussed. A trade-off between ecological validity, experimental control and resource constraints presented itself in the context of research phase 1 design. However, steps were taken to re-establish the contextual factors associated with label usage and explore usage during the eye-tracking experiment through subsequent interviewing. This represents an

advantage over previous studies in this vein, which have opted for the more behaviouristic approach with which eye-tracking methodology is aligned, through supplementing eye-tracking data with introspective techniques. Combination of eye-tracking data and semi-structured interviewing providing a rich and nuanced data set offering fuller insights into participant interaction with experimental stimuli while simultaneously accounting for the individual's context.

The second study phase builds on phase 1 to consider the role of risk/benefit orientations on consumer knowledge structures and gain insights into consumer perceptions of digital labelling. Using a MEC approach and drawing on two distinct consumer segments (domain-specific innovators/early adopters and laggards), the role of networks of associations in guiding information search and evaluation processes was considered. This afforded greater insights into the role of risk- and benefit-orientations in guiding information search. Congruent with the constructionist approach underpinning this research, semi-structured interviewing was leveraged to account for the broader contextual and idiosyncratic factors influencing information search. This allowed the researcher to explore consumer attitudes towards digital labelling and establish congruency with extant search behaviour.

The following chapters will proceed to present and discuss key findings arising from research phases 1 and 2 respectively. Chapter 5 outlines the means through which eye-tracking, RTA and semi-structured interviewing data were integrated to develop a conceptual framework of label usage. In particular, this chapter leverages phase 1 data to illustrate the nature of interactions of endogenous and exogenous factors throughout the label usage process. Chapter 6 elaborates on phase 1 findings leveraging MEC and thematic analysis to discuss the salient networks of meanings activated through label usage and their role in guiding information search and developing the label usage framework presented in Chapter 5. Chapter 7 proceeds to address the evolving nature of labelling, considering extended communication networks accessible through traditional labelling in adding value for the consumer. Drawing on findings presented in Chapters 5 and 6 and data drawn from both study phases, issues concerning the congruency of digital labelling with extant information search behaviours and information needs is explored.

Chapter 5
Influencers, Drivers and Strategies of Label Usage

5.1 Introduction[20]

The purpose of this chapter is to illustrate, understand and map the influence of endogenous and exogenous determinants of consumer *attention*, *perception* and *processing* of labelling information in order to address the first research question:

> **RQ1:** How and to what extent do endogenous and exogenous factors influence attention to labelling stimuli and subsequent information processing?

Drawing on the conceptual framework of label usage developed in Chapter 3 (see Figure 3.5), an understanding of attention requires an appreciation of both the endogenous and exogenous factors which influence attentional mechanisms and subsequent information processing (Dweck, Manfels & Good, 2004; van Herpen & van Trijp, 2011; Orquin & Muller Loose, 2013). As such this chapter considers both the endogenous factors, such as goals, cognition and affect, as well the exogenous factors such as labelling stimuli, in the label usage processes.

As highlighted previously, attention and perception (either conscious or subconscious) are prerequisites for information processing (Grunert & Wills, 2007), with the importance of attention in label usage clearly established within the literature (Antúnez et al., 2015; Siegrist, Leins-Hess & Keller, 2015; Peschel, Orquin & Mueller Loose, 2019). As discussed in Chapter 4, this study phase uses a combination of eye-tracking, retrospective think aloud and interview data. Using eye-tracking data, *attention* to labelling stimuli is considered. Then drawing on the combination of eye-tracking and retrospective think-aloud data, findings presented in this chapter discuss the issue of *perception* and its role in subsequent information processing. Finally, with regard to the processing of information, both cognitive and affective systems have been noted as influencing *information processing* (Stanovich & West, 2000; Adolphs & Damsio, 2001; Kahneman, 2003; Zeelenberg & Pieters, 2006; Grunert & Wills, 2007). As such, both the cognitive and affective dimensions of label usage are considered in line with the cognitive paradigm of motivation studies underpinning this

[20] Findings presented in this chapter have been accepted for publication in abridged form in the journal *Appetite* and are available online at: https://doi.org/10.1016/j.appet.2018.11.015. Further details of this publication are provided in the Research Dissemination section provided in the preface.

research. This is achieved through integration of the eye-tracking, RTA and interview data within this phase to gain a holistic understanding of the label usage process.

The chapter begins by identifying the key themes which were identified during the analysis process and then moves on to discuss their relevance in the context of understanding consumers' food label usage, as discussed in Chapter 3. Following this, a framework of label usage is presented, which draws together key findings presented in this chapter and situates these within the current labelling literature and adds to our current understanding. This is followed by a discussion of findings presented in this chapter and their role in addressing the first research objective for this study. Implications for the subsequent study phase are presented, including the role of this study phase in helping to address subsequent research questions.

5.2 Key Themes

Three key themes were identified, which captured the nature of interactions with labelling stimuli as it relates to decision-making. The first theme highlights the role of attention and motivational relevance in the acquisition and application of information into participants' decision-making, combining information in the environment with knowledge held in long-term memory. The second theme draws attention to the role of existing knowledge structures, consumer idiosyncrasies and the means through which they were employed in the inference-making process. The final theme focuses on the established mechanisms or scripts through which individuals sought out, acquired and utilised information to reach a product evaluation and reflects the means through which participants combined new information and existing knowledge to reach a product determination.

To provide a frame of reference for the quoted interview excerpts presented in this chapter, an overview of participant details is provided in Table 5.1.

Table 5.1 Phase 1 Participant Profiles

Pseudonym	Age	Gender	Employment Status	Family Status	Health Goal Negotiability[21]
Jane	36-50	Female	Employed	Single	NNG
Jessica	18-35	Female	Employed	Single	NNG
Adam	18-35	Male	Student	Single	NG
Mark	18-35	Male	Employed	Single	PNG
Tom	51-64	Male	Employed	Married, Parent	PNG
Laura	18-35	Female	Employed	Single	PNG
Janice[22]	36-50	Female	Employed	Divorced, Parent	PNG
Claire	18-35	Female	Student	Single	NG
Suzanne	51-64	Female	Retired	Married, Parent	PNG
Gerald	36-50	Male	Student	Widowed, Parent	PNG
Niall	18-35	Male	Unemployed	Cohabiting	NG
Marie	36-50	Female	Employed	Cohabiting	PNG
Aisling	18-35	Female	Unemployed	Single, Parent	NG
Elizabeth	36-50	Female	Unemployed	Married, Parent	PNG
Ian	36-50	Male	Student	Single	NG
John	65+	Male	Retired	Married, Parent	PNG
Christopher	51-64	Male	Employed	Married	NG

[21] Participants are identified based on their goal negotiability (NNG = Non-Negotiable Goal; PNG = Partly-Negotiable Goal; NG = Negotiable Goal). Although participants were screened for the presence of diet-related health conditions as part of the quota-based screening, this categorisation emerged through participant analysis (see Section 5.2.2).

[22] As noted in Section 4.3.3, a sufficient degree of accuracy for eye-tracker calibration was not possible for one participant. In the case of Janice, eye-tracking data was not collected. However, data pertaining to the semi-structured interview was included in the subsequent analysis which established the role of the broader context in understanding label usage.

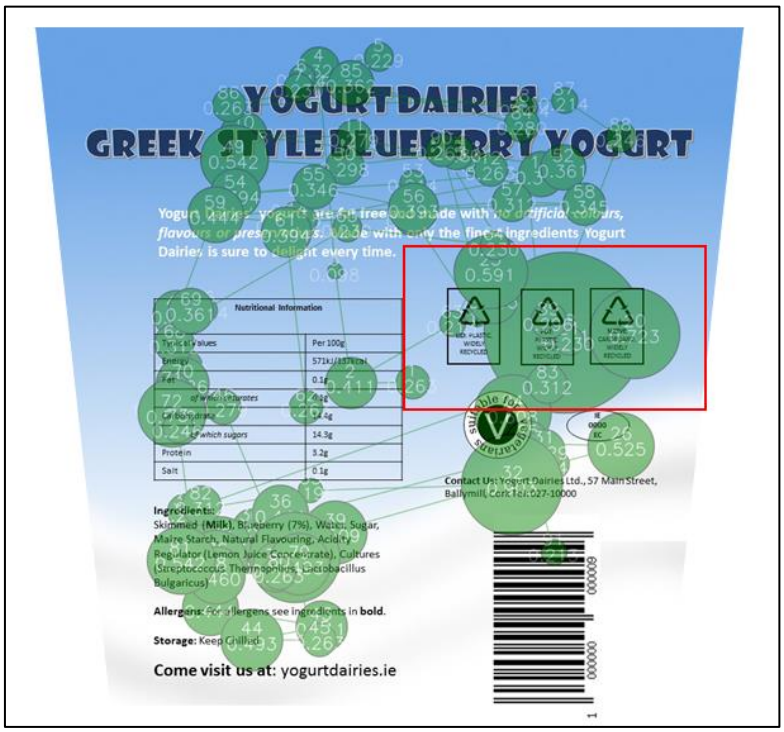
5.2.1 Theme 1: Attention and Motivational Relevance

Attention is a prerequisite for cognitive processing of stimuli (Chun, Golomb & Turk-Browne, 2011). Building on findings from the eye-tracking experiment and RTA, attention was observed to occur either as a result of purposeful goal-driven activities which manifested themselves in the form of repeated scripts of information usage behaviour or due to stimulus-driven attention. The latter can be considered as a form of non-volitional attention, with cognitive resources redirected due to visual stimuli capturing attention as opposed to goal-directed search activities. This represents that notion of stimuli being "*attention-grabbing"*, as noted by Corbetta and Shulman (2002, p.207) in Section 3.3.

Attention, Perception and Motivational Relevance

Comparison of findings from the eye-tracking experiment and RTA suggest that label design disrupted established search behaviour through attention capture, without the participant becoming consciously aware of the disruption occurring. Although the role of design in capturing attention has been well explored (Antúnez et al., 2015; Siegrist, Leins-Hess & Keller, 2015; Peschel, Orquin & Mueller Loose, 2019), a gap between attention capture and processing appears to exist where there is a lack of motivational relevance. Jane, a coeliac with a consistently enacted approach to label usage, self-reported that she did not view recycling information, however, observations from the eye-tracking data (see Figure 5.1) revealed that this was not the case, with a relatively substantial amount of time being spent on recycling compared to other label elements.

Figure 5.1: Gaze-Path – Recycling Information Attention [Jane, 35-50, NNG]

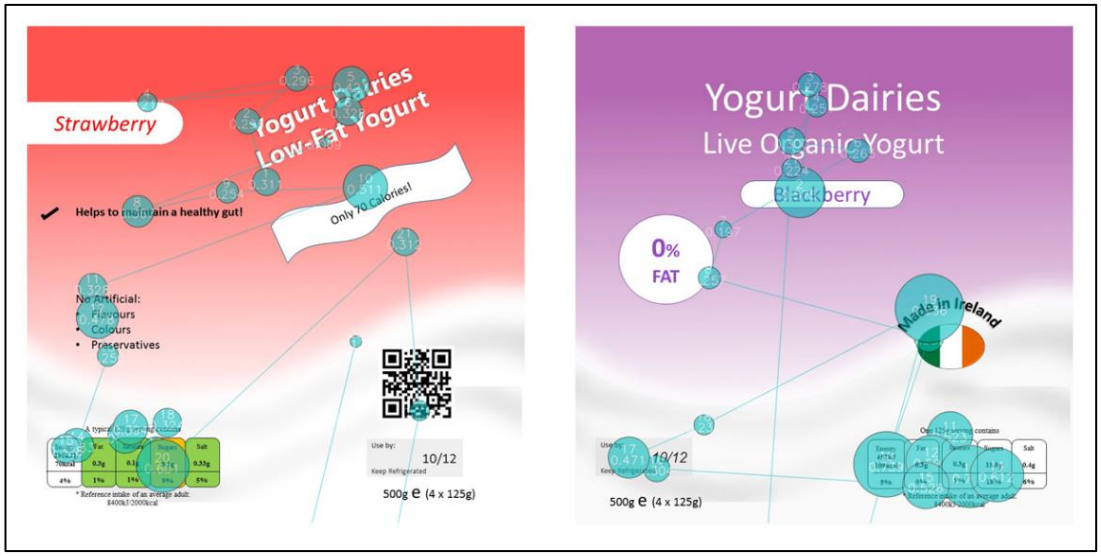


This was assumed to suggest not only attention, but processing of the information presented. However, on further exploration, it became clear that the labelling convention, which was unfamiliar to Jane (although widely available on the marketplace), had redirected attention: *"I was interested because they don't usually do that [information layout format], and I was thinking … what's the point in it, and I thought, that's good"* [Jane, 35-50, NNG]. However, this information had no perceived importance relative to goal attainment as evidenced by its omission during the RTA exercise, thereby suggesting that the information was not held within the finite working memory store. Where a gap exists between attention and motivational relevance, the latter was more important in determining subsequent incorporation of information. Beyond consideration of information owing to an unfamiliar labelling convention, this content was not ordinarily sought out and had no impact on product selection due to a lack of motivational relevance. As such, although unfamiliar label cues have the potential to capture attention, this may not translate into information processing, where information is not congruent with goal attainment.

Redirection of attention was common upon encountering unfamiliar labelling formats, such as traffic light (TL) labelling on FoP nutrition declarations. Where

participants were familiar with the colour coding scheme, TL labelling served to capture attention and provided clearer direction of cognitive resources, as evidenced in the gaze-paths for Marie (see Figure 5.2) who described leveraging TL formats as follows: *"I'd still look at the individual [values], but it would draw my attention more, if you see the colours that you know are bad it would draw your attention"* [Marie, 35-50, PNG]. This effect of focusing attention to 'bad' nutritional value is evidenced in Figure 5.2 by the exclusive focus on sugar content in the instance of traffic light labelling (left), compared with attention to all nutritional information in the case of monochromatic labelling (right).

Figure 5.2: TL vs Monochromatic Label Usage [Marie, 35-50, PNG]

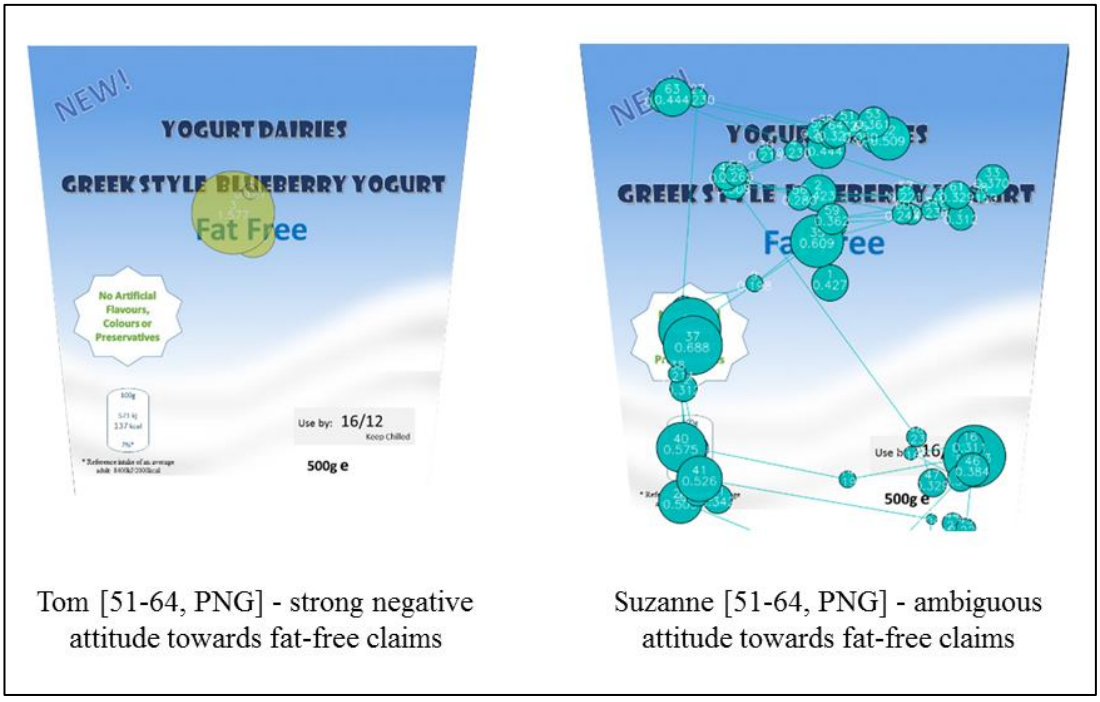


Information Checkpoints

A number of label elements, particularly product claims, acted as 'checkpoints' to further label usage, with strong negative attitudes to information resulting in participants discontinuing viewing of labelling stimuli. Comparison of gaze-paths for Tom, who self-reported non-viewing of labels bearing fat-free claims, with gaze-paths from Suzanne, who had an ambiguous attitude towards fat-free products (see Figure 5.3), highlight the impact of product claims on influencing information search. Tom, a pre-diabetic, recounted the viewing of products bearing fat-free claims as follows: *"fat-free, I noticed, and probably drove me away, at that stage no, right, let's go on"*. He later detailed how prior incidental learning (see Section 5.2.2) had shaped his negative disposition towards products bearing fat-free claims: "*I have learned from*

shopping that … the light [low-fat] yogurt, … is probably high in sugar, and I would go for full-fat", demonstrating the leveraging of information held in long-term memory for the construction of information usage strategies (see Section 5.2.3).

Figure 5.3: Interaction of Fat-Free Associations in LTM with Attention to Visual Stimuli



Tom [51-64, PNG] - strong negative attitude towards fat-free claims

Suzanne [51-64, PNG] - ambiguous attitude towards fat-free claims

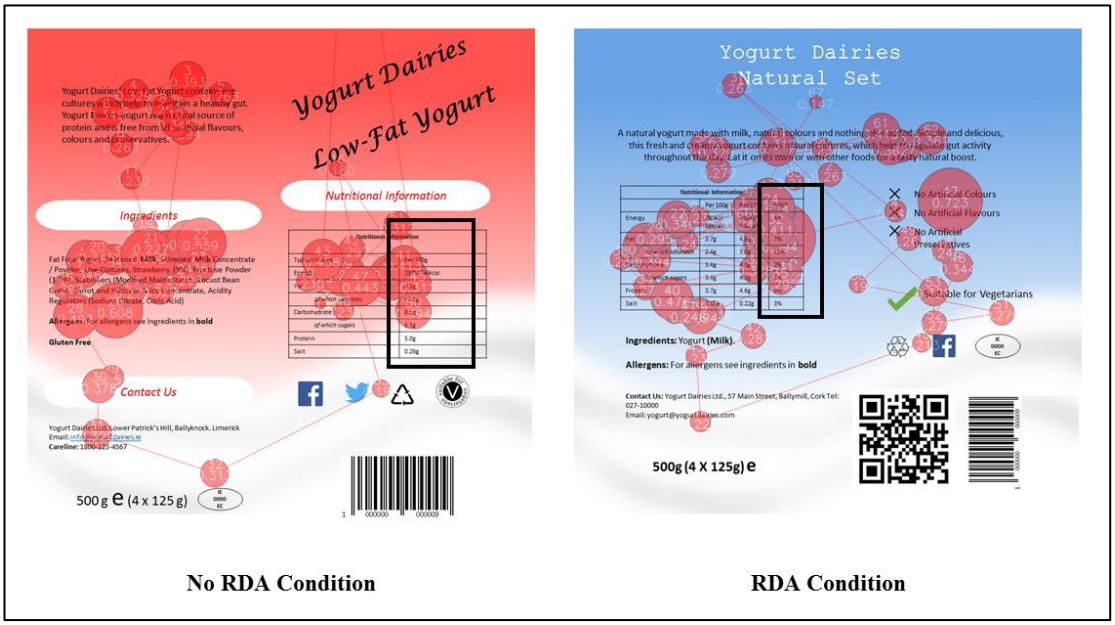
Similarly, characteristics related to branding or sensory aspects acted as checkpoints for interaction, oftentimes resulting in a strong affective response: "*I moved on so quickly with that one because … I saw, it's forest fruit, I hate forest fruits … so I'm moving on, because, damn, it's the wrong flavour, but everything else might be ok*" [Jane, 35-50 NNG]. This appears to reflect the affect-priming account of affect infusion discussed by Forgas, Chan and Laham (2001), whereby affective responses prime associated thoughts required for cognitive processing. Here the strong negative affective response of "*hate*" which forest fruits elicited, primed a cognitive response, whereby Jane acknowledged that other potentially appealing aspects of the product could not outweigh the negative consequences of an undesirable taste profile.

Although the meaning attached to design aspects varied between participants, it was clear that design also fulfilled this checkpoint role, acting as a heuristic to expedite decision-making: "*generally the colour kinda indicates the flavour, so that*

would be drawing me towards particular products" [Adam, 18-35, NG]. Product design could draw attention away from further exploring a product, even for those with conditions that necessitated dietary restrictions as highlighted by Jessica: "*no, I wouldn't even pick it up … to look at the back of it or anything, I just found [the FoP] too ordinary*" [Jessica, 18-35, NNG].

Certain labelling information, such as RDAs, facilitated consumers' interaction with information by providing a frame of reference, thereby directing attention to information where the perceived cognitive load was reduced: "*if it can be summed up the smaller the better, so if it's telling you recommended daily allowance, that would be probably, what I'd look at first*" [Adam, 18-35, NG]. The need for RDAs for instance typically stemmed from uncertainty relating to how the grams of certain nutrients should be evaluated *"the actual number … 16.6 grams of sugar and … 4.3 grams of sugar, I don't know what that means without the percentage points"* [Mark, 18-35, PNG]. However, provision of such information had the potential in certain instances to lead participants to engage with information ordinarily precluded from consideration. Interestingly for Mark, who self-reported a preference for RDA values, although he engaged with the nutritional information where no RDA was present, when RDAs were presented, attention shifted to RDA values (see Figure 5.4).

Figure 5.4: Nutritional Information Usage in the No-RDA and RDA Condition [Mark, 18-35, PNG]



No RDA Condition **RDA Condition**

5.2.2 Theme 2: Goal Activation, Knowledge and Learning

Goals played a significant role in shaping interactions with food labelling, although goal attainment was strongly influenced by existing knowledge and motivation to learn. There appeared to be a two-way relationship between long-term memory (LTM) and stimuli presented with goals held in LTM directing label usage and labels serving to remind participants of goals held.

Goals: Top-Down Activation

Goals guided label usage and product category involvement. Specifically, those with non-negotiable health goals tended to be more involved in the decision-making process, with said consumer involvement being defined primarily in terms of risk importance. Although previous research has highlighted the positive effect of health goals on label usage (Visschers, Hess & Siegrist, 2010; Chrysochou & Grunert, 2014), and depth of information processing (Sanjari, Jahn & Boztug, 2017), it was possible to delineate clear differences in usage according to the degree of health goal specificity and negotiability. Indeed, the data suggests that three distinct groups of consumers existed based on their health goals (see Table 5.2).

Table 5.2: Health Goals

	Health Goals		
	Specific Health Protection Goal	*General Avoidance Health Goal*	*General Approach Health Goal*
Goal Specificity	Participants' goal(s) clearly specified.	Broad understanding of dietary requirements with some uncertainty.	Varying degrees of specificity. Understanding across participants varies.
Goal-Negotiability	Non-negotiable (NNG)	Partly negotiable (PNG)	Negotiable (NG)
Label Usage Strategies	Clarification	Clarification / Simplification	Clarification / Simplification

Congruent with extant literature (Locke & Latham, 2002; van Herpen & van Trijp, 2011), where goal negotiability was low and goal specificity was high, label

usage approaches were more structured and rigidly adhered to, with consistent information usage patterns observable among participants, such as Jane, who was diagnosed with coeliac disease and had a consistent approach to label usage: "*I kind of work out the process by elimination. If I don't see the word wheat, starch or yeast"* [Jane, 35-50, NNG]. Furthermore, for those with a specific health protection goal, information deemed relevant for goal attainment remained constant across contexts with the saliency of this information oftentimes stemming from health professionals: "*I can't have anything with high magnesium … [so] I'd look at the ingredients*" [Jessica, 18-35, NNG].

However, where participants had an avoidance health goal, relating to developing diet-related diseases, adherence to health goals could be disrupted where difficulties in goal attainment were encountered. For instance, Gerald, who describes himself as being pre-diabetic and concerned with his sugar intake, describes how frustration experienced with labelling information leads him to ignore nutritional information: "*I keep forgetting what your grams of your recommended daily allowance is … then you'd have to try to start to remember how much you should be having, at that stage you just throw it away, you couldn't be bothered reading*" [Gerald, 35-50, PNG]. Rather than seeking to negotiate these difficulties, participants in such instances either abandoned the product offering, opting instead to continue purchasing the same product or if the desire to purchase the product outweighed their avoidance goal, they suppressed that goal in the given purchasing occasion.

Approach goals relating to general health and wellbeing, which were more loosely defined, exhibited the property of equifinality across participants, i.e. multiple routes to goal attainment existed (Kruglanski et al., 2015). Goal structures of those consumers with approach motivations exhibited the property of equifinality, which appears congruent with extant goal-specificity literature (see Section 2.4.1). Findings presented here provide support for previous research, which suggests that more loosely defined goals allow for greater behavioural variation (e.g. Locke, 1996; Wallace & Ektin, 2018). Oftentimes, goal attainment strategies contradicted one another owing to high subjective knowledge levels, precluding the perceived need to re-evaluate the accuracy of information interpretation. The presence of these more general goals poses a challenge to marketers, as goal attainment had multiple routes, including evaluation

of one or two key macronutrients: "*[I'm] looking for sugar values that like, there's not a pile of sugar in it*" [Ian, 36-50, NG], interaction with product ingredients: "*we'll say if a word was on like, we'll say an ingredient now for instance … I'd kind of say the word to myself and then like if it doesn't sound right it's staying there*" [Niall, 18-35, NG] and general product evaluations based on more loosely defined criteria such as 'naturalness', which consumers subsequently sought to evaluate: "*we've a good diet at home … preservative free really, more kind of natural*" [Suzanne, 50-65, PNG]. These routes can appear contradictory, as was the case with full-fat and low-fat claims, which were both considered to signal healthy product offerings: "*you're probably better … to eat a full-fat one because there's so much sugar in these [low-fat yogurts] and you're not doing yourself any good*" [Marie, 35-50, PNG], "*being a bit health conscious … I feel a bit better if I've only bought the low-fat*" [Claire, 18-35, NG].

In addition to the presence of multiple routes to goal attainment, participants' desire to attain multiple goals also posed a challenge. In particular, simultaneous fulfilment of health and hedonic goals appeared to give rise to personal conflicts, leading to a sense of unease or discomfort: "*when I go shopping, half of me wants to buy all ridiculous stupid things and the other half comes along for the ride and says, no, you are a coeliac, and really you don't need to buy more chocolate … two of me goes shopping, and one talks to the other throughout the whole shop*" [Jane, 35-50, NNG]. This discomfort was observed to be eased by the presence of desirable health claims, which reinforced consumers' existing knowledge and refocused attention to the health aspects of the product offering. This is illustrated in the case of Jessica, who, although aware that yogurt products contain calcium, appreciated having this point reinforced as it affirmed her own product evaluation and subsequent decision: "*it's a good source of calcium, … I'd go for this … because it's telling me … it's nice to kind of have it backed up to you*" [Jessica, 18-35, NNG].

Goal conflict necessitated a process of goal negotiation and prioritisation, particularly due to a perceived incongruity between health and hedonic goals, with conflict occurring at either an individual or household level: "*it depends what week, if we're being good one week and trying to get the good stuff or being bad we'd kind of get more food that we'd enjoy … well not that we don't enjoy the other food but we'd try to get stuff that we want that week*" [Aisling, 18-35, NG]. Where the perceived

effort required to reconcile conflicting goals was considered too high, consumers prioritised goals which they deemed important, thereby imposing these on others: "*they're on [my diet] as well, they don't know they're on it, but they're on it*" [Elizabeth, 36-50, PNG]. This reduced the cognitive effort expended in the immediate decision-making context and allowed the purchaser to restrict information search to familiar information cues, even in the case of unfamiliar product offerings.

Goals: Bottom-Up Activation

It has been argued that environmental cues, including food labels, can serve to promote direction of cognitive resources to longer terms goals (Higgs, 2016). Goal activation occurred either through goals being (sub)consciously drawn from LTM during decision-making or through being triggered by labels, with stimuli acting as a cue for the activation of existing goals. Activation through stimuli cueing occurred more frequently for goals or needs of lesser importance, suggesting participants were insufficiently motivated to actively seek out information relevant to these goals or needs. Product provenance, for instance, positively impacted product evaluation, but was not actively sought, highlighting the importance of exogenous factors in capturing attention: "*the fact that it was local probably would have a bearing, but it would have to be pointed out to me … you showed it to me, and I didn't see it, it just didn't stand out*" [Tom, 51-64, PNG].

In particular, the case of provenance warrants further investigation, as although this information was not actively sought out, consumption of Irish products was viewed as socially desirable and influenced decision-making: "*I think the fact that its Irish, something Irish on the advertising, would certainly, we'll say now product of west Cork now, that would, would influence me*" [Suzanne, 51-64, PNG]. Indeed, in the context of dairy, provenance appeared particularly important: "*dairy products from Ireland are of a high quality, they're recognised as being a high quality, so I'd always, and generally you know as well, support your own, so yeah that's nearly a natural reflex, trying to buy Irish if possible*" [Adam, 18-35, NG]. However, it appears provenance is generally not actively sought out and as such has to capture attention through bottom-up mechanisms to influence decision-making: "*I would genuinely be inclined to support it, it's not a case, I'm not going to go rushing around the shop, looking for something that says made in Ireland*" [Mark, 18-35, PNG].

At a more general level, consumers signalled an awareness that extensive interaction with environmental cues may force them to engage in more cognitively burdensome information processing arising from a need to renegotiate and reprioritise goals, where labelling highlights conflicting goals or identifies where past goal prioritisation should be reassessed. In the case of the latter, this was evident for Marie who had previously prioritised hedonism and expediency over avoidance of additives and now actively avoided and ignored such information: "*a lot of what you eat has got additives and that in it, so I think, what the eye don't see the heart don't feel, I don't worry about it then you know, if I don't see, I don't worry*" [Marie, 36-50, PNG].

Hedonic Goals

Thus far, discussion has focused predominantly on health-related goals, as these tended to be the primary influencer of label usage strategies. However, a number of additional goals were observed to influence the information search process, including hedonic goals, despite the incongruence or tension between health and product enjoyment perceived by many participants: "*they are supposed to be good for your gut, but then I realised that the amount of goodness for your gut is so small that I was putting up with a taste that I didn't like*" [Jane, 36-50, NNG]. Product enjoyment was also significant driver of choice within the category, with hedonic goals being achieved predominantly, although not exclusively, through selection of products with a desirable taste profile.

Although the old adage 'ignorance is bliss' appeared to be an appealing way to characterise the information search behaviours of those with a predominantly hedonic focus, this 'ignorance' appeared paradoxically wilful in nature. Wilfully ignoring information, which may otherwise result in a perceived need to reconcile negative and positive outcomes associated with the product consumption, appears an effective means through which to actively avoid any subsequent psychological discomfort. This point was most clearly conveyed by Mark, for whom yogurt was a treat. Mark describes how, within particular product categories, he actively disregards certain information which may highlight goal conflicts to him: "*depending on what I'm buying I will pay a certain amount of attention to the actual, to the figures like, but with a donut I don't need to know how much crap I'm putting into my mouth … I'm aware that it's laden in sugar and laden in all sort of things I don't really need to*

eat, … I wouldn't even glance at that nutritional value of my donuts" [Mark, 18-35, PNG]. This finding is supported by previous research highlighting that nutritional label usage is more likely for products which are perceived as healthy (Grunert, Wills & Fernández-Celemín, 2010).

Interestingly, although the yogurt product category was associated with enjoyment or pleasure, yogurt was often used as a means of managing perceived conflicts between health and enjoyment goals, with yogurt viewed as occupying an intermediary position between these seemingly mutually exclusive goals, which were viewed as situated at the extreme ends of a spectrum. Although seeking enjoyment, yogurt was adopted as a means of achieving an enjoyment goal while limiting the compromise made in relation to health, thereby reducing feelings of guilt or distress arising from making an 'unhealthy' decision: "*I get a yogurt as my snack almost, as my treat, like flavour is obviously the main thing, like I want something tasty, it is that role, it is in that role for me like I'm getting it instead of getting a muffin, instead of getting a bar of chocolate it's my almost a compromise treat for myself*" [Mark, 18-35, PNG]. This sentiment was also conveyed by Niall, who described yogurt as "*something that's healthy but something that also might be a treat*" [Niall, 18-35, NG] As a 'happy medium' between health and hedonic goals, the yogurt category allowed participants to engage with nutritional information without being confronted with figures which would force them to abandon a desired purchase decision.

Caring for Others and Maintaining Relationships

Goals held became more dynamic and flexible in instances where the desire to care for others in the household necessitated this, either on a short term or prolonged basis. In such instances where existing goals were adjusted, or new ones adopted for the benefit of others, the decision-making strategies which were employed were forced to undergo changes in order to accommodate others into the purchasing process. Although not often explicitly stated, this stemmed from a concern for the other, either as it relates to their health and wellbeing, or their enjoyment or from a desire to maintain relationships with them.

In terms of maintaining relationships for instance, Tom, who lived with his wife, described how his role as both a purchaser and consumer changed during periods

in which their daughter came to live with them occasionally, as he sought to accommodate her vegetarian diet. In particular, he cites a flexibility and willingness to try unfamiliar products. This resulted in the formulaic shopping process: "*the list is on a pro forma, that we've printed out and we simply circle the items that we need*" [Tom, 50-64, PNG] becoming more dynamic in the pursuit of relationship maintenance: "*it will be tailored to whoever's at home basically, if it's just the two of us, well then it's … quite structured but then when there's a third person … there'll be more adventure, in terms of finding vegetarian options or ingredients for those vegetarian options*" [Tom, 50-64, PNG].

In Section 2.4.1 we noted that a perceived external locus of control could diminish motivation to perform a behaviour (e.g. Locke & Latham, 2002). Interestingly, here, rather than being driven exclusively by his daughter's goal to consume vegetarian foods, it appears that the relevance of this goal to the attainment of a superordinate goal to care for others in the household supressed the negative impact of an external locus of control associated with his daughter's goals. This appears to reflect recent goal architecture literature which suggests that a simultaneous awareness of and focus on superordinate and subordinate goals supports progression towards goal attainment (Höchli, Brügger & Messner, 2018).

Similarly a desire to respect the changing needs and wants of others in the household necessitates a change in purchasing goals, which, in turn, acts as a vehicle for showing respect for the choices of others: "*it's just me and my son, it's easy for me to pick up what I need for him because, once again, he's my son and I raised him to eat a certain way … but saying that, he's older now, he's 18, he's a young adult, and I have to respect his other choices, so that means it's not always what I want to put in the buggy for him, considering his age*" [Janice, 35-50, PNG].

The household purchaser is sometimes required to interpret the goals of others in the household and where disparities arise between their goals and the perceived goals of others, they may seek to reconcile these disparate goals. In some instances, this required the purchasers to alter their usual purchasing strategy, or wilfully disregard information which may be personally salient but not of importance to the intended consumer, such as Elizabeth who ordinarily sought to reduce her sugar

consumption: *"[my husband's] got a very sweet tooth and he has no will power, so I do tend to go, for him, for a packet of biscuits and I don't care, as much as that sounds terrible, about the sugar content in what I buy him, because he cycles so he can burn it off and he needs the sugar, so I just throw a packet in, I do, I do but I'd be very, very conscious of what I'd be buying other than that*" [Elizabeth, 35-50, PNG]. Although conscious of her own sugar intake, this is not considered owing to a desire to deliver a product which will satisfy her partner. Furthermore, a distinction is drawn between individual dietary needs, which allows her to reconcile the different standards to which they are both held.

Where the goals held by the individual and the intended consumer conflict this may lead to a sense of unease in instances where the purchaser believes that fulfilling the other's goal is counterproductive to their own wellbeing, leading to the desires to please others and care for them coming into conflict. Tom, who is concerned about his sugar intake due to a fear of developing diabetes, recounts how he does not look at the sugar content of products which will be consumed exclusively by others in the household: "*if they want a sweetened yogurt, yeah I would get them the sweetened yogurt yeah, if, if that's what they wanted, if I was buying for someone else and you know, I would ask them, what, what flavour, and then, you know if they say strawberry or whatever it is, yeah, and then it [the sugar content] wouldn't worry me, as I wouldn't be eating it personally, I, I probably tend not to worry about it, which is very selfish [laughs]"* [Tom, 50-64, PNG].

Learning

Sense-making tended to draw on a combination of incidental and intentional learning. However, learning and understanding were often hampered by information overload and uncertainty, with consumers expressing confusion when confronted with product claims, due to prior conflicting messaging: "*but now all of a sudden [scientists] … are saying that fat in milk is good for you and it leaves us very confused*" [John, 65+, PNG].

Particularly in the case of incidental learning, purchase decisions for unfamiliar products appeared to rely on a limited number of learning occasions. In the case of knowledge acquired incidentally, associative learning, which is less

cognitively demanding (Jayanti & Singh, 2010), appeared to play a more dominant role, reflecting the less motivated nature of participants in the decision-making process more broadly for these low involvement products. A recurring example of this was the assumed relationship between sugar and fat content, resulting in fat claims acting as a proxy for inferring sugar levels: "*there was a study done before of labels … I saw this on telly about yogurt … they showed them a yogurt, a normal yogurt, 10% fat and a fat-free one and they asked the different people what would you eat, … 'I'd definitely eat the fat-free' they'd say, but they never questioned sugar content*" [Christopher, 51-64, NG]. Indeed, fat and sugar content appeared to be inextricably linked for some, with low-fat claims acting as a warning signal that a product should be avoided, thereby influencing information search and label usage: "*I have learned from shopping … that the light yogurt that's presented to you is probably high in sugar, and I would go for full-fat*" [Gerald, 36-50, PNG].

Contrasting this with those who actively sought out information, intentional learning occurred among those more highly motivated in their purchasing decisions, particularly those with non-negotiable health goals, and resulted in active information search and learning, with acquired knowledge applied across decision-making occasions. This is evidenced in the case of Janice, who assumed that products sold in health stores are nutritionally superior: *"if [I'm] going to a supermarket, there's going to be a lot of unnecessary ingredients in food so, whereas if I went to the health store it'd be safe because it's supposed to be already guaranteed to be 100% pure (…) I know I'm much safer in the health food [store] than I would be in the supermarket. Supermarkets are going to make me work a bit more harder [sic]*" [Janice, 36-50, PNG]. Drawing on this heuristic, which equated health stores with nutritionally superior products, purchasing decisions in the supermarket context were informed by information acquired incidentally in health stores, with products in these stores acting as a basis for comparison: "*I educate myself, try to educate myself when I go to the health store*" [Janice, 36-50, PNG].

In instances where consumers exhibited a willingness to learn more about a product and address perceived gaps in their existing knowledge, mechanisms had been established to seek out and acquire additional information: *"I'd normally end up googling them [ingredients] … if I don't understand something I look it up"* [Jessica,

18-35, NNG]. This immediacy of information access may represent a shift for future generations of label users. Furthermore, participants had developed strategies to find information and educate themselves to increase the likelihood of goal attainment, which facilitated the development of rules and scripts for decision-making. In particular, this included self-educating through more extensive interaction with trusted products, which later served as a basis for comparison when considering unfamiliar products.

High levels of subjective knowledge appeared to reduce consumer motivation to learn, which may account, in part, for participants' lack of awareness and understanding of novel labelling schemes and entrenched beliefs. For instance, Niall justifies his lack of interest in learning how to use nutritional labels in terms of his experience in the dairy sector: "*I worked on a dairy farm, I'd know a lot about what's kind of in yogurts and milk, I'd know the difference between them alright but I dunno the percentage stuff like the salt percentage, there's like, there's always salt, carbohydrate, sugar in any dairy you're gonna get"* [Niall, 18-35, NG].

Knowledge and Understanding

Existing subjective knowledge and self-efficacy beliefs shaped the nature of interactions with information, with associations formed potentially leading participants to reach erroneous conclusions: *"if you're able to contact them within Ireland, you generally assume that it's made in Ireland"* [Jessica, 18-35, NNG]; *"so when they don't give contact details you don't know where they are from"* [Adam, 18-35, NG]. Similar to that noted by Brunsø et al. (2005), a number of product cues were used in such a way as potentially to render them dysfunctional, i.e. not support progression towards the desired outcome.

Participants appeared reasonably confident in their ability to evaluate products based on their sensory characteristics, with difficulties in understanding and subsequent uncertainty typically arising in relation to product claims, ingredients and nutritional declarations: "*I just kind of had a quick read through the ingredients and again I suppose I don't really know enough about them to be making any sort of informed decision*" [Claire, 18-35, NG]. Although many consumers acknowledged having a limited understanding of nutritional information, they were not motivated to

address these perceived knowledge gaps, opting instead to disregard information or products where they encountered difficulties processing information, leading to certain pieces of information or whole areas of the label being excluded from consideration: *"the level of fat, level of carbs, sugars … if it just gave me grams I wouldn't really understand it ok, bad or indifferent"* [Adam, 18-35, NG]. In other instances, participants had developed strategies in their immediate decision-making context to maximise the likelihood of obtaining the best products for their needs, without actively learning more about labelling information, such as with the use of multiple product labels for the purpose of comparison, to identify nutritionally 'better' products: "*I don't really know that much about nutrition … I'd kind of be able to compare, so if I feel like one of them is really low-fat or something but it's very high on sugar … I'll compare is there another one, that's, we'll say, that's not offering such a, there's not such a big difference*" [Claire, 18-35, NG]. Acknowledged knowledge gaps were framed in terms of estimates of others' knowledge to justify a lack of willingness to engage in more cognitively burdensome learning processes. This means of justifying knowledge gaps was evidenced in the case of Mark, who as noted in Section 5.2.1, expressed a preference for RDA guidelines "*4.3 grams of sugar, I don't know what that means without the percentage points, and I know some people do, but most people don't, most people have no idea*" [Mark, 18-35, PNG]. In these cases, participants appeared to suggest that the food industry has the responsibility for making label content more accessible, but were unsure as to how this might be achieved.

As discussed above, associations in memory tended to lead to different structures underlying attitudes held. Assimilation of information led participants to associate low-fat and fat-free products with being high in sugar, which increased the likelihood of a negative attitude being held towards such products: "*I think full-fat stuff is probably better for you … the low-fat stuff, probably contains a load of sugar"* [Ian, 35-50, NG]. However, negative attitudes held in relation to low-fat products were also triggered by associations with taste and enjoyment, which served to attain hedonic goals: *"yogurt should have some fat I think … why would you reduce the amount of fat so much? It also makes it more sour right? … I'd rather buy something that has a little bit more fat"* [Laura, 18-35, PNG]. As such, nutritional information was used not

only to reach product evaluations on health dimensions but also in relation to products' sensory characteristics.

Associations drawn from experiences were also observed to influence and expedite product evaluation. For instance, Janice, who indicated a strong desire to achieve a healthy diet and purchase food that was in line with "*mother nature*", stated that, suitable for vegetarian logos presented on yogurts helped her to make a decision. This owed to broader associations held between health and vegetarianism: *"suitable for vegetarians, that's a safe zone, because you know … if its suitable for vegetarians, it's got to be very, it's got to respect the health side of it, of their intake, so I feel safe when it says things like that"* [Janice, 35-50]. In this instance, the perceived healthiness of a vegetarian lifestyle resulted in this trait being inferred for vegetarian products more broadly. This 'halo effect' observable with vegetarian claims has the potential to undermine health goals, where such logos act as an alternative for extended processing of information.

5.2.3 Theme 3: Information Usage Strategies

Owing to limited cognitive abilities, divergent goals and variations in information provision within the purchasing environment, participants had developed strategies to negotiate their information landscape. Strategies varied in relation to the degree of information usage, purchasing goals, contextual factors, consumer involvement and participant attitudes, including affective and cognitive responses.

Furthermore, as noted by Payne, Bettman and Johnson (1988), strategy selection was also influenced by cost-benefit considerations associated with the strategies available, i.e. where the effort required to make a decision was deemed to outweigh the benefit of reaching the decision, the product was discounted. For example, Gerald, a student in his mid-40s, when discussing the cognitive effort required to interpret nutritional information stated: *"I keep forgetting how much your grams of your recommended daily allowance is … if it tells you there's 1.6 grams of some fat then you'd have to try to start to remember how much you should be having, at that stage you just throw it away, you couldn't be bothered reading, figuring that out … and you're not going to go looking it up"* [Gerald, 36-50, PNG].

It has been broadly established that decision-making draws on both cognitive and affective dimensions (Brunel & Pichon, 2004; Grunert & Wills, 2007; Evans, 2008; Mukherjee, 2010). In the context of this study, the distinction between cognitive and affective responses is important in discussing the strategies undertaken, as both cognitive and affective responses to labelling stimuli were evident. Two dominant strategies were identified through the analysis process; *clarification* and *simplification* strategies. These broader strategies have been previously identified within the perceived risk literature (Mitchell & McGoldrick, 1996; Brunel & Pichon, 2004). To this end, the distinction between the automated and deliberative approaches to information usage and decision-making (which form the basis for distinguishing between System 1 and System 2 in dual process models of cognition), offers a useful lexicon with which to explore participants' label usage. The key characteristics of these strategies are outlined in Table 5.3.

Table 5.3: Characteristics of Simplification and Clarification Strategies of Label Usage

	Simplification Strategy	**Clarification Strategy**
Time Expenditure	Fast and automated.	Slower and deliberative.
Response	Affective response more likely.	Cognitive response more likely.
Effort Required	Low effort.	Effortful.
Information Input	Uses a limited number of *familiar* product cues & heuristics.	Integration of information from multiple sources likely.
Usage Context	Used in familiar purchasing contexts (experience-based).	Guided by more narrowly defined purchasing goals, uses multiple information sources.

Before proceeding to discuss the strategies, it is worth noting the distinction between purchasing of familiar and unfamiliar products. Although the purpose of this study was to explore label usage in the context of purchasing unfamiliar products, label usage more broadly was also explored in order to establish typical decision-making contexts. Therefore, some of the cues and strategies employed (such as the use

of familiar brand names and prior experience with the product) although typically used in the decision-making process, may not apply in an unfamiliar product purchase context where an unfamiliar product or brand name is present.

Simplification Strategy

Simplification strategies were enacted in a fast and automated nature, relied on a limited number of familiar product cues and were utilised where the goals driving purchasing within the product category were partially or fully negotiable and poorly specified (see Table 5.2). Consequently, information processing in the immediate product evaluation context appeared to be less deliberative and less cognitively demanding. This strategy was particularly common where information overload was experienced, i.e. where the amount of information presented was likely to exceed participants' working memory capacity (Gruszka & Nęcka, 2017).

Familiarity with the product category appeared to facilitate simplification approaches, with brand familiarity and past experiences, in particular, used as heuristics to expedite decision-making: *"I would have [read the label] before, and now it's kind of my yogurt of choice and I suppose I'm kind of almost familiar enough with a brand"* [Mark, 18-35, PNG]. In the context of purchasing unfamiliar products, the absence of such cues leads to non-consideration of these products. To this end, simplification strategies were used especially where the participant indicated that they had prior experience with products in a given brand range, as illustrated by Adam, when recounting the recent purchase of a new product: *"it was dairy milk, which I don't think is Irish but it has the kind of Irish symbolism as well so you know it's going to be good quality"* [Adam, 18-35, NG] and Jane when considering new product offerings: *"if I think a brand is good and I like the brand, if the brand brings out something new then I will, I presume that I am going to like it"* [Jane, 35-50, NNG]. Failure to attain negotiable goals was not considered as serious a loss for consumers. Overall consumers who predominantly exhibited the use of simplification strategies did not indicate any specific health concerns as affecting their decisions.

The simplification approach to decision-making typically leveraged a small number of associations in LTM to reduce the immediate cognitive burden and expedite decision-making, particularly in the unfamiliar product purchase context, reflecting

the less motivated state of these consumers: "*you just don't want to spend an hour in the shop*" [Ian, 36-50, NG]. In relation to product ingredients, for instance, this included conflating the number of ingredients with 'naturalness': "*the fewest possible ingredients, yeah that's probably the most basic definition of natural to me*" [Laura, 18-35, PNG], or the position of ingredients within the ingredients list, to determine product healthiness: *"I tend to just look for sugar and see how high up it is [in the list of ingredients]"* [Mark, 18-35, PNG]. Such associations were readily accessible and easily utilised when evaluating unfamiliar product offerings. Particularly associative reasoning was used to infer additional product characteristics beyond those being immediately communicated. For instance, Niall, in outlining how he chose a healthier yogurt, stated: *"I'd personally go for the fruit ones before I'd go for the chocolatey ones because there's less fat and less sugar in the fruit ones than there would be in the chocolatey ones"* [Niall, 18-35, NG].

Existing knowledge structures held in LTM and low self-efficacy relating to understanding and interpretation of labelling information, contributed to the use of simplification strategies. Particularly where participants perceived a gap between their knowledge and the information provided, simplification strategies were far more likely to be pursued: *"I'd say I wouldn't be as competent in the knowledge of what everything means … I don't know on a regular daily basis how much I should be having, so it probably tells you, but I don't have enough of an understanding to appreciate what I'm being told I suppose"* [Adam, 18-35, NG].

Clarification Strategy

Clarification strategies typically involved deeper information processing, were characterised by a slower and more deliberative decision-making process, utilised information from multiple sources, both within and beyond the product label and tended to occur among more involved consumers, with said consumer involvement defined in terms of risk importance and existing in the presence of clearly defined goals relating to health and dietary restrictions. For those with specific dietary restrictions, the probability of loss, particularly in relation to physical loss, was higher whereas the probability of loss in sensory dimensions appeared relatively low given consumers' perceived efficacy to reach sensory evaluations of product offerings.

Participants pursuing a clarification strategy indicated that they would use comparisons between products to optimise the likelihood of goal attainment. For instance, Janice, a single mother with a strong interest in health and wellbeing described how she used product labels in health food stores as a means to educate herself on what healthy products should contain, and then sought to use this acquired knowledge in her 'regular' supermarket: *"if I went to the health stores and I can see a difference in [the ingredients], so I educate myself, if I went to a supermarket I look at the label first, I go to the food market I see a difference in the label"* [Janice, 35-50, PNG]. Although the implicit assumption that products in health stores should act as a guide when selecting product ingredients and nutrient levels represents a heuristic which may in and of itself be problematic, the subsequent application of information accrued in the health store context to products in the supermarket is representative, in part, of a slower, more deliberative route to decision-making.

In particular instances, clarification strategies are driven by a need to verify product claims owing to a disposition of distrust at a product-specific or food industry level, with claims such as '*low-fat*' or '*only 70 calories'* prompting distrust in the producer or the food industry broadly: *"I reckon there has to be something done to it to make it 'only 70 calories, I'd say there has to be some engineering done"* [Suzanne, 51-64, PNG]. Verification typically occurred in the immediate decision-making context and also entailed cross-referencing of BoP information with FoP product claims: *"if they say 'sugar free', you're looking to see if they're tricking you basically, so if they say no added sugar, right you're looking at the back, do they have, say, aspartame put in?"* [Gerald, 35-50, PNG]. Dispositions of distrust towards the food industry led to beliefs that information distortion was an integral part of the framing of food benefits, resulting in a perceived need to engage a more critical evaluation stance when considering unfamiliar products which offered personally relevant benefits: *"the way it's [information on labels] presented at times is extremely dishonest for lack of a better word, it's not dishonest because the facts are there, but it's misleading certainly"* [Mark, 18-35, PNG].

This disposition of distrust influenced the communication channels which were used to inform product evaluations. This is illustrated by Gerald, who explains his concern surrounding using QR codes to inform his decision-making:

> "*if you go to the QR code, they're bringing you to where they want you to go, if you google it, you get the boards.ie saying I bought this stuff and it's awful and I'd go to some other brand instead because it works better, so you kind of fan out information and you … get the page that they want you to go to but you'll also get, I'm probably suspicious that way, you'll get general, you'll get a kind of a, an overview from others, other than the specific manufacturers themselves*" [Gerald, 36-50, PNG].

In this instance, a general distrust in manufacturer dominated channels of communication, in conjunction with a preference for word of mouth evaluations, manifests in the use of alternative online communication mediums being employed.

5.3 Label Usage Framework

This research is situated within the broader motivation literature and investigates the factors affecting consumers' motivation to engage with food product label information. In line with extant research (Visschers, Hess & Siegrist, 2010; Antúnez et al., 2013; Mawad et al., 2015; Siegrist et al., 2015; Grunert & Aachmann, 2016) findings confirm that label usage is strongly influenced by situational and individual factors which impact information acquisition and processing, the direction of cognitive resources and responses to context-specific information.

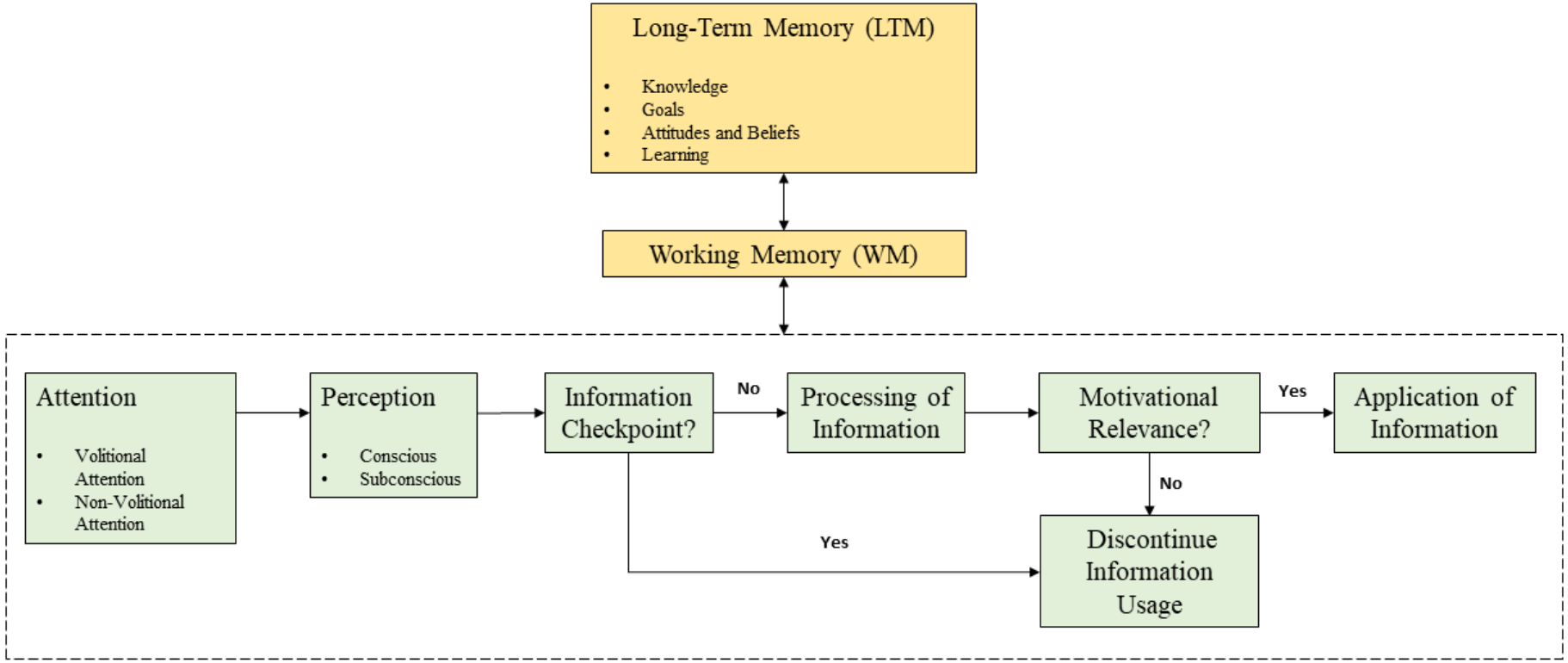
Building on the findings presented within this chapter, there are clear processes which guide *attention, perception* and *processing* of information reflected in the themes presented. The proposed interaction of these factors is presented diagrammatically in Figure 5.5, which situates observations from this study within existing label usage literature, whereby attention and perception are considered prerequisites for information processing (Grunert & Wills, 2007).

In line with the conceptual framework of label usage presented in Figure 3.5, which draws together key literature within the labelling area, the label usage process depicted in Figure 5.5 reflects the prevailing stepwise approach to information processing, through incorporating the elements of *attention*, *perception* and *information processing* discussed in Theme 1, and knowledge, goals and understanding, discussed in Theme 2. Importantly, this study builds on previous

research through the incorporation of information checkpoints, which represent pivotal moments in information acquisition whereby evaluations held in LTM are recalled and serve to signal points for (dis)continuing label usage. As depicted in the figure presented below, the label usage process involves continuous interfacing with existing knowledge structures.

Observations in this study suggest that motivation relevance, i.e. the extent to which information was deemed as facilitating goal attainment, was not only relevant to product evaluations arising from interactions with labelling information, but also had the potential to fundamentally alter the nature of interactions with labelling stimuli. This, in conjunction with information checkpoints, represents a new dimension to the conceptual framework presented in Figure 3.5, which reflects the extent to which cognitive constructs with motivational properties, such as goals, influence consumer acquisition of information on food labels.

Figure 5.5: Label Usage Process[23]



[23] Elements of the label usage process pertaining to Theme 1 are highlighted in green, while elements pertaining to Theme 2 are highlighted in yellow. Theme 3, which refers to broader strategies of label usage, represents the ways through which consumers navigate through this process and draws on all elements as illustrated in the preceding discussion.

As evidenced in the eye-tracking experiments, particularly in the case of non-volitional attention, information which reaches the processing and evaluation stage may not ultimately be considered for the purpose of evaluating unfamiliar product offerings. In such instances, motivational relevance, i.e. the extent to which the information is viewed as salient to goal attainment, determined whether information was considered for product evaluation purposes. Where motivational relevance is low, a gap appears to exist between information processing and application of information. Addressing this gap poses a challenge to marketers and requires not only an understanding of the mechanisms through which attention is captured and retained but also an understanding of the networks of meaning activated through label usage and their congruency with purchasing goals and existing knowledge structures. To this end, there is a clear need to further consider the role of needs-based information provision with respect to meanings and saliency consumers attach to the various elements comprising food labelling.

Leveraging the working memory model proposed by Baddeley (2012), knowledge and goals held in LTM are assumed to interact with the label usage process. Congruent with extant literature, it appears that goals held in LTM drive interactions with labelling through goal-directed attention and labelling serves to activate goals held in LTM through stimuli-driven attention (van Herpen & van Trijp, 2011; Higgs, 2016; Duerrschmid & Danner, 2018). In addition to leveraging, previously formed evaluations of information held in LTM to evaluate labelling stimuli, participants also engaged in incidental learning and sense-making processes in the immediate decision-making context, leveraging existing knowledge and available information, with motivation influencing the extent to which working memory and LTM were utilised to combine information sources.

Variations in information usage appears to stem from two principle sources: the knowledge, and associations held in memory, and the nature of the interaction guiding information search. Analysis suggests that the means through which information was assimilated was influenced by health goal specificity and negotiability. In particular, participants with non-negotiable health goals presented higher levels of consumption related risk, resulting in established and adhered to

strategies for acquiring and processing personally salient information presented on food products.

5.4 Discussion and Conclusion

The analysis in this chapter highlights the role of endogenous and exogenous variables in influencing attention to visual stimuli and supports the use of eye-tracking technology, as a means of eliciting valuable participant data to guide in probing and introspection of participants. Although previous research has demonstrated the impact of health motivation on label usage (Visschers, Hess & Siegrist, 2010, Hung et al., 2017), findings from this study suggest that it is not exclusively the type of goal, but also the degree of goal specificity that impacts attention, label usage and information processing. Although the presence of non-negotiable health goals appears to be the most influential factor in determining health goal specificity, this was also influenced by existing knowledge and decision-making strategies within product categories.

Drawing on the working memory (WM) model proposed by Baddeley (2000) and outlined in Section 3.4.1, the label usage framework proposed in Figure 5.5 builds on previous studies through incorporation of information checkpoints. These checkpoints appeared to be highly dependent on consumers' extant knowledge structures, with those more risk-averse consumers, with non-negotiable health related considerations exhibiting a more static approach to information search and interpretation.

Particularly noteworthy were the variations in interpretations among participants with more general goals, owing to acquisition of information from diverse and sometimes conflicting sources. Due to limited cognitive resources or motivational drive, these discrepancies in understanding led to divergent and sometimes inaccurate interpretation of labelling information. The quality of goal equifinality exhibited among consumers with poorly specified goals appears to stem from the importance of goal attainment, differing degrees of interest and underlying knowledge structures. This poses a challenge in communication design, as it allowed for multiple, and as illustrated in this chapter, potentially conflicting routes to goal attainment. Addressing this challenge requires an understanding of the underlying knowledge structures which

guide label usage in these instances in order to identify and evaluate the efficacy of these network routes in achieving general health approach goals.

In its current form, Regulation (EU) 1169/2011 aims to ensure that food label information is accessible to the 'average' consumer, such that information provided, particularly nutritional information, should be simple and easily understood. This research highlights that the notion of an 'average' consumer is problematic, not least of all, because it accepts that existence of 'below-average' consumers for whom information is not fully accessible. Furthermore, owing strongly to the existence of diverse associations with attribute information, the extent to which understanding is objectively rather than subjectively correct comes into question. Indeed, one could argue that a misguided, but strongly held subjective understanding of information, is quite detrimental as it may reaffirm incorrect interpretations. To this end, understanding of the associations which guide and are primed by label content is important not only in informing label content design but in identifying existing misconceptions among various consumer segments. Although food and nutritional labelling are important instruments for facilitating healthier choices among consumers (Grunert, Wills & Fernández-Celemín, 2010; Gregori et al., 2014), there exists clear challenges in delivering information to facilitate consumers in attaining purchasing goals.

Given the relatively high failure rates for new food products (Dijksterhuis, 2016), consumer attention is essential to ensuring product acceptance. However, it is clear that "*there is only so much attention to go around"* (Davenport & Beck, 2001, p.10). This notion has given rise to the so-called attention economy view, which views attention not only as a cognitive construct but as a scarce and limited resource at both an individual and societal level (Davenport & Beck, 2001; Crogan & Kinsley, 2012). Regardless of whether consumers consider their attention in these terms, the breadth of information available and resource constraints relating to time and cognition, for instance, necessitates consumers to be resourceful with their attention, as evidenced by the existence of information checkpoints which expedite information search activities. Viewing attention in this light, findings from this research suggest that, in the context of labelling, attention is a resource whose full potential is not being currently met, due to this gap between attention and product evaluation occurring in

instances of low-motivational relevance. Leveraging of this attention resource by organisations needs further consideration, in particular having triggered the use of this resource, ensuring that it leads to evaluation and informed choice.

The eye-tracking approach to identification of personally salient attributes in considering unfamiliar products proved a useful tool for uncovering attributes considered in the decision-making process. Eye-tracking findings allowed for further probing of label usage during the interview, which may not have taken place if relying solely on self-reported measures of attention and usage, which, as noted in Chapter 4, have a number of shortcomings (see Visschers, Hess & Siegrist, 2010; Graham, Orquin & Visschers, 2012; Ares et al., 2013). In particular, this was of use where information was passively viewed owing to attention-capturing design, but not consciously considered in the product evaluation, as highlighted in Section 5.2.1. RTA appeared an effective means to address some of the key limitations associated with eye-tracking methods, owing to its behaviourist underpinnings. In particular, supplementing eye-tracking with RTA appears to be a promising means through which to capture the motivational component of label usage and distinguish between the conscious and subconscious aspects of attention. As evidenced in this study, sole-reliance on eye-tracking findings had the potential to result in erroneous conclusions being drawn.

Comparison of eye-tracking and RTA findings allowed for the identification of unreported viewing behaviours during the ET experiment. Upon further exploration some of these unreported behaviours appear to exhibit the characteristics of habitual behaviours, i.e. that they were automatic in nature, and occurred subconsciously. As discussed in Chapter 2, the habit goal interface suggests that it is conceivable for individuals to infer goals and motives from habitual responses (Wood & Neal, 2007). However, a limitation of this aspect of the habit goal interface is that it is not possible to distinguish between accurate reporting of behavioural goals and post-hoc justifications of actions taken. Indeed, it is conceivable that the study design pushed participants to justify behaviours in a post-hoc manner, given the evidence of behaviour enactment through the eye-tracking experiment. Consequently, in the instances where subconscious viewing of labelling elements is explored, it is difficult to distinguish between existing motives and post-hoc justifications. Additionally, with

regards to habit, it is worth noting that the experimental design, which removed familiar cues such as brand names and elements of the purchasing environment, may have attenuated the role of habit in consumers' interaction with labelling presented in this study.

This study phase was conducted using a heterogeneous sample, as outlined in Section 4.5, which, although reflective of the yogurt market more broadly, may account in part for the divergence in product evaluations. The extent to which associations activated through interaction with product label information are divergent is unclear, however, information delivery is effective only to the extent to which the intended message is received with these divergent associations posing a challenge in this regard.

This research phase sought to shed light on the interaction of personal factors and food labelling stimuli in considering unfamiliar product offerings. However, immediate interactions with food labelling were restricted to an experimental setting, with the trade-off between experimental control and ecological validity necessitated by computer-based eye-tracking methods being a limitation of this study. Although attempts to re-establish broader contextual factors through subsequent semi-structured interviewing were made, further exploration of this kind, in the context of a real-world retail environment, may prove beneficial in furthering this research area. Although some efforts have previously been made to situate eye-tracking in a real-world setting (Clement, 2007), there is a need, as highlighted in this research and elsewhere (Miller et al., 2015), to incorporate introspective techniques, to more accurately and wholly reflect the consumer experience and capture the motivational dimension of food choice and label usage. Further studies may seek to increase ecological validity through use of in-store designs.

To conclude, there has been a call to situate labelling research within its broader context, considering issues such as personal relevance and motivational concerns (Mawad et al., 2015, p.8), to gain a more nuanced understanding of label usage, which may help to bridge the gap between labelling penetration and usage. Research phase 1 proposes means through which contemporaneous research techniques may be effectively integrated to gain a more holistic understanding of label

usage through using ‘objective’ usage measures (Graham & Jeffery, 2012; Piqueras-Fiszman et al., 2013), while also account for the motivational dimensions of usage (Miller et al., 2015). In the context of unfamiliar product offerings, it is clear that although the attention capture dimension of label design is important, needs-based information provision cannot be overlooked.

Given that variations in label usage strategies were observed to stem principally from the presence of divergent knowledge structures and health related goals, which represented varying degrees of risk importance, the next study phase sought to establish the role of risk and benefit orientations in knowledge structures and consumer adoption of pull marketing using digital labelling. In seeking to further our understanding of risk and benefit orientations, the consumer innovativeness literature was considered as a means to identify risk averse and benefit oriented consumer segments (Steenkamp, Hofstede & Wedel, 1999; Matzler, Grabner-Kräuter & Bidmon, 2008; Pettifor et al., 2017). Two consumer segments were considered (category ‘laggards’ and innovators/early adopters) to determine what, if any salient distinctions in understanding of labelling information exist.

The first research phase and the relevant findings presented in this chapter address the mechanisms through which information was acquired and processed in the context of unfamiliar products and sets out the challenges which exist beyond attention capture. The following chapter considers data pertaining to the second research phase and addresses research objective 2. Moving from the information acquisition phase of label usage discussed in this chapter, the following chapter considers the evaluation of information acquired, focusing specifically on the interaction of risk/benefit orientations and knowledge structures. As such this phase seeks to address the endogenous components of label usage discussed in Chapter 3 (see Figure 3.5) and consider the knowledge structures and networks of associations which give risk the varied product evaluations.

Chapter 6
The Role of Knowledge Structures in Label Usage

6.1 Introduction

The purpose of this chapter is to assess the impact of risk and benefit orientations on the networks of associations primed by label information in order to address the second research question:

> **RQ2:** Does product category innovativeness/risk aversion influence associations activated through label usage?

In line with the cognitive paradigm underpinning the approach to motivation adopted in this study, individuals are assumed to store, access and utilise information in memory (Baddeley, 2000; Huitt, 2003). However, owing to differences in individuals' exposure to and processing of information, variations in understanding which are subjective in nature can arise (Grunert & Wills, 2007; Liu, Hoefkens & Verbeke, 2015). This can give rise to differences in the individual knowledge structures (Gutman, 1982), which are cued by environmental stimuli such as food labels (Quillian, 1967; McKoon & Ratcliff, 1992; Minton, Cornwell & Kahle, 2017). This chapter seeks to understand the role of risk and benefit orientations in the construction of knowledge structures activated through interaction with labelling stimuli. This is achieved using a means-end chain approach (Gutman, 1982; Grunert & Grunert, 1995; Bredahl, 1999; Costa, Dekker & Jongen, 2004), which links product attributes to instrumental and terminal values (Rokeach, 1973) which have motivational properties, and uncovers the cognitive structures activated by product offerings.

In seeking to further our understanding of risk and benefit orientations, the consumer innovativeness literature was considered as a means to identify risk averse and benefit oriented consumer segments (Steenkamp, Hofstede & Wedel, 1999; Matzler, Grabner-Kräuter & Bidmon, 2008; Pettifor et al., 2017). As such, two participant segments were identified a priori using the DSI scale; Innovators/Early Adopters (n=19) and Laggards (n=19). Risk is associated with innovativeness, with risk averse consumers generally being less likely to tend towards innovative behaviours (Steenkamp, Hofstede & Wedel, 1999; Matzler, Grabner-Kräuter & Bidmon, 2008). Laggards are demonstrably more risk averse (Pettifor et al., 2017), while innovators are more accepting of risks and are concerned with the benefits

products can offer. The domain-specific innovativeness approach to identifying risk and benefit oriented consumers was adopted as domain-specific innovativeness considers innovative tendencies in a particular area of behaviour. This is suited to the study of perceived risk and perceived benefit, which are context sensitive and vary across product categories (Bettman, 1973; Kaplan, Szybillo & Jacoby, 1974; Stone & Grønhaug, 1993; Dowling & Staelin, 1994).

Findings relating to the laddering interviews and subsequent means-end chain analysis are presented in this chapter. The discussion presented in Chapter 5 highlighted the impact of variations in interpretation and understanding of labelling information and subsequent product evaluations. Whereas the first study phase was concerned with the mechanism underlying participants' selection of information within the labelling context, this study phase explored individual knowledge structures and their role in influencing this information acquisition process.

The chapter then progresses to discuss the role of endogenous factors in influencing the assimilation of label information into memory. Specifically, three key themes identified across the laddering data for both participant segments are identified. These themes provide further explanation and context for the findings presented in the hierarchical value maps for innovators/early adopters and laggards. The chapter concludes with a discussion of key findings and highlights their relevance in the context of digital labelling, particularly in addressing RQ3 which is considered in the subsequent chapter.

6.2 Hierarchical Value Mapping[24]

RQ2 sought to establish whether and to what extent risk aversion and innovativeness influenced the networks of meaning activated through label usage. Consequently, this investigation was aligned to the risk/benefit lens of motivation studies offered in Chapter 2 and drew on the discussion outlining the respective roles of risk aversion and innovativeness provided in Section 3.2.4. Turning first to the MEC analysis, hierarchical value maps (HVMs) for innovators/early adopters and laggards are presented. As outlined in Section 4.6.1, HVMs presented in this chapter represent

[24] The findings presented in Section 6.2 (in conjunction with those presented in Section 7.3) have been accepted for publication in the *International Journal of Retail & Distribution Management*. Further details are provided in the Research Dissemination section.

all linkages with a cut-off value of 3 or higher, with this cut-off value being congruent with previous studies using a similar sample size (Urala & Lähteenmäki, 2003; Costa et al., 2007; de Ferran & Grunert, 2007; Boecker, Hartl, & Nocella, 2008; Mirosa et al., 2016).

6.2.1 Implications Matrices

As outlined in Section 4.6.1, implication matrices were developed for both the innovator/early adopter and laggard segments, and represent all linkages (direct and indirect) with a value of 3 or higher. Abridged versions of the implication matrices for the innovator/early adopter and laggard segments are presented in Table 6.1 and Table 6.2 respectively. For ease of presentation, the implication matrices presented have been abridged to depict the columns and rows relating to all elements of the subsequent HVMs for the respective segments, i.e. only those elements of the content analysis represented in the HVMs (as listed in Table 6.3) feature in the abridged implication matrices. Direct links are presented before the decimal point and indirect links are presented after the decimal point, with direct links with a cut-off value ≥3 highlighted in green and indirect links with a cut-off value ≥3 highlighted in yellow.

Table 6.1: Abridged Implication Matrix: Innovators/Early Adopters

	(Added) Sugar	(Full) Fat	Calories	Fruit Content	Greek	Low Fat – Fat Free	Natural (flavour)	Fewer Ingredients	Healthy	Low Sugar	Provenance	Taste – Poor	Financial Loss	Food Wastage	Health and Wellbeing	Longevity	Mobility	Non-Enjoyment	Supporting Local	Thicker	Weight Loss	Weight Gain	Being Responsible	Quality of Life	Caring for Others
(Added) Sugar			1.0	**4.0**		**5.1**							0.1	0.1	**0.3**		0.1	0.1				**3.0**	0.2	0.2	0.1
(Full) Fat															1.2		0.1					**3.0**	0.1	0.1	0.2
Calories															0.2		**0.3**					**3.0**	0.1	0.2	
Fruit Content									1.0						0.2	0.1						0.2	0.1	0.1	0.2
Greek									1.0			1.0	0.1	0.1	**0.3**					**3.0**			0.1	0.1	
Low Fat – Fat Free									2.0			2.0	0.1	0.1	**1.7**	**0.3**	0.2	0.1			**5.0**	0.2	0.2	**0.3**	**0.5**
Natural (flavour)								1.0	2.0	1.1		1.1			**1.5**	0.1		0.2					**0.3**	0.2	**0.3**
Fewer Ingredients										1.0					**0.3**										**0.3**
Healthy															**3.0**	0.1	0.1					0.1	0.1	0.2	0.2
Low Sugar															**4.0**									0.1	**0.3**
Provenance															0.2				**3.0**				0.1	0.1	0.1
Taste – Poor													0.2	0.2				**3.0**							
Financial Loss														**3.0**				0.2							
Food Wastage																		2.0							
Health and Wellbeing																2					**3.0**	1.1	**4.1**	**5.1**	**8.0**
Longevity																									
Mobility																					1.0	**3.0**		2.0	
Non-Enjoyment (Taste)																									
Supporting Local Economy																									
Thicker																									
Weight Loss																							0.1	0.2	
Weight Gain																							0.1	0.2	
Being Responsible																								1.0	
Quality of Life																									
Caring for Others																									

Table 6.2: Abridged Implication Matrix: Laggards

	Sugar	Additive Free	Diet Claim	Fruit Content	Low Fat – Fat Free	Natural (flavour)	Sweeteners	TL Labelling	Low Sugar	Organic	Preservative Free	Processed	Provenance	Quality – Good	Add Own Ingredients	Diabetes	Ease of Label Use	Health and Wellbeing	Support Local Economy	Taste	Time and Expediency	Weight Gain	Weight Loss	Enjoyment	Versatility	Being Responsible	Control	Quality of Life	Caring for Others	Societal Wellbeing
(Added) Sugar			1.1	**3.0**	**8.0**		1.0					1.1				2.0		2.1				**4.1**						**0.3**	**0.4**	**0.4**
Additive Free						**3.0**				1.0																				
Diet Claim					0.1		1.1		1.0			1.0				**0.3**		0.2				0.2	0.1	0.1				**0.3**	**0.3**	**0.3**
Fruit Content																		0.1				0.1		**3.0**		0.1		0.2	**0.4**	
Low Fat – Fat Free							1.0					**4.0**				**0.3**		1.2		0.1		**0.4**	**3.0**	0.1		0.1		**0.4**	**0.4**	**0.3**
Natural (flavour)									**3.0**		**3.0**				**5.3**	0.1		**0.3**		**3.0**		0.1		0.2	**3.0**	0.1	**0.4**	0.2	**0.3**	
Sweeteners									1.0			1.0										0.1		1.0				**0.3**	0.1	1.0
TL Labelling																	**4.0**				0.2									
Low Sugar																0.1		0.1				0.1		0.1				0.1	**0.3**	0.1
Organic											0.1			1.0				1.2		**4.0**				0.2		0.1	0.1		0.2	
Preservative Free													1.0					1.0											0.1	
Processed																0.1		0.2				0.1	0.1					0.2	0.1	0.1
Provenance														**3.0**				0.2	**7.0**							**0.4**		0.1	0.2	0.2
Quality – Good																		1.0												
Add Own Ingredients																									**4.0**		**5.0**			
Diabetes																						1.0	1.0					1.0		1.0
Ease of Label Use																					**3.0**									
Health and Wellbeing																						2.0	1.0			**3.0**		2.0	**4.0**	
Supporting Local Economy																										**3.0**				2.0
Taste																								**5.0**					0.2	
Time and Expediency																														
Weight Gain																												0.2	0.1	0.1
Weight Loss																										1.0		0.1	1.1	
Enjoyment																													**3.1**	
Versatility																											**0.3**			
Being Responsible																														
Control																														
Quality of Life																														
Caring for Others																														
Societal Wellbeing																														

Drawing on the implication matrices above, the key elements of the MEC analysis comprising the subsequent HVMs for both segments are presented in Table 6.3. It is worth noting, particularly in the case of laggards, that salient attrbutes of the product, considered via the product label, were primarily concrete and intrinsic in nature, with credence attributes playing a relatively small role in product considerations.

Table 6.3: Overview of MEC Elements

		Innovator/Early Adoptor	**Laggard**
Attributes	**Concrete**	Added Sugar Calories Fat Fat Free Fruit Content Greek Low Sugar Thick	Added Sugar Additive Free Diet Claim Fat Free Fruit Content Low Sugar Preservative Free Sweeteners TL Labelling
	Abstract	Fewer Ingredients Healthy Natural (flavour) Provenance Taste	Natural (flavour) Organic Processed Provenance Quality Taste Versatility
Consequences	**Functional**	Financial Loss Food Waste Health and Wellbeing Mobility Weight Gain Weight Loss	Add Own Ingredients Diabetes Ease of Use Expediency Health and Wellbeing Weight Gain Weight Loss
	Psychosocial	Enjoyment Supporting Local Economy	Enjoyment Supporting Local Economy
Values	**Instrumental**	Being Responsible	Being Responsible Control
	Terminal	Caring for Others Longevity Quality of Life	Caring for Others Quality of Life Societal Wellbeing

The following sections, Section 6.2.2 and Section 6.2.3 will consider the HVMs for the innovator/early adopter and laggard segments respectively. The HVMs

for both segments are presented and an accompanying discussion is provided to offer greater context for the more reductionist presentation offered by the HVMs. To provide a frame of reference for the quoted interview excerpts presented in this section, an overview of participant details for those in the innovators/early adopters segment is presented in Table 6.4.

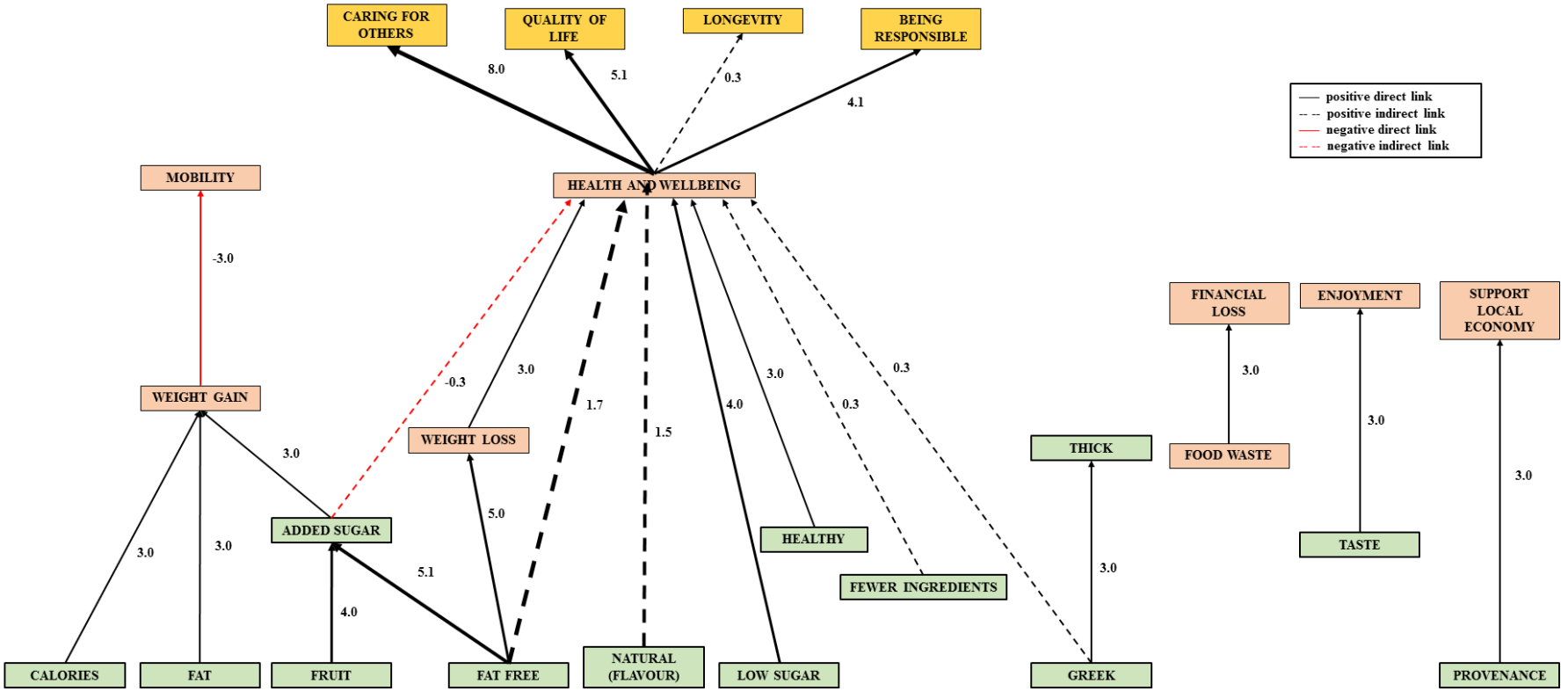
Table 6.4: Phase 2 Innovator/Early Adopter Participant Profile

Pseudonym	Gender	Age	Relationship	Employment	Smart Phone	DSI Score
Isabel	Female	51-64	Married	Employed	Yes	25
Bridget	Female	18-35	Married	Employed	Yes	27
Amy	Female	51-64	Married	Unemployed	Yes	29
Declan	Male	51-64	Married	Retired	Yes	28
Evelyn	Female	36-50	Married	Unemployed	Yes	26
Daniel	Male	51-64	Married	Employed	Yes	25
Geraldine	Female	51-64	Married	Employed	Yes	25
Holly	Female	51-64	Married	Employed	Yes	26
Kate	Female	36-50	Separated / Divorced	Employed	Yes	27
Christine	Female	51-64	Married	Retired	Yes	25
Louise	Female	36-50	Separated / Divorced	Employed	Yes	27
Elisabeth	Female	51-64	Separated / Divorced	Retired	Yes	24
Elliot	Male	36-50	Married	Employed	Yes	24
Sarah	Female	65+	Married	Retired	Yes	26
Amanda	Female	65+	Married	Retired	No	30
Emily	Female	51-64	Married	Retired	Yes	26
Kasey	Female	51-64	Married	Retired	Yes	27
Marie	Female	36-50	Single	Employed	Yes	26
Mary	Female	51-64	Married	Employed	Yes	24

6.2.2 Innovator/Early Adopter Hierarchical Value Mapping

Among those in the innovator/early adopter segment, benefits were considered primarily in terms of general health and wellbeing implications of consumption (see Figure 6.1). In particular, delivery of health and wellbeing related benefits were observed to satisfy goals relating to caring for others, while maintaining an associated sense of responsibility, which offered secondary benefits such as a sense of achievement or pride. This is demonstrated in the ability of health and wellbeing consequences to lead to the simultaneous satisfaction of multiple values, as can be seen in Figure 6.1. In particular, this appears to suggest a more nuanced appreciation of the interrelated nature of health and wellbeing consequences among innovators/early adopters. The following section provides an overview of the dominant values observed to guide label usage and information search among these participants. Additionally, a summary of the dominant values guiding usage with supporting evidence is provided in Table 6.5.

Figure 6.1: Innovator/Early Adopter Hierarchical Value Map[25]



[25] Line thickness represents the strength of linkages. Direct linkages are represented by the number before the decimal point. Indirect linkages are represented by the number after the decimal point.

Table 6.5: Innovator/Early Adopter Values

Value	Definition	Example
Caring for Others	Participant desire to maintain and ensure the happiness and wellbeing of those immediately in the household environment (as distinct from at a societal level).	"*when you have kids you kind of have to be more conscious of what they're eating and what you're giving them*" [Evelyn, 36-50, Innovator/Early Adopter]
Quality of Life	References to impact of diet on health and lifestyle. Quality of life considerations are framed in terms of a desire to enjoy life, be mobile, and be free of major health complications.	"*my mother is quite heavy, and she can't walk now, and she has diabetes and she has a lot of other things and I don't want to go there*" [Elisabeth, 51-64, Innovator/Early Adopter].
Longevity	Participants express a desire to live longer.	"*we can all make decisions in life that are good or bad for us, but this is just, as I said I'm almost 50 years old so … and I hope to live another, you know, thirty years with the same and its longevity maybe is what it is. And, just feeling good.*" [Elliot, 36-50, Innovator/Early Adopter]
Being Responsible	References to the importance of taking personal responsibility and ownership for the consequences of personal choices.	"*middle aged (laughs), you have to try and get sense at some stage*" [Isabel, 51-64, Innovator/Early Adopter] "*Health … the older you get the more you ... it comes in ... like obviously you know at 21/22 you're going to beat the world but as you get older, life changes … your choices change*" [Daniel, 51-64, Innovator/Early Adopter]

Being Responsible

Among both innovators/early adopters and laggards, personal accountability for food choices was a consideration in decision-making and was framed in terms of the broader health implications of dietary patterns. Almost paradoxically, taking personal responsibility for decisions made was often framed in terms of external considerations, such as participants' role as a caregiver within the household, thereby reflecting the pervasiveness of consequences arising from food decisions. This was evident in the case of Geraldine who felt a responsibility as a mother to instil positive body image ideals to her daughters through her food choices and as a result refused to purchase products bearing diet claims: "*diet [claims], I don't like the impression when you've got daughters what diet suggests and you're trying to keep their head straight and they look fine whether they're this size or this size*" [Geraldine, 51-64, Innovator/Early Adopter].

Additionally, age appeared to be an overriding determinant of participants framing 'healthy' food choices in terms of taking responsibility. For instance, Isabel, who recounted trying to reduce her fat intake, with a view towards losing weight, stated: "*middle aged (laughs), you have to try and get sense at some stage*" [Isabel, 51-64, Innovator/Early Adopter]. Similarly, Daniel who was concerned with his quality of life, rather whimsically recounted how his approach to food changed over time leading him to make better, more responsible decisions: "*obviously you know at 21/22 you're going to beat the world, but as you get older, life changes you know, and I think your choices change … I think you get more experience as well, do you know? It's a pity, because you can see the same mistakes being repeated all the time*" [Daniel, 51-64, Innovator/Early Adopter].

For the most part, those citing taking personal responsibility for their health and wellbeing practiced principles of moderation, such as Emily, who sees the need for balance between enjoyment and health goals: "*being responsible for your own health really is very important, you can go on a little binge every now and then*" [Emily, 51-64, Innovator/Early Adopter]. However, in some instances, personal responsibility implied a more totalitarian approach, whereby individuals could be viewed as to blame for their poor health without regard for the broader food environment and the difficulties associated with navigating the breadth of information

available: "*they always think it will happen to someone else, people don't realise god love us until they don't feel well themselves and then they realise god their health is so important … I think people need to take responsibility for their own health. The same with other things in life, you know in a way you kind of path your life yourself to a certain extent*" [Emily, 51-64, Innovator/Early Adopter].

Health and Wellbeing

Particularly among those within the innovators/early adopter category, product attributes were predominantly considered in relation to the health and wellbeing implications envisaged as arising from consumption, as evidenced in the central role of health and wellbeing in the HVM for this segment (see Figure 6.1). Although it was anticipated that health and wellbeing would feature as an important consequence of consumption, given its dominant role in guiding label usage in research phase 1, the preoccupation with positive health outcomes among innovators/early adopters, when compared with those in the laggard segment, was noteworthy.

It was notable that the subordinate goal of health and wellbeing allowed for the attainment of multiple superordinate goals related to both terminal and instrumental values, such as maintaining a good quality of life and the associated enjoyment which that brings. This was evident in the case of Kate, who sees her current food choices as contributing towards her quality of life in later years: "*it's prevention … it's actually to keep yourself fit and healthy in your 60s, 70s, 80s. I want to be able to do a headstand in yoga at 80 rather than be in a wheelchair*" [Kate, 36-50, Innovator/Early Adopter]. Given the interrelatedness of the key values driving category decision-making for these consumers, and the characteristic of multifinality (see Kruglanski et al., 2015) underlying the goal structures exhibited among them, a health and wellbeing orientation appears to be a potentially appropriate marketing tool, as it allows for progression towards multiple related superordinate purchasing goals.

Caring for Others

The desire to care for others within the household, particularly children, was observed to be related to higher order ideas of what is right and wrong: "*when you have kids, you kind of have to be more conscious of what they're eating and what you're giving them you know*" [Evelyn, 36-50, Innovator/Early Adopter]. As such, the

caregiver role was intrinsically related to ideas of responsibility and normative beliefs (see Ajzen, 1991), with the link between diet and health providing a basis for considering the role of food as a medium for caring for others: "*they are my kids and I am mad about them. You are what you eat, you know*" [Louise, 36-50, Innovator/Early Adopter]. Where consumers felt that they were adequately addressing the health and wellbeing of those within the household, this led to a sense of pride and accomplishment, which in some regards reflected their perceived ability to make appropriate choices when engaging with food labelling and food more generally: "*I don't like the idea of eating food that has additional processing methods added to it … I feel better about myself if I have fed my family, and I, clean, less processed food*" [Bridget, 18-35, Innovator/Early Adopter].

Quality of Life

In discussing participants' focus on health and wellbeing, quality of life was a driver of health concerns. Quality of life reflected considerations relating to both hedonism and socialisation as well as practicalities such as mobility, particularly in later stages of life. Oftentimes, this notion of quality of life was framed in terms of past experiences, particularly negative experiences of others, and acted as a flash point for considering the long-term implications of dietary behaviours: "*my mother is quite heavy and she can't walk now and she has diabetes and she has a lot of other things and I don't want to go there*" [Elizabeth, 51-64, Innovator/Early Adopter].

6.2.3 Laggard Hierarchical Value Mapping

Hierarchical value mapping for those within the laggard segment revealed that category laggards were markedly more loss-oriented than those within the innovator/early adopted segment, as evidenced by the relative frequency of negative laddering, which represent the demotivating element of HVMs (Zanoli & Naspetti, 2002). In particular, negative associations arising from the presence of health-based claims such as 'fat-free' and 'diet' evoked negatively valenced affective and cognitive responses and represented attributes capable of leading to the frustration of attainment of personally salient terminal and instrumental values related to societal wellbeing and quality of life.

Among laggard consumers, the desire to care for others appeared closely related to the instrumental value of being responsible, with those charged with acting as the primary decision-maker for household food purchases viewing themselves as having a responsibility to ensure and promote the health and wellbeing of others:

> "*as a shopper you are aware as well of feeding a family, you're wondering if I'm giving them a particular type of yogurt. Very often it adds to their sugar consumption over the day or over the week which is already heavily charged between biscuits and sweets and chocolate and I'm thinking I don't need to add another heavily processed food to what they're eating*" [Nicole, 36-50, Laggard].

Interestingly, we note the presence of seemingly contradictory associations which are reflective of the broader findings within the previous research phase. For instance, fat free claims were observed to be associated with weight gain (owing to the perceived presence of added sugar), while also being associated with weight loss outcomes (see Figure 6.2). As can be observed in the laggard HVM, negatively valenced responses to product attributes drew on both affective and cognitive responses to past and future consumption-related implications. For instance, Jennifer, who demonstrated a great degree of self-awareness, framed concern around health, sugar and weight gain in terms of long-term health implications and mobility concerns "*I can be addicted to sugar very quickly … it's a kind of self-perpetuating kind of thing with sugars … I've been trying to lose weight because I've been told I will have to, in 5 years, I will have to get another knee replacement"* [Jennifer, 51-64, Laggard].

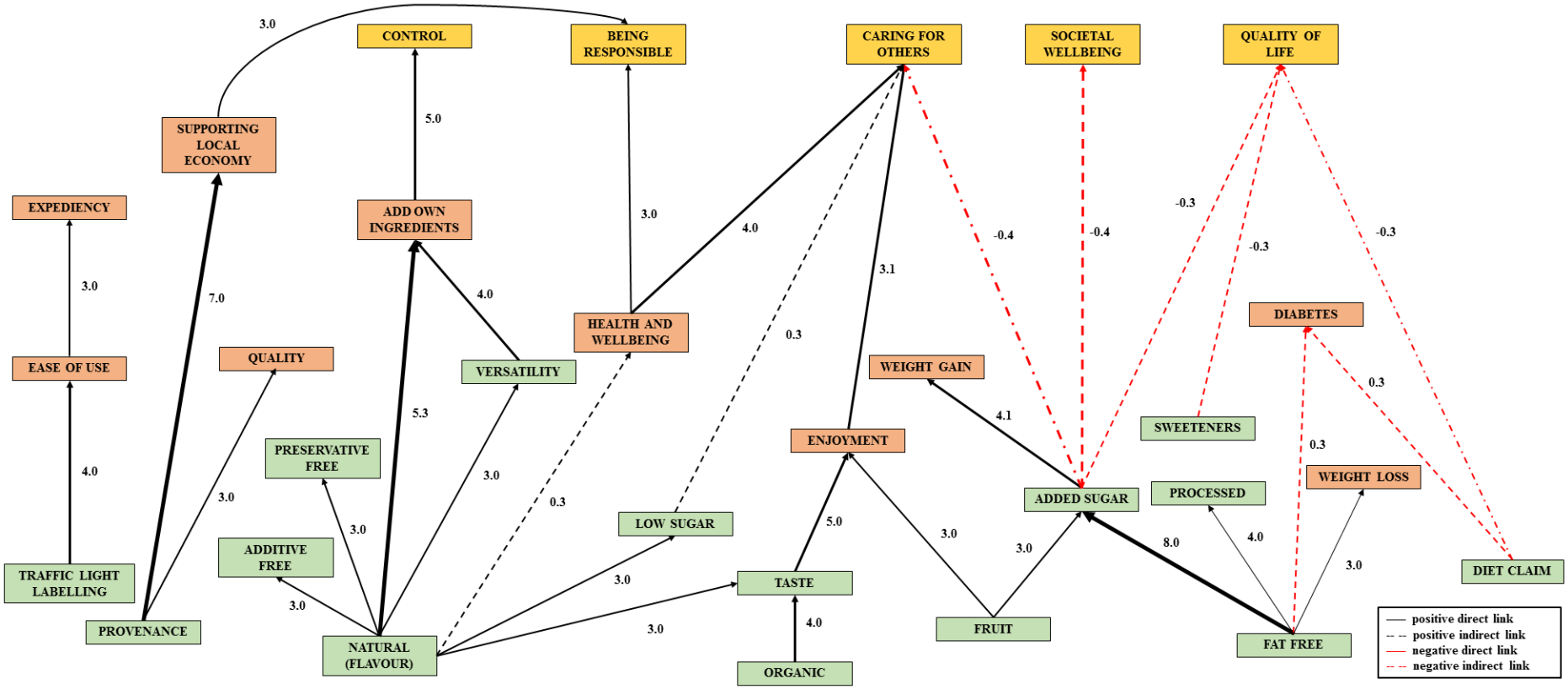
As discussed in the previous section, some values transcended risk/benefit considerations, with values such as 'caring for others' and 'being responsible' observable in both consumer segments (see Table 6.3). For instance, the confluence of these considerations (caring for others and responsibility) was evident in the case of Ciara, who, when presented with yogurt label 19 (see Appendix 4.14), which contained toffee and caramel, stated: "*if I saw mothers buying that for children I'd go berserk … straight off you're giving them toffees and caramel, they're treats, not a food as such and the level of sugars, I couldn't imagine anybody buying that for a child*" [Ciara, 65+, Laggard].

Given that these values have already been considered in discussing the innovator/early adopter segment, the following discussion elaborates on those values specific to consumers within the laggard segment. Specifically, concerns regarding societal wellbeing and the desire to maintain control over their food environment are discussed. Nevertheless, a summary of the dominant values guiding usage with the laggard segment and supporting evidence is provided in Table 6.7. Additionally, to provide a frame of reference for the quoted interview excerpts presented in this chapter, an overview of participant details for those in the laggard segment is presented in Table 6.6.

Table 6.6: Phase 2 Laggard Participant Profile

Pseudonym	Gender	Age	Relationship	Employment	Smart Phone	DSI Score
Laura	Female	51-64	Married	Employed	Yes	8
Alex	Male	65+	Married	Retired	Yes	10
Matthew	Male	51-64	Married	Unemployed	No	8
Charlotte	Female	65+	Single	Retired	Yes	8
Jennifer	Female	51-64	Single	Retired	Yes	8
Luke	Male	65+	Married	Retired	Yes	6
Paulina	Female	65+	Married	Retired	No	11
Lara	Female	65+	Widowed	Employed	No	6
Ciara	Female	65+	Married	Employed	No	9
Nicole	Female	36-50	Married	Unemployed	No	10
Mark	Male	51-64	Married	Retired	Yes	10
Maisie	Female	51-64	Married	Employed	Yes	8
Sofia	Female	51-64	Single	Employed	Yes	11
Amber	Female	51-64	Married	Employed	Yes	6
Emma	Female	51-64	Separated / Divorced	Retired	Yes	8
Evan	Male	51-64	Single	Student	No	6
Nora	Female	65+	Relationship	Retired	Yes	12
Ryan	Male	51-64	Married	Employed	Yes	12
Ethan	Male	36-50	Relationship	Employed	Yes	11

Figure 6.2: Laggard Hierarchical Value Map[26]



[26] Line thickness represents the strength of linkages. Direct linkages are represented by the number before the decimal point. Indirect linkages are represented by the number after the decimal point.

Table 6.7: Laggard Values

Value	Definition	Example
Control	Participant refers to a desire to have input/choice over the foodstuffs they consume.	"*I don't buy flavoured yogurts anyway much anymore. I tend to only buy natural yogurts now … because I know I can add fruit to it if I wish*" [Sofia, 51-64, Laggard]
Being Responsible	Participant refers to importance of taking responsibility or ownership for the consequences of their choices.	"*you have to be good and these products actively reduce cholesterol you know it's something good you're doing for yourself*" [Amber, 51-64, Laggard]
Caring for Others	Participant desire to maintain and ensure the happiness and wellbeing of those immediately in the household environment (as distinct from at a societal level)	"*I have two boys with very bad eczema and my husband is diabetic, so I have to be kind of careful that there aren't too many extra things in the food we eat so*" [Laura, 51-64, Laggard]
Societal Wellbeing	Participant expresses concerns regarding the implications of food choices and the food system for society at large.	"*you know we've had a lot of publicity about obesity you know and when you look at your parents and grandparents and look at today's children coming out of schools, even remembering my school days in the 50s and early 60s, we didn't have fat people in the class you know. We just didn't you know, and people cooked from scratch and they ... yeah but I think the more food is processed and messed about with and added to, to make it palatable yeah the more damage it's doing to the population at large*" [Nora, 65+, Laggard]
Quality of Life	Participants reflect to importance of being able to live a life unimpeded by health constraints or chronic health problems.	"*I've always had this thing you know I must stay healthy, be like my grandmother and live 'til 96 (laughs) or 97 you know … she was as sharp in the brain the day she died … she was a good advert for a healthy diet, a healthy lifestyle you know*" [Nora, 65+, Laggard]

Societal Wellbeing

Drawing on broader dispositions of distrust towards the food industry at large, participants, particularly older participants, expressed concern regarding the long-term, wider implications of food consumption. In particular, diet claims, sugar content and claims of reduced fat elicited strong concerns regarding their implication for societal wellbeing: "*It's frightening really, the amount of sugar that is in them. They say that diabetes will be an awful epidemic … You go into a shop, into a supermarket … they have all sweet things, cakes, scones, tempting people*" [Paulina, 65+, Laggard]. In part, these concerns appeared anecdotal in nature and stemmed from a perceived discrepancy between current lifestyles and those of yesteryear: "*when you look at your parents and grandparents and look at today's children coming out of schools, even remembering my school days in the 50s and early 60s, we didn't have fat people in the class you know*" [Nora, 65+, Laggard].

Awareness of broader societal issues, particularly obesity, was observed to filter down to household level behaviours and concerns: "*you do hear about the obesity epidemic in adults and children and you're thinking what can I do to try and stave that one off if you can, and try not to develop a sweet tooth as well when it comes to the children*" [Nicole, 36-50, Laggard]. Indeed, concerns were often framed in the plural form, with queries related to the implications at broader societal rather than individual level. This is evident in the case of Mark, who queries the impact of fat reduction on society as a whole: "*I wonder are we throwing the baby out with the bath water as regards to over emphasise the health benefit of low fat*" [Mark, 51-64, Laggard].

Control

In Chapter 2, it was noted the desire for autonomy has motivational properties (Ryan & Deci, 2006). Autonomy in the context of food choice was among key considerations for category laggards. Interestingly, natural (unflavoured) yogurts presented one means through which laggards could be afforded autonomy and control, or at least the appearance of such (see Section 2.5.1) in relation to their yogurt selection, while simultaneously managing food related risks. Particularly, laggard consumers expressed concerns over the level of control they had within their own food system: "*I just think that there is an awful lot of stuff going into the food stuffs that we've no control over*" [Amber, 51-64, Laggard]. Natural unflavoured yogurts were

considered free from flavouring and additives, which were considered to undermine health and societal goals. Consequently, natural unflavoured yogurt allowed for incorporation of more trusted ingredients: "*I tend to only buy natural yogurts now … because I know I can add fruit to it if I wish*" [Sofia, 51-64, Laggard]. Aligned to the idea of adding fruit was concerns regarding sugar and distinctions between incorporating sweeteners at home, as opposed to at a manufacturer level: "*if you add something like honey to it you're putting a bit of sugar in there but you're still not overloading it with sweeteners and other things that you would find in some of the labels*" [Nicole, 36-50, Laggard].

This desire for control appears congruent with the laggard typology of more risk averse behaviour. Viewing risk aversion as an attitudinal response to uncertainty in a given behaviour domain, risk averse consumers are generally regarded as being less likely to adopt new products or tend towards innovative behaviours, opting instead to purchase well established and familiar brands (Steenkamp, Hofstede & Wedel, 1999; Matzler, Grabner-Kräuter & Bidmon, 2008). From a marketing perspective, given the ease of substitution between natural yogurt brands, this poses a challenge in terms of product differentiation. Particularly, given the focus on the simplicity and perceived versatility of this product, it appears that a focus around natural yogurt should consider the consequence of consumption, such as the ease of inclusion of ingredients in the household, rather than addition of further attributes and ingredients, which although differentiating the product, may undermine its perceived simplicity.

6.3 Thematic Analysis

Having conducted the MEC analysis for both the innovator/early adopter and laggard segments, a number of additional issues emerged in relation to the knowledge structures activated through interaction with the labelling stimuli presented as part of the (free sorting) attribute elicitation exercise. A thematic analysis of these interviews identified key issues underlying the construction of networks of associations for those within the respective segments. The first theme, valence of purchasing orientation, considers consumers' predispositions to the purchase of unfamiliar food products in general and assesses the valence of general purchasing orientations on information search activities. The second theme, reconciling conflicting product attributes, considers the mechanisms established to address instances where attributes are

perceived as coming into conflict and accounts for the discrepancies in the saliency of conflicting network routes. The third and final theme considers the level at which consumption implications are conceptualised, drawing a distinction between inward facing and outward facing considerations of the consequences of consumption.

6.3.1 Theme 1: Valence of Purchasing Orientation

This study phase represented participants whose purchasing orientations varied in line with their degree of domain-specific innovativeness. As anticipated, this resulted in varying levels of interest in and willingness to try unfamiliar products. Notably, however, consumer innovativeness had implications for the valence of purchasing orientations and subsequent information search activities, accounting in part for differences between the HVMs for the innovator/early adopter and laggard segments.

An area upon which the innovator/early adopter and laggard segments differed fundamentally, was their views on novelty and the relative merit of such in motivating purchasing. In line with extant literature, it appears that innovators/early adopters sought out novelty, however, this desire to try something new/unfamiliar was occasionally poorly defined: *"you could be watching the telly and next thing something will come up and say have such and such a thing and you kind of look and you kind of go, 'oh God do you know something now, I might try that', it would be something different, you know"* [Holly, 51-64, Innovator/Early Adopter]. This contrasted with the laggard perspective, whereby novelty was generally considered in terms of potential loss and as providing no additional value: "*if it's not broken why fix it*" [Amber, 51-64, Laggard].

A lack of willingness to try unfamiliar products also manifested itself in established shopping routines of laggards, which resulted in the exclusion of consideration of unfamiliar products and accompanying information: "*I make the list and I go to the supermarket and I'll get the list and I don't look at anything … when my sisters come they just can't believe that I just walk around and throw things into the basket. They look at every single thing in the supermarket … they love it*" [Charlotte, 65+, Laggard].

This differed starkly for those in the innovator/early adopter segment, for whom novelty in product selection was a goal in its own right, owing to a sense of boredom with staid food options: *"[I buy] something new because you get a bit bored*" [Bridget, 18-35, Innovator/Early Adopter]. Indeed, this sense of boredom was a pervading consideration among innovators/early adopters which led to a benefit-orientation in the shopping context, even when others in the household do not see the value in purchasing new or unfamiliar products: "*life is boring if you eat the same thing all the time you know … My wife gives out to me. She says you're always f*****g conned with them things (laughter)"* [Declan, 51-64, Innovator/Early Adopter]. This led to different search behaviour and information usage, whereby new information and accompanying information were actively sought out and were congruent with goal attainment, rather than passively acquired.

Conversely, as food novelty for those in the innovator/early adopter segments was a more integral part of their purchasing practices, label usage was not always necessary. This stemmed from broader discussions with peers concerning food which gave rise to recommendations, such that product evaluations were conducted prior to the shopping occasion: "*I have one or two friends who are a bit like me with their food. We would swap recipes, swap ideas and 'have you seen this?' and 'have you tried this? This is lovely"*" [Amy, 51-64, Innovator/Early Adopter].

Innovators/early adopters appeared to consider the broader foodscape in their consideration of new or unfamiliar products. For instance Bridget, who expressed a belief that she was more willing to spend money on food products than others, expressed a desire for elements of provenance and supporting smaller local manufacturers as motivating her purchase decisions, rather than focusing solely on concrete product attributes:

> "*I would always have a little look to see if there's any new products, maybe off some really small company or some sole trader that are doing something kind of new, and I would give that a try … I think if Ballymaloe come out with another relish I'm not that fussed about buying it, but if I see little Mary Murphy down the road has made a new jam ... I would probably ... I would buy that. I would try it. And*

that would be partly supporting a small enterprise as well as knowing it's probably going to be quite fresh and it's not going to be processed" [Bridget, 18-35, Innovator/Early Adopter].

Ultimately, the valence of broader purchasing orientations was observed to influence both consumers' willingness to interact with new product offerings, but also the nature of said interaction. This broader orientation to purchasing in general appears to contribute to the risk/benefit orientations of consumers within the respective segments.

6.3.2 Theme 2: Reconciling Conflicting Product Attributes

Information search resulted in participants sometimes findings themselves in the precarious situation of having to reconcile attributes which appeared to conflict with one another. Seemingly conflicting linkages are evident at a group level, in the case of both innovators/early adopters and laggards (e.g. fat free was observed to facilitate and frustrate attainment of health and wellbeing outcomes for innovators/early adopters). However, these conflicts were also observed to be present at an individual level, with these conflicts stemming from anticipated consequences arising from attributes. In seeking to reconcile these conflicts, participants were observed to engage in a number of practices, including practicing moderation.

In phase 1, the concept of wilful ignorance was introduced to highlight instances where participants wilfully disregard information, which may force them to reconsider decision-making and the suitability of a given product in relation to its nutritional composition and ability to deliver on conflicting purchasing goals (see Section 5.2.2). Additional probing conducted in the context of phase 2 highlighted the role of moderation in justifying this wilful ignoring of potentially salient nutritional information. Moderation afforded consumers a means to justify deviation from a desired course of action, be that reduction of intake of specific ingredients or macro-nutrients or avoidance of certain products/product categories, while reconciling the perceived conflict presented by attributes: "*moderation is definitely the best thing, like you can eat everything I feel and I think sometimes people need to eat everything to have a balanced ... but like obviously not too much fat stuff and not too much fecking*

alcohol. It's just a matter of just having a happy medium I think" [Holly, 51-64, Innovator/Early Adopter].

The notion of moderation also afforded consumers comfort when confronted with confusing information or seemingly conflicting messaging: "*You know, things that they said that were bad for you long ago now they are saying are good for you. You know, everything in moderation is what I would believe*" [Louise, 36-50, Innovator/Early Adopter]. In this regard, summary evaluations of products or product categories without detailed investigation of the nutritional content of a given offering was acceptable as a certain level of deviation from health and wellbeing fell within the remit of moderation. Indeed, moderation appeared as almost a mantra when describing food choice, repeated in much the same way as if read from a script: "*everything in moderation is what I would believe"* [Louise, 36-50, Innovator/Early Adopter]; "*everything in moderation is definitely the best thing"* [Holly, 51-64, Innovator/Early Adopter]; "*everything in moderation, that's the way I look at it*" [Kate, 36-50, Innovator/Early Adopter]; "*everything in moderation*" [Paulina, 65+, Laggard]; "*it's all moderation*" [Mark, 51-64, Laggard]; "*try to keep it in moderation*" [Nicole, 36-50, Laggard].

The moderation concept also allowed participants to justify the consumption of products which offered greater hedonic value, through relating current purchasing to older practices and tradition. For instance, Mark expressed concerns that reducing the fat content of food through altering the products from its natural state for potential health benefits may also reduce its nutritional value, while simultaneously affirming that moderation justified the consumption of the full fat product he preferred: "*obviously the original product was always full fat … up to 10 years ago I would have chosen the low-fat product, but I think the full fat product is tastier and I wouldn't be eating bucket fulls of full fat. So, it's all moderation*" [Mark, 51-64, Laggard].

6.3.3 Theme 3: Inward and Outward Focus

Dominant MEC chains across participants in both consumer segments represent a confluence of considerations relating to the implications of consumption in both the immediate and broader context. Consequently, label usage was driven by

values with direct implications for the individual (and where relevant those in the household) as well as society more broadly.

Outwardly focused concerns related to two key areas. Firstly, drawing on the health and wellbeing implications of consumption, participants framed concerns regarding products' nutritional content in terms of epidemiological implications: "*It's frightening really, the amount of sugar that is in them. They say that diabetes will be an awful epidemic*" [Pauline, 65+, Laggard]. Secondly, with a view towards the economic impact of consumption, participants considered the broader impact of consumption on the local economy: "*I actually like to support home produce and jobs to the country and keep people in work and keep the system going*." [Emily, 51-64, Innovator/Early Adopter]. In the case of provenance indicators, participant expression for a preference of local foods was recited as if part of a pre-scripted mantra, which appeared to draw on the social desirability of 'supporting the local economy': "*support local, spend local, buy local … keep the local economy going as much as you can*" [Mark, 51-64, Laggard].

Outwardly focused concerns were occasionally framed in reminiscent terms, contrasting the current state of affairs, particularly in relation to diet and health, with those of yesteryear. This was particularly notable in the case of Matthew, whose ideals regarding children's activity levels at present framed his purchase decisions:

> "*I suppose in the last twenty or thirty years, an awful lot of children are sitting down and watching television, they're on Xbox they're on iPads, they're on these … when I was growing up, you were kicked out the door and you come in again for your grub time … so you were out playing and you kept the weight down … when I'm shopping nowadays, I've two grandchildren that call to the house, and I like to have treats for them, but not with sugar, not with fat … I don't believe in fizzy drinks, I give them dilute and things like that because one is two and half and she has an iPad and the other fella is six and he has an iPad and they don't like to go out and play*" [Matthew, 51-64, Laggard].

Given that inward and outward focused expression of concerns drew on the same individually held body of knowledge, there was a confluence of considerations,

such that the point at which inward focus of concern ended and outward focus of concern began was difficult to ascertain. This was evident in the case of Evelyn who, when recounting the difficulties of catering for picky eaters, framed potential food waste terms of immediate financial loss but also broader societal implications: "*I know what I spend on food, so you just couldn't be affording to be throwing out. It's a waste anyway with all the starving people and stuff in the world so I'd just rather buy what they'd eat*" [Evelyn, 36-50, Innovator/Early Adopter].

6.4 Conclusion

Drawing on the MEC analysis conducted as part of research phase 2, the purpose of this chapter was to explore whether and to what extent risk aversion and benefit orientation influenced the networks of meaning activated by food labels and their implications for subsequent product evaluations. In so doing, this chapter addressed RQ2. To this end, two consumer segments were considered, 'innovators/early adopters' and 'laggards', which represented two distinct groups of consumers with different purchasing orientations within the product category. The MEC approach taken facilitated furthering understanding of consumer knowledge structures in the context of the framework of label usage proposed.

Findings presented in this chapter provide support for the assertion that purchasing orientation influences the associations created and activated through interaction with labelling stimuli. In particular, both the relative frequency of negative ladders and the nature of associative links in HVMs for laggards compared to innovators/early adopters is illustrative of the impact of risk aversion and benefit orientation on the framing of information.

The MEC analysis underpinning the HVMs presented in Figures 6.1 and 6.2 revealed that across both innovator/early adopter and laggard segments, salient attributes considered at the product level were primarily intrinsic in nature, with limited use of extrinsic cues in purchase decisions. As illustrated in the HVMs, category laggards appeared more risk-oriented compared to category innovators/early adopters, who considered products in terms of benefits, particularly generalised consumption-related health benefits. This is evidenced in the relatively high frequency of negative ladders among laggards when compared with innovators/early adopters,

which represent the "*de-motivating parts of the maps"* (Zanoli & Naspetti, 2002, p.651). Among laggards the desire to care for others while simultaneously maintaining a sense of control over their food environment appeared to direct label usage and decision-making. However, a sense of mistrust surrounding product claims was evident in the perception that such claims had the potential to undermine attainment of higher-order goals (as evidenced in negative ladders).

Although aware of the negative implications associated with consumption of products possessing potentially undesirable characteristics, innovators/early adopters were more benefit-oriented, with health and wellbeing acting as the focal point for benefit acquisition. Particularly, attainment of goals rather than potential routes through which goals could be undermined or frustrated fore fronted decision-making. This is reflective of the broader literature concerning innovators/early adopters and laggards, with the latter typically demonstrating greater degrees of risk aversion than the former (Steenkamp et al., 1999). In the context of digital labelling, it is noteworthy that neither innovators/early adopters or laggards considered QR codes as salient attributes, as evidenced through the HVMs. However, they may represent a new extrinsic cue, which can be used to build and inform the evaluation of intrinsic product attributes, which are often difficult to assess, thereby enhancing purchase motive fulfilment. This is considered in greater detail in Chapter 7.

Congruent with the previous study phase, health considerations played a significant role in influencing participants' information search. However, building on the previous study phase, comparison of MEC data for the innovator/early adopter and laggard participants supports the assertion that purchasing orientation influences the networks of associations activated through interaction with labelling stimuli. Although health considerations played a significant role for both consumer segments, innovators/early adopters were far more benefit-oriented in the salient attributes considered and the associations activated as a result of label usage. That, of course, is not to suggest that innovators/early adopters were ignorant to the potential negative consequences arising from consumption. Instead, framing of attributes for these consumers represented a predominantly benefit-oriented focus. Furthermore, the relative proportion of negative ladders among category laggards supports the potential

value of provision of labelling information guided by needs-based segmentation, as highlighted in Chapter 5.

The laddering process which forms the basis of MEC analysis proved an effective means of uncovering the relationship between subordinate and superordinate goals. While some participants had a clear awareness of both the subordinate and superordinate goals which were personally important and how current decisions contributed to the attainment of their values, this was not always the case. Recent research by Höchli, Brügger and Messner (2018), discussed in Section 2.5.1, highlights that consumers' conscious awareness of the interrelatedness of subordinate and superordinate goals can facilitate progression towards goal attainment. Consequently, consumers' active awareness of the relationship between health and wellbeing and these higher order goals (through marketing activities) may offer a means to facilitate consumers in attaining these more abstract goals.

In conclusion, this chapter has illustrated the role of risk aversion and benefit orientation on the selection and interpretation of labelling information, thereby supporting the contention presented in chapter 5, that variations in label usage patterns observed in the eye-tracking experiment could be traced in part to consumer purchasing orientations. The next chapter, Chapter 7, builds on findings presented in both Chapter 5 and Chapter 6, to address the role of dynamic technology enabled labels in facilitating consumer decision-making. In so doing, Chapter 7 situates the discussion thus far within the digital labelling context and considers the congruence of digital labelling with extant information search and purchasing behaviour.

Chapter 7
Consumer Responses to Digital Labelling

7.1 Introduction

In discussing current labelling regulation (Regulation EC 1169/2011), it was noted that the scope of labelling definitions oftentimes fails to acknowledge the digitalisation occurring within the labelling space. Consequently, one of the aims of this research, as set out in research objective three, was to gain an overall appreciation of the current and potential use of more effortful pull marketing tools (Barnes, 2002; Atkinson, 2013), such as QR codes, as a mechanism to facilitate interaction with information to support purchase decision-making. In addressing this aim, this chapter draws specifically on the data gathered in phase 1 relating to QR code attention and use, and phase 2 data which sought to reconcile the apparent paradox within the literature as it relates to the adoption of pull-marketing tools (see Section 3.4.2). In so doing, this chapter addresses the third and final research question:

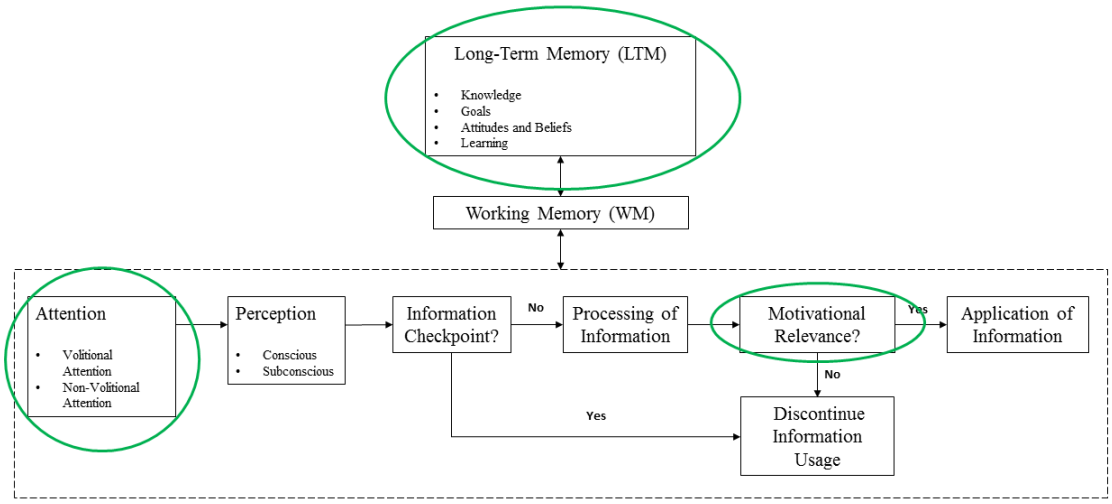
RQ3: Does understanding, interpretation and perceived utility of QR codes vary across innovators/early adopters and laggards?

As stated, in the context of this research, QR codes were chosen as a case to consider the digitalisation of food labelling, given their ubiquity, the relatively low cost associated with their usage from a manufacturer perspective and recent increasing adoption rate (Statista, 2018) owing to a diversification of functionalities offered by this technology (Armstrong, 2017; Spence et al., 2018). The purpose of this chapter is to discuss key aspects associated with participants' attention to and application of digital labelling information within their decision-making process through findings arising from research phases 1 and 2. Firstly, Section 7.2 begins by elaborating on the role of attention in digital labelling usage through the framework of label usage presented in Section 5.3. Then, building on research phase 2 and drawing on the conceptual framework of pull technology usage presented in Section 3.2.4, Section 7.3 considers the respective roles of risk aversion and innovativeness on digital label usage. Finally, this chapter concludes by discussing the implications of attention and knowledge within the context of digital labelling and providing an outlook for future research.

7.2 Consumer Use of Digital Labelling Information[27]

Leveraging the findings from research phase 1, which was concerned with the processes associated with assimilation of labelling information, this section highlights the role of exogenous and endogenous factors on consumer attention to digital labelling information. Three key issues are identified in the context of digital label usage. Firstly, attentional drivers of usage were considered in line with the label usage framework proposed previously. Secondly, the implications of motivational relevance and the role of said on attention to digital labelling are discussed. Finally, drawing on post-eye-tracking interviews, the implications of prior knowledge and experiences held in LTM on attention to digital labelling specifically are considered. As data presented in this section pertains to the first research phase, and the framework of label usage developed in phase 1 (see Figure 5.5), this framework is presented here for convenience. In relation to this framework, the three key areas where barriers to attention to digital labelling were observed are highlighted in Figure 7.1. Each of these, as they apply to digital labelling will be discussed.

Figure 7.1: Barriers to Attention to Digital Labelling



7.2.1 Attentional Drivers of QR code Usage

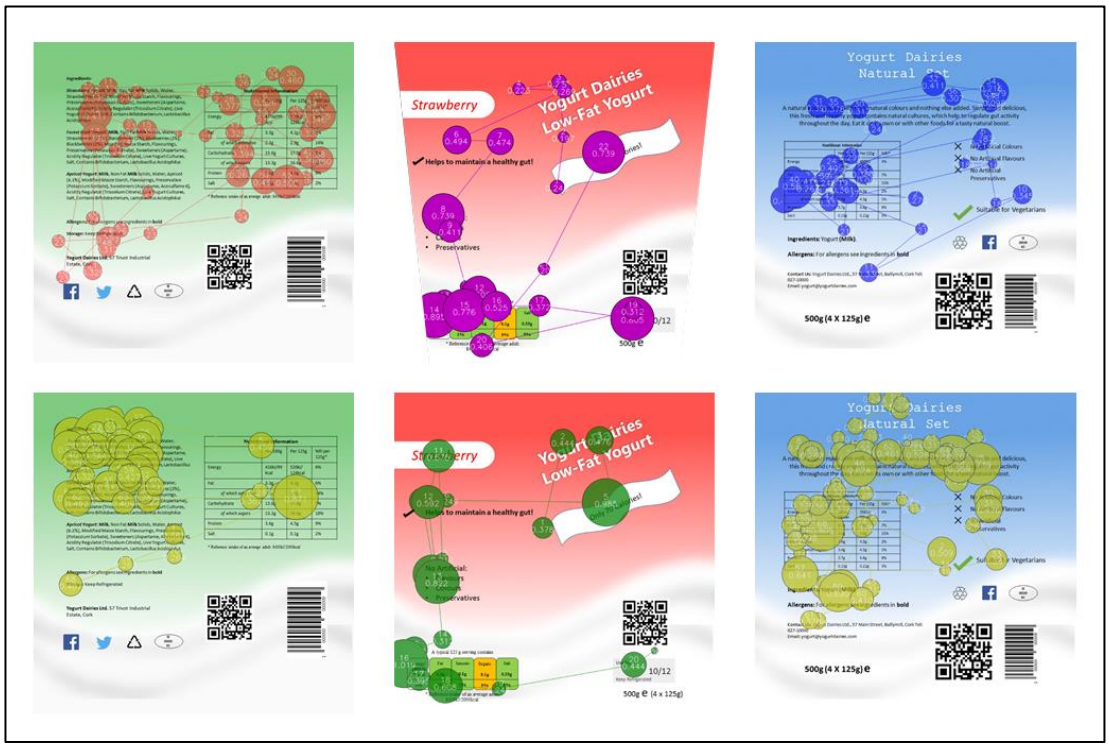
Building on the framework of label usage presented in Figure 7.1, interactions with QR codes and other forms of digital marketing presented on the labelling stimuli during the eye-tracking experiment were considered. Labels presented during the eye-

[27] An overview of participant profiles for participants quoted in Section 7.2 can be found in Table 5.1.

tracking experiment included QR codes and inducements to engage in online platforms through inclusion of Facebook and Twitter logos, as illustrated in the experimental stimuli presented in Appendix 4.2. This was congruent with current 'real-world' labelling, as established through the label content audit conducted as part of research phase 1 and detailed in Section 4.3.2.

Findings from across participants consistently suggested a lack of attention to QR codes and other digital labelling conventions. In particular, attention to QR codes appeared low regardless of their position on the label (see Figure 7.2). Attention to and awareness of the presence of QR codes were explored as part of the semi-structured interviewing that followed the eye-tracking experiment.

Figure 7.2: Attention to QR Codes Across Participants[28]



Despite the experimental setup having the potential to influence interactions with QR codes (given that the experiment did not afford participants the opportunity to scan the codes presented), subsequent interviewing revealed that the factors underlying non-attention to QR codes went beyond the experimental design. This was

[28] Top Row (L-R): Mark, 18-35, PNG; Claire, 18-35, NG; Christopher, 51-64, NG.
Bottom Row (L-R): Laura, 18-35, PNG; Elizabeth, 36-50, PNG; John 65+, PNG.

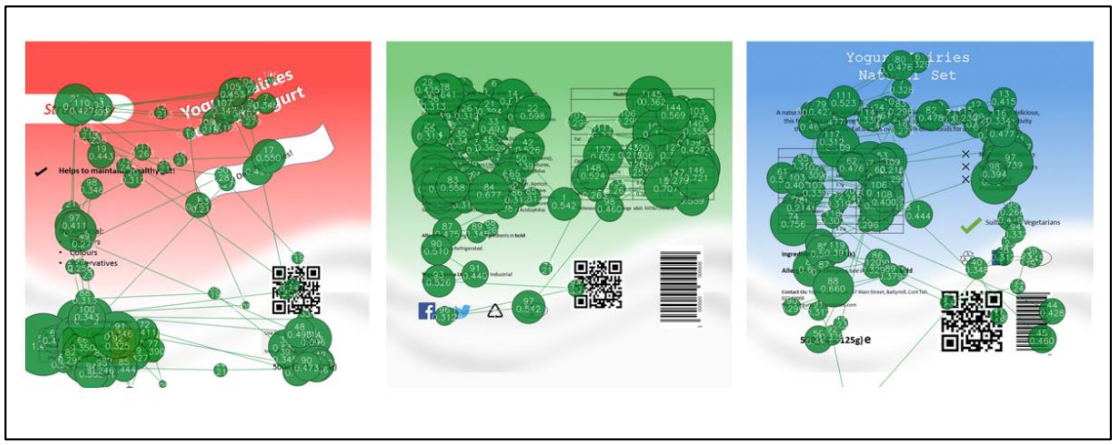
further supported by the absence of fixations on QR codes in the first instance as illustrated in Figure 7.2. In the case of Suzanne, she acknowledges that her non-usage of QR codes is a repeated response, owing to her lack of familiarity with and interest in the convention: "*I don't take any notice of them, I don't know what they're about really, I haven't even bothered trying to figure out what they're about*" [Suzanne, 51-64, PNG]. Indeed, lack of familiarity with both the convention and functionality was a reoccurring theme among participants, with even those familiar with the existence of QR codes unsure as to how they functioned or encountering difficulty during usage: "*I tried to use, not on a yogurt or whatever, but I think I tried to use one before and it just didn't work and I just had no interest in it you know*" [Aisling, 18-35, NG]. Similar to instances where participants had an acknowledged gap in nutritional knowledge (see Section 5.2.2), participants appeared to justify their lack of understanding of the QR code convention in terms of others: "*I don't know how to use them, I, I know you can scan it for snapchat and stuff, it's easy but I don't know … some people are very techy and would be able to do that, but I wouldn't know what to do, so I'd say I've only briefly glanced at it*" [Adam, 18-35, NG].

As highlighted in Section 5.2.1, exogenous factors relating to the label design had the potential to disrupt established search behaviour. However, QR codes appeared broadly ineffective in this regard, regularly being seen as akin to UPC barcodes and, as such, attracted no attention for the purpose of decision-making: "*I'm going to put my hand up I don't know anything about them … I don't know what they are, what they do … I thought that was the barcode*" [Elizabeth, 36-50, PNG]. Given the duration of their presence on the marketplace to date, this appears to indicate a failure of marketing efforts, with consumers continuing to incorrectly rely on existing schema to frame their interpretation of QR codes presented in traditional print labels.

One exception of this trend towards non-attention to QR codes was Gerald, who observed QR codes in all three instances where they were presented (see Figure 7.3). However, attention in this instance appeared to have no implications for usage intention as uncovered through the RTA and semi-structured interviewing which followed the eye-tracking experiment: "*I know they exist, but I don't use them and I wouldn't be bothered going looking for them, I wouldn't be bothered going scanning*

it and finding out more details on it" [Gerald, 36-50, PNG]. This appears to reflect the gap between attention and motivational relevance illustrated in Section 5.2.1.

Figure 7.3: Attention to QR Codes [Gerard, 36-50, PNG]



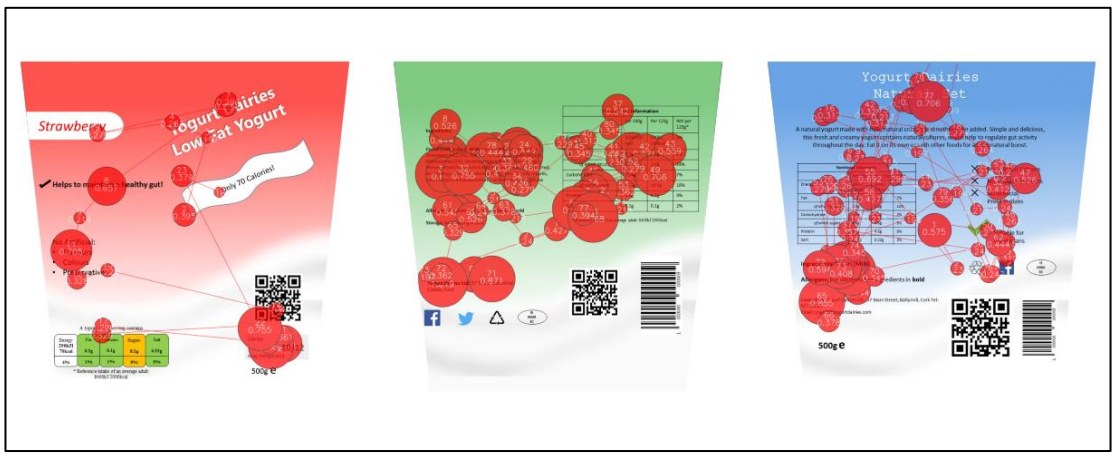
Indeed, in line with the label usage framework proposed in Section 5.3 endogenous factors, particularly motivational relevance, were observed to influence information search and attention, as is elaborated on in the following section.

7.2.2 Motivational Relevance of QR Codes

Given that labels were predominantly considered as an information source, the value of which resided primarily in the retail context, participants generally framed the value of QR codes within the context of the retail space. As such, the motivational relevance of QR codes in the retail context appeared to account in part for a lack of attention to them. For instance, Tom, when accounting for why he did not view the QR codes during the eye-tracking experiment, expressed a preference for using these outside of the retail context: "*I certainly wouldn't be taking out my smartphone and analysing it while I'm actually shopping, I could probably see a use for it at home, in your own time*" [Tom, 51-64, PNG]. Indeed, a perceived incongruence between QR codes and the retail environment, stemming from broader contextual factors related to the retail environment, diminished the perceived motivational relevance of QR codes in the decision-making process: "*I wouldn't spend time on that in the supermarket at all and depending on the supermarket you go to you usually don't have internet or any network at all anyway*" [Laura, 18-35, PNG].

Preference for usage beyond the retail context was also held by Jessica and was evident in her viewing behaviour: "*I don't really kinda, bother massively with them unless I actually kinda like, if I'm very, very, very interested in something … it would probably be at home afterwards kinda thing like, I wouldn't really use them in the shop itself*" [Jessica, 18-35, NNG]. This predisposition towards QR codes was observed to have attention related implications as illustrated in Figure 7.4.

Figure 7.4: Attention to QR Codes [Jessica, 18-35, NG]



This preference for using QR codes beyond the retail setting appeared to stem from concerns regarding social norms and the perceptions of others within the retail environment, with Jessica expressing concerns about spending time reading labels within the store in general: "*I don't like being in the way of people, so if I'm standing there reading something for ages, and having to try to like, really put in a lot of effort, I feel very conscious of the fact that there are other people probably, who are trying to do the same thing*" [Jessica, 18-35, NNG]. Given the more effortful information search associated with pull marketing methods such as QR codes (Barnes, 2002; Atkinson, 2013), perceived congruency of this type of information search within current retail environments merits further consideration.

Further compounding the lack of motivational relevance was a general attitude ambivalence towards digitalisation of labelling. This was particularly evident in the case of Jane, who was not previously familiar with the QR code convention. Upon becoming aware of the information it could potentially provide and its functionality (i.e. the means through which it was used), she proceeded to express a range of considerations drawing on extant knowledge and resulting in strong affective and

cognitive responses, which served to highlight the obstacles to acceptance of such conventions:

> *"that's kind of annoying in a way, 'cause like, why not just put it on it. Because everybody won't have the app and it's kind of a bit inconsiderate to, ahw, here's your QR code like 'cause I didn't even know about it and then people older than me won't have a clue at all. And like, well not that I, I don't know, no I don't know, I suppose listen you'd have to modernise yourself too, and if that's what's coming in, if everybody had it, because it is giving a lot of information this now, when I look at it, it's got everything so I couldn't see what else this is giving you. So, it'd be interesting to know in a way really. I didn't know about it, that's why*." [Jane, 36-50, NNG].

The range of affective and cognitive responses relative to the impact of evolving labelling conventions on both the individual and society at large expressed by Jane appeared to accurately capture the core concerns across participants. In particular, it seems that digitalisation in other domains, and the impact it has had in terms of more traditional approaches, carries through to the labelling space. This appears to support previous observations regarding participants' tendency to frame new information in terms of existing knowledge and prior experiences in order to reach an evaluation (see Section 5.2.2). It is also worth noting that Jane, as an individual with non-negotiable health goals, faced greater potential losses in instances where traditional labelling information was not easily accessible.

Where potential advantages were discerned in relation to QR codes and the information they may provide, participants appeared rather ambivalent in their attitudes: "*I don't know, there's probably advantages I suppose, it's probably nice to know as much about your food as possible and, it's probably a new way to become more, become more informed*" [Claire 18-35, NG]. Although aware of the potential benefits of additional information, this appeared insufficient to motivate change in information search patterns: "*I couldn't be bothered … I can definitely imagine other people wanting to know more about what they eat, but that's so much personal*

preference like, I don't, I don't want to spend too much time informing myself about what product that is" [Laura, 18-35, PNG].

In particular, among participants, there was a recurring trend of interest in the concept of QR codes and the additional information they would provide, however not within the retail environment or food category more broadly. For instance, Mark, who had prior experience using QR codes, stated the following: "*I don't know that I would necessarily do it while in [the shop], just deciding what yogurt I'm going to get, but I would imagine that at some point, something that I'm more passionate about, than, than my diet to be frank, there could be like a poster for a gig or something*" [Mark, 18-35, PNG]. Attention was also influenced by individual circumstances. For instance, when asked to explain why they had not viewed the QR codes during the eye-tracking experiment, Laura responded: "*I don't have any app or anything on my phone so I don't, I just don't make any use of it so I don't really, I'm not interested at all in it*" [Laura, 18-35, PNG].

7.2.3 Content Disparities and Implications for Managing Goal Expectations

Non-attention to QR codes and other inducements to engage with companies' online social media presence, was framed in terms of the absence of coherent messaging across information platforms. Congruent with classical expectancy theories of motivations (Vroom, 1964; Ajzen, 1991), the lack of certainty regarding behavioural outcomes was observed to depress top-down, exogenous (i.e. goal-directed) attention to QR codes and other indicators of social media presence: "*I dismiss them generally … they could definitely do with explaining it better, something that popped into my head before is that I don't know what they are about*" [Adam, 18-35, NG]. Similar to the issue of motivational relevance, this facet of usage was uncovered through participants' post-hoc explanation of viewing behaviours through the eye-tracking experiments.

For instance, Mark, who had experience using QR codes in other product and service domains, expressed uncertainty with regards to the outcome of usage, viewing the QR code as being akin to a journey or portal and stated: "*I don't really know what's at the end of that particular trail"* [Mark, 18-35, PNG]. Indeed, there was uncertainty regarding the extent to which information provided via QR codes would offer any

additional details beyond current labelling: "*I don't know what would you expect, what would you expect that's more than what's on the tub itself, ahm, I don't know is the short answer, possibly maybe slightly more detail on the ingredients themselves, like where it says colourings and flavourings it might tell you what the colourings and flavouring are, if they be E-numbers and stuff like that*" [Gerald, 36-50, PNG]. In line with the Valence-Instrumentality-Expectancy (VIE) model (Van Eerde & Thierry, 1996; Bjørnebekk & Gjesme, 2009) underlying Vroom's (1964) expectancy theory (see Section 2.5.2), this perceived disparity in content led to questions regarding the *instrumentality* of QR usage in the attainment of personally salient positive outcomes. This appeared to be the source of depressing volitional, goal-directed attention among many participants, with prior summative evaluations of digitalised information within the food space considered as offering an uncertain value proposition. This coupled with the inability of QR codes to capture bottom-up attention through exogenous factors, as discussed in Section 7.3.1 (below), presents an overview of the reasons for non-attention to QR codes.

The absence of attention to, and perceived motivational relevance of, QR codes specifically, and pull marketing more broadly, provided additional support for the need to consider their role with respect to current labelling. Having identified the current barriers to attention to QR codes, the following sections draw on the research undertaken in study phase 2 in order to better understand consumer perceptions of digital labelling and propose means through which to increase the potential efficacy of digital labelling to add value within the purchasing process.

7.3 Consumer Understanding of Digital Labelling Information[29]

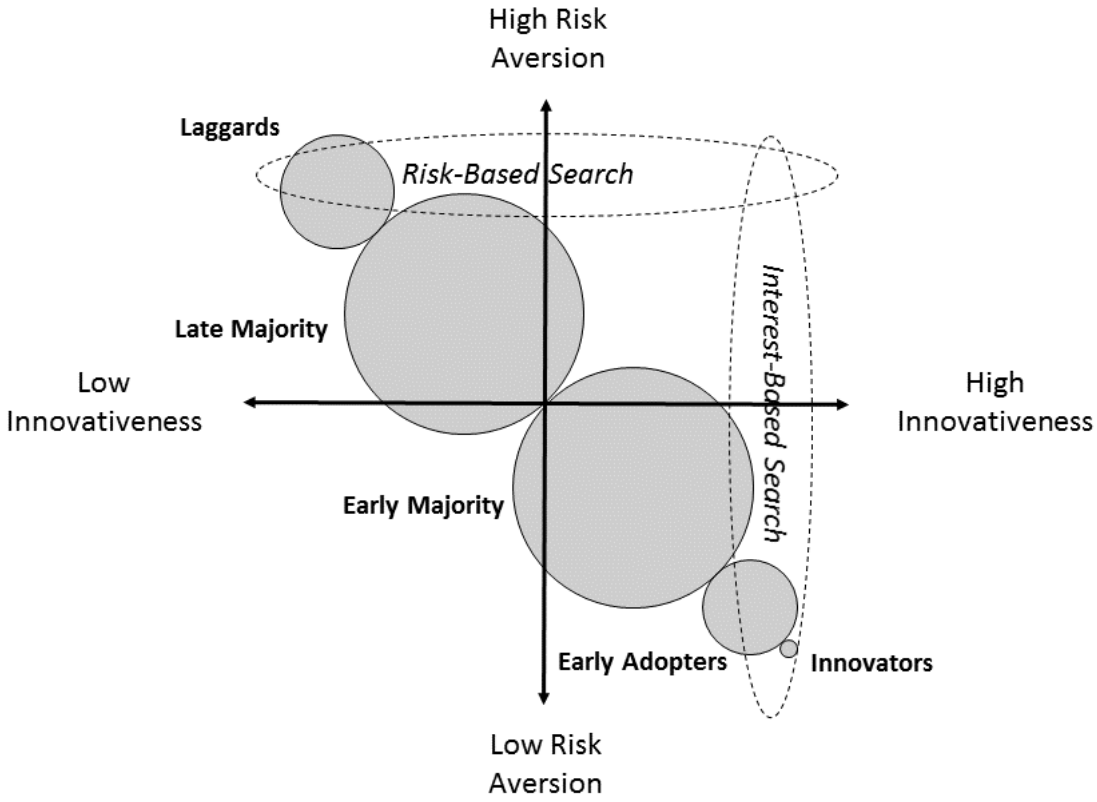
Building on findings from both research phases, this section is concerned with the perceived value of digital labelling within the decision-making process. This section draws on research phase 2 and seeks to address the second research question for this study phase:

[29] The findings presented in Section 7.3 (in conjunction with those presented in Section 6.2) have been accepted for publication in the *International Journal of Retail & Distribution Management*. Further details are provided in the Research Dissemination section.

RQ3: Does understanding, interpretation and perceived utility of QR codes vary across innovators/early adopters and laggards?

In addressing RQ3, data related to the semi-structured interviewing conducted during study phase 2 was analysed using thematic analysis (Braun & Clarke, 2006) to explore the respective roles of innovativeness and risk aversion on QR code acceptance in the context of food labelling. The analysis presented in this section seeks to address the paradox in extant innovation and risk literature presented by the use of effortful forms of information search, i.e. pull technology in the low-involvement context. This paradox was presented diagrammatically in Chapter 3, and is repeated here in Figure 7.5 for convenience. The literature suggests that, although more risk-averse laggard consumers would benefit from the increased information provided by digital labelling (Mitchell, 1999; Brunel & Pichon, 2004), the innovativeness literature suggests that category innovators are far more likely to use a diversity of information sources in their decision-making (Kim, Hunt & Lancioni, 2015) while risk averse consumers are less likely to do so (Sultan, Rohm & Gao, 2009; Hubert et al., 2017). Similarly, although innovators are more likely to engage with said information, higher levels of self-confidence and relatively lower levels of risk-aversion suggest they have a lesser need for such information. Consequently, concurrent reading of the benefit-oriented innovation literature and risk-oriented perceived risk literature suggests that both innovators/early adopters and laggards are equally likely to use pull-marketing technology such as QR codes, but will do so for different reasons, if at all.

Figure 7.5: Risk-Aversion/Innovativeness Framework of Pull Technology Usage in Low-Involvement Context



Drawing on phase 2 interview data, three key themes were identified in the context of attention to QR codes and other digital labelling conventions. The first theme addresses the confused nature of consumers' current understanding of QR codes and their efforts to leverage extant technological knowledge and prior experiences to frame QR code understanding. The second theme draws attention to the role of source credibility, which has implications for both use of novel technology and trust in information delivered through these QR codes. The final theme highlights the importance of integration of QR codes into extant shopping routines and the broader foodscape to offer new benefits beyond traditional labelling.

7.3.1 Theme 1: Roles and Purpose of QR codes

Regardless of innovation status, knowledge and experience of QR codes appeared low among participants: "*Oh I would have seen them, but I wouldn't have used them"* [Evelyn, 36-50, Innovator/Early Adopter][30]; "*I don't know what a QR code*

[30] An overview of participant profiles for participants in the Innovator/Early Adopter and Laggards segments is provided in Table 6.4 and Table 6.6 respectively.

is actually" [Isabel, 51-64, Laggard]. Where participants demonstrated an awareness of their functionality or speculated as to their role within the food context, explanations tended to be framed in terms of past experiences within the digital space. This process of associative reasoning led to divergent and disjointed explanations of QR code functionality across participants, with emergent attitudes and evaluations being equally disjointed, given a lack of consistent understanding across participants.

In postulating the purpose of QR codes, expectations were framed both in terms of existing labelling: "*all the information that's on the back [of the label] … I don't know what they would have had on it that they didn't have on the label"* [Amber, 51-64, Laggard] and broader services currently used online, such as customer reviews, i.e. electronic word of mouth (eWOM): "*other people's opinions of something, you know, like what people would rate something ... like we get it with say hotels"* [Isabel, 51-64, Innovator/Early Adopter]. Furthermore, many participants had no expectation regarding QR code functionality, leading them to completely disregard these as an information conduit: "*Oh I'd completely ignore that, I don't even know what that is for*" [Nicole, 36-50, Laggard]. In instances where consumers were unaware of the applications of QR codes, they judged these were unnecessary, considering they had hitherto been able to efficiently make purchase decisions, such that additional information was viewed as serving no additional value to decision-making: "*I would imagine that everything I need to know to make a decision should be there. If they're going to tell me how happy their cows are well that would be lovely to know but I haven't time to be reading about it, thanks very much*" [Geraldine, 51-64, Innovator/Early Adopter]. Indeed, this belief that requisite information would be provided on labels stemmed, in part, from the perceived effectiveness of regulation in ensuring key information is provided to consumers: "*I presume by law you have to have all of these things [on the label]*" [Geraldine, 51-64, Innovator/Early Adopter].

This sense of confusion surrounding the purpose of QR codes pervaded consumer attitudes and opinions regarding QR code usage, with broader global attitudes drawn on to form evaluations. Particularly among category laggards, who, as evidenced through the MEC analysis presented in Chapter 6, framed new purchase decisions in terms of potential losses, negative inferences dominated regarding the purpose of QR codes. Laggards, more than innovators/early adopters, viewed QR

codes as a marketing tool designed to promote profit motives: "*maybe some kind of an offer to try and entice you or something or you know to look more in-depth into the company or their products ... it would be all advertising really I suppose. That's what I'd expect*" [Evan, 51-64, Laggard]. However, it is unclear as to whether such profit motives were ascribed to manufacturers, retailers or the industry more broadly. This belief appeared to undermine laggards' desire to maintain control over their decision-making as they felt they were being coerced into buying additional products.

This lack of certainty regarding the role of QR codes was viewed in part as a failure in marketing communication resulting in a lack of consumer willingness to engage. Isabel, who expressed a general interest in finding out more about the food products she purchases articulated the scenario as follows: "*I suppose it's [QR codes] not as much in your face. Maybe it is and I'm just not seeing it but ... you see I do know I've seen them, but I didn't really understand what they were so that's why I would ignore them*" [Isabel, 51-64, Innovator/Early Adopter].

7.3.2 Theme 2: Source Credibility

As part of the inductive data analysis undertaken, source credibility (Westerman, Spence & van der Heide, 2014; Hussain et al., 2017) emerged as a key theme in the consideration of QR codes and framing of considerations. Although previous literature highlights that different sources of trust/distrust influence usage of mobile marketing (Atkinson, 2013; Ström, Vendel & Bredican, 2014) and QR codes (Spence et al., 2018), this study suggests that the two participant segments differed fundamentally in this regard. To this end, the source credibility literature offered a useful lexicon with which to discuss these differences. Source credibility is comprised of two components: trustworthiness and expertise (Wiener & Mowen, 1986), and has been demonstrated to influence consumers' adoption of digital information for food products (Hussain et al., 2017). For innovators/early adopters, source expertise appeared to be a concern, and reflected their underlying self-confidence in their category-specific knowledge. Conversely, laggards' credibility concerns centred around the trustworthiness of the information provider, thereby reflecting their broader level of risk aversion, as discussed when considering the MEC analysis presented in Chapter 6.

Among those within the laggard segment, it appears that participants were reconciled to society progressing towards future digitalisation, with acceptance being inevitable: "*well it's the way it's going isn't it? … I really can't see what the need for that is, but then … we didn't use the internet as much as we use it now … so I suppose that's the way it goes"* [Jennifer, 51-64, Laggard]. However, the multiplicity of information sources compounded underlying concerns for both innovators/early adopters and laggards regarding the veracity and trustworthiness of information provided when seeking out sources: "*sometimes now you're even questioning are you getting the right information, because there was a time when I started out and you'd have one or two searches, but now there's thousands, you don't know, it all depends on who is getting in first with information"* [Daniel, 51-64, Innovator/Early Adopter]. In such instances, trust concerns relating to the breadth of information available stemmed from knowledge uncertainty (Urbany, Dickson & Wilkie, 1989), which increased search costs and negatively impacted information search activities. In line with previous research highlighting the negative impact of low perceived benefits on information search in the presence of knowledge uncertainty (Shiu et al., 2011), termination of information search at the product level was further compounded by cost-benefit considerations and the ease of product substitution, with time costs in particular pervading laggards' considerations: *"they're not an expensive purchase, so you're not going to put a lot of time and effort into researching it before you buy it really"* [Ciara, 65+, Laggard].

In the case of laggards, source credibility related to distrust regarding the motives of content providers, leading them to adopt a more cynical view that digitalisation of labelling was a marketing ploy, designed to promote additional purchasing, thereby reflecting the broader orientation of distrust identified during MEC analysis: "*I have my list, so I know what I want, and I don't want to have marketing selling me something else"* [Amber, 51-64, Laggard]. The issue of source credibility appeared to be amplified by the anonymity afforded to those generating content online. For instance, Evan expressed concerns regarding the motives of content providers, speculating that there existed potential for fraudulent content and reviews, which diminished the value of online content more broadly: "*I wouldn't trust online kind of reviews of ... anyone could put anything on it really, yeah. Once it's not*

kind of totally beyond the pale like, but I wouldn't regard it as having any real worth. Who is to say that some different company didn't put up a review?" [Evan, 51-64, Laggard]. Indeed, in some instances, it appeared that consumers held the view that these self-serving motives were detrimental at a societal level: "*there seems to be a huge industrial effort to get a lot of low fat product out there aimed at certain lifestyles, whether it be women who think they are overweight or people who run 10 miles a day who don't need to run 10 miles a day but it's a fashion thing*" [Mark, 51-64, Laggard].

Conversely, innovators/early adopters, who were generally more positively disposed to technology within the food space, saw a role for QR codes as a potential way of filtering through redundant or unreliable information. Source credibility for innovators/early adopters centred predominantly around the issue of information veracity and source expertise, with concerns around current online search behaviour regarding the accuracy of information provided by others reviewing or interacting with products online: "*you can always get the crank, you know, that will never be happy with anything"* [Daniel, 51-64, Innovator/Early Adopter]. These concerns appear to correspond with the innovator/early adopter profile; whereby innovators/early adopters have higher levels of perceived category knowledge. For innovators/early adopters, trust also centred around the extent to which their goals aligned with those less invested in food decisions: "*my sister … knows I like good quality food, whereas a stranger might just be the type of person that can take [it] or leave [it], you know food is just food*" [Bridget, 18-35, Innovator/Early Adopter].

Indeed, it appeared that the anonymity afforded to those reviewing, discussing and recommending products online further exacerbated underlying concerns regarding the veracity of information available, such that user generated content pertaining to product offerings was considered as potentially being 'garbage': "*they're written by … sure who … like there's a lot of garbage written on the internet now by people … you know people won't say anything to someone on the street, now they'll put it on writing on the internet. That's insane … I don't have a lot of faith in what people say in general*" [Daniel, 51-64, Innovator/Early Adopter].

Paradoxically, participants who exhibited a willingness to avail of eWOM in the context of restaurants, such as Isabel, expressed scepticism in the context of food

products in store owing to concerns regarding others' ability to effectively evaluate food on sensory characteristics "*Well see people's taste are different. You might have something there and you say 'Oh that tastes vile' and I'm thinking it's lovely or you might think it's lovely and I think it's you know ... so it's very hard, you know we all have different taste buds*" [Isabel, 51-64, Innovator/Early Adopter]. Although both within the food domain, a clear distinction is drawn between the combination of food and service in the restaurant setting and the sole focus on food in the retail context, "*I'd look up a restaurant or something like that, you know … but I wouldn't for a product I wouldn't necessarily you know, if I saw something I'd usually say 'Ah well we'll give it a try'*" [Isabel, 51-64, Innovator/Early Adopter]. Indeed, it appeared that given the increased potential loss relating to restaurant purchases, consumers were willing to set aside their concerns regarding the potential shortcomings associated with reviews in light of greater potential losses: "*a restaurant … it's going to cost you anything up of €10/€15. You go into a supermarket and you buy a product and it might be €2, so if you sit down with your €2 something and you find you don't like it, okay, whereas if you're in a restaurant and you've ordered this meal and you don't like it just because it's not to your taste well you're out an awful lot more*" [Isabel, 51-64, Innovator/Early Adopter]. In this regard, it appeared that the saliency of trust concerns varied in part with the perceived risk associated with a negative outcome.

7.3.3 Theme 3: Reframing the Value Proposition - Leveraging the Broader Foodscape

Fundamentally, the lack of awareness of QR codes pervaded evaluations of digital labelling and resulted in a feeling that they decoupled products from the broader foodscape through undermining food-related activities and lacking complementarity with other products on the marketplace. Among both innovators/early adopters and laggards, the digitalisation of food labelling was viewed as aligned to broader trends in technology, whereby the interrelatedness dimension of traditionally social activities was undermined. Congruent with broader technology acceptance literature (Curran, Meuter & Surprenant, 2003), this lack of familiarity resulted in global attitudes and evaluations (Bohner & Dickel, 2011) towards technology influencing QR code evaluations, such that existing negative attitudes towards technological applications

within the food category, including online shopping and customer reviewing, were also ascribed to QR codes.

Consequently, for laggards, increased digitalisation was viewed as undermining the social dimension of purchasing, typically related to socialisation in the immediate shopping context, or as part of broader shopping ritual within the locality: *"it's the social aspect of kind of going to the shop and you'd say hello to somebody and that's really the only reason I don't [look up information online]"* [Jennifer, 51-64, Laggard]. In the context of new or unfamiliar products, this extends to conversing with in-store advisors, with digital labelling seen as undermining that experience: "*I like to go into a shop and engage with a fellow behind the counter and ask about the product and if they don't know … well that's hard luck, but it's part of the shopping experience, I like that"* [Mark, 51-64, Laggard]. This pattern of observations is supported by the extant laggard literature which suggests that such consumers are more entrenched in established patterns of behaviours and are less willing to change. More broadly speaking, QR codes were also viewed as fundamentally altering the shopping experience: "*I'm quite visual I'd prefer to be in the shop looking at the label and looking at the product rather than kind of scanning it and reading it on a little phone*" [Laura, 51-64, Laggard].

Within the food retail context, online search appears to be driven by comparison of prices across retail outlets, which is presently a cumbersome task: *"what I do is I go into the computer on a Tuesday or Wednesday and I get up (the retailers') website and I get all the offers that are on … Tesco have a great website. I do the four of them actually, I do Tesco and SuperValu … they have fabulous offers … I go into the Lidl website and I go into the Aldi website*" [Declan, 51-64, Innovator/Early Adopter]. In its present form, online food search behaviour appears to focus around the broader foodscape rather than individual product offerings, with search driven by more broadly defined goals: "*[I have not looked up] specific products, but I would have looked up foods … that would be good for me, let's say like, you know, pineapples, I know all that. I've looked all that up online"* [Jennifer, 51-64, Laggard]. This orientation around the broader foodscape results in search which typically terminates at the product category rather than the brand/product level: "*the only thing related to food I look up online are recipes*" [Bridget, 18-35,

Innovator/Early Adopter], leading to non-usage of digital labels. Although usage at the brand/product level was more common among innovators/early adopters, for both segments, alignment of individual offerings to the broader foodscape appeared a more meaningful way of adding value, given that traditional labelling adequately facilitated in-store decision-making at present: "*everything I need to know to make a decision should be [on the label]* [Geraldine, 51-64, Innovator/Early Adopter]; "*individual products I wouldn't have [looked up], I think that's what the packaging is there for"* [Ethan, 36-50, Laggard].

This observation appears to be reflected in recent research highlighting the positive impact of general food involvement as opposed to category specific involvement on perceived information usefulness (Kim & Woo, 2016). Leveraging the broader foodscape included integration into the retail environment in the form of promotional offers redeemable in-store, suggestions for complementary products and usage recommendations as well as further details concerning the producer: "*If it's a new small product it would be nice to know the back story. So, I would scan it actually, just to find that out*" [Bridget, 18-35, Innovator/Early Adopter].

7.4 Conclusion

In seeking to add to a currently under-researched area, this chapter outlined the potential value of digitalisation within the food labelling domain. Using QR codes as a vehicle to explore more effortful information conduits within the context of food labelling, this chapter drew on both datasets in this study, in order to illustrate the primary issues concerning acceptance of digital labelling. In so doing, this chapter considered both the attentional mechanisms of merit in the context of QR codes, drawing on the label usage framework developed in research phase 1, as well as considering the target audience for this labelling convention.

Findings from the eye-tracking experiment, and subsequent interviewing, reveal that attention to QR codes presented on food labels appears relatively low among consumers. Upon further exploration, it was apparent that this stems from both a combination of endogenous and exogenous factors, i.e. there was a lack of both volitional and non-volitional attention to QR codes. Whereas other labelling conventions were observed to effectively redirect attention to potentially salient

information (e.g. traffic light labelling), QR codes were broadly ineffective in this regard. Indeed, their resemblance to UPC barcodes appears to lead consumers to dismiss these out of hand as being irrelevant in the decision-making context. However, developments in the area of QR codes allow for a more stylised aesthetic (Xu et al., 2018) allowing for the incorporation of images and logos into QR codes (Lin, Luo & Chen, 2013; Lay & Chen, 2018; Xu et al., 2018), which may offer one means of promoting non-volitional attention to QR codes through disrupting extant information search patterns. In addition to the ineffectiveness of QR codes to capture attention, they were also not actively sought out (i.e. there was a lack of volitional attention). This was observed to stem from both a lack of perceived motivational relevance within the typical label usage context, as well as existing attitudes towards QR codes that were held in memory.

Whereas data related to the first study phase was drawn from a heterogeneous sample, study phase 2 adopted a domain-specific innovativeness perspective to consider the role of innovativeness and risk aversion in influencing consumers' acceptance and usage of QR codes on food labelling. To the best of the authors' knowledge, this is the first study to explore the impact of domain-specific innovativeness, as distinct from technological innovativeness on the acceptance and usage of mobile marketing applications in the low-involvement context.

Perceived lack of utility appears to be the dominant barrier to consumers extending product-specific information search beyond traditional labelling, either through website search or QR codes, with laggards expressing concerns relating to potential time loss associated with usage. This study suggests that presently, QR codes are not viewed as adding value, owing to a fundamental lack of awareness as to their purpose, which represents a failure of marketing efforts to inform consumers as to their purpose. Consequently, provision of QR codes, website details and any other information encouraging further interaction with product offerings, requires a clear communication of the underlying value proposition if consumers are to opt into pull marketing. Such communication may require on-pack directions or coupling of in-store tasting with encouragement for extended interaction via on-pack QR code usage.

In line with the MEC comparison of innovators/early adopters and laggards presented in Chapter 6, laggards appeared relatively more concerned with routes through which goals could be frustrated (i.e. loss-orientation) than innovators/early adopters, who considered routes through which higher-order values could be fulfilled. Regarding RQ3, although laggards were risk oriented in their consideration of new purchases, distrust in information providers acted as a barrier to QR label usage. Therefore, it appears that despite the greater need for information among laggards, broader attitudes to considering unfamiliar food products and new information further compounded the lack of perceived benefits among these consumers, such as attitudes towards product switching: "*if it's not broken, why fix it?*" [Amber, 51-64, Laggard]. Conversely, innovators/early adopters appear to indicate a greater degree of interest in engaging with QR codes in the first instance, however, there is a need for information differentiation to motivate interest in this regard. Particularly in the context of more local or artisanal products, QR codes may offer a means of making a more emotional connection with these consumers and tap into the broader food environment.

Although uncertainty regarding the purpose of QR codes was the main factor influencing usage, domain-specific innovativeness was observed to have clear implications for the framing of offerings delivered over pull platforms such as QR codes, with the risk and benefit orientations of consumers in the laggard and innovator/early adopter segments respectively, influencing usage considerations. Despite possessing an interest in technology, concerns dominate relating to the underlying communication channels, with laggards ascribing ulterior motives to manufacturer-dominated channels (i.e. source trust). Although an experiential product, consumers across both the laggard and innovators/early adopter segments appear confident in their ability to evaluate product offerings using existing cues, with traditional labelling adequately facilitating the decision-making process. Risk concerns appear to dominate laggards' considerations, acting as a barrier to product acceptance. However, currently QR codes are not considered as a potential risk reliever for these consumers.

Where online search activities related to food provision were present at the product level, this tended to be driven by price comparison across retail outlets. Currently, this is a cumbersome task, however, the potential for cross-retailer price

comparison represents an area where additional engagement may be likely. In their present form, QR codes are viewed as decoupling the product offering from the retail environment, with promotional offers redeemable in-store representing a potential avenue for future integration. In line with previous research, QR usage considerations were strongly influenced by potential promotional offers (Okazaki, Li & Hirose, 2012; Hui, et al., 2013). Although examples exist in the alcohol market (Swedberg, 2017), food manufacturers still appear to be lagging in this regard. This consideration appeared to be closely linked to the importance of the immediacy of tangible benefit accrual, with deferred benefit acquisition providing little to no motivational impetus to stimulate engagement.

Digitally enabled interaction with labelling communications may facilitate consumers in navigating a foodscape where information overload acts as a barrier to engagement, through providing recipes and suggestions of complementary products within the retail environment. Particularly, applications such as MyFitnessPal, which facilitate comparison of products on personally salient characteristics against predefined criteria, may add value through enabling evaluation of product offerings and reassessment of previous food choices: "*when I found out [about 'MyFitnessPal'] I nearly went around the house and checked everything*" [Daniel, 51-64, Innovator/Early Adopter]. Indeed, mobile applications have been highlighted as a means of potentially influencing in-store purchasing behaviour (Flaherty et al., 2018). Hence, findings suggest two potential routes through which QR codes may add value to end consumers: firstly, through integration into the retail environment to add value in store and, secondly, through providing access to materials which promote usage beyond the retail environment, thereby providing benefits at the post-purchase stage. Additionally, in the context of this study, QR codes were considered primarily from a cognitive perspective, considering how information may reduce risk and uncertainty. However, as evidenced by interest in the role of QR codes in providing greater narratives around the product offerings themselves, they may act as a means of developing more emotional connections between consumers and brands, incorporating sign and hedonic value (Laurent & Kapferer, 1985) to the QR experience and offering a means of differentiating product offerings.

Encouraging interaction in the first instance remains a problem. There is a need to fundamentally reassess consumers' awareness and understanding of the role of QR codes through differentiation from current online food related information search activities. At present, decision-making appears to rely predominantly on intrinsic product cues. Future research may aim to assess the potential of QR codes as an extrinsic cue capable of facilitating evaluation of product attributes, adding additional benefits for innovators/early adopters and reducing risk for category laggards. Within the context of food specifically, findings from this study suggest that digital marketers need to move beyond brand-centric efforts when seeking to facilitate a dialogue with consumers by situating product offerings within the broader foodscape.

This chapter has identified key considerations relating to both the attentional and motivational dimensions of digital labelling, which represents a more effortful, yet potentially beneficial form of information search. The next, and final, chapter discusses the findings presented in this thesis, highlighting their relevance with regard to existing consumer behaviour literature. The strengths and limitations of this research are discussed, and recommendations are made for both researchers and marketing practitioners.

Chapter 8
Discussion and Conclusions

8.1 Introduction

The primary objective of this research was to consider the factors giving rise to label usage and build on extant information search literature. This objective was pursued through consideration of the motivation construct using a risk/benefit prism. Specifically, this research was situated within the interpretivist school of thought, adopting a primarily cognitive perspective on motivation. In recognition of the changing nature of labelling, this objective was approached with special reference to digital labelling. Specifically, in line with the conceptual framework based on existing label usage literature, presented in Figure 3.5, the research sought to address the following objectives:

Research Objective 1: To map the influence of consumers' personal endogenous dispositions (including risk/benefit orientations) and exogenous factors on label usage and information processing.

Research Objective 2: To assess the impact of risk/benefit orientations on associations in memory activated through label usage.

Research Objective 3: To evaluate the impact of domain-specific innovativeness on understanding, interpretation and perceived utility of digital labelling, enabled through pull marketing, in adding consumer value.

The first research phase considered label usage in terms of *attention*, *perception* and *information processing*, with a particular focus on the combined role of endogenous and exogenous influencers in the label usage process. The second phase considered the role of risk/benefit orientations in the construction of networks of associations activated through label usage to understand consumers' usage motivations and further address the role of information processing in label usage. Additionally, building on findings in the previous phase, phase 2 considered consumers' acceptance of the digitalisation of labelling, as facilitated through pull marketing technology.

This chapter provides an overview of the research conducted, outlines the significance of the findings presented in relation to current literature and demonstrates the theoretical and original contribution of this work. The relative strengths and limitations of the research are considered, and the chapter concludes with a discussion of the broader theoretical and practical implications of this work, and provides recommendations for future research directions.

8.2 Summary of Research

A focal aspect of this thesis was the risk/benefit lens adopted to consider consumer motivation to use label information in their purchase decisions. Findings from phase 1 illustrated the combined role of endogenous and exogenous factors in consumers' assimilation of label information. Specifically, findings from this study phase illustrated the means though which labelling both acted as means of priming purchasing goals thereby giving rise to motivational drive, while also signalling instances where label usage should be discontinued to avoid goal frustration.

In reconciling findings from this research with extant literature, the label usage process depicted in Figure 5.5 expanded on current labelling research through the inclusion of 'information checkpoints' and 'motivational relevance', which accounted, in part, for variations in label usage and information processing across participants. Information checkpoints represent pivotal moments in the label usage process and consumer assimilation of labelling information. Building on the information processing and working memory model proposed by Baddeley (2000) it was clear that participants were able to quickly access cognitive and affective evaluations of attributes which acted as checkpoints for continuing attention. Additionally, the role of motivational relevance in participant assimilation and processing of information, as identified in this study, highlights the need to consider the role of information to not only attract information but also deliver on personally salient purchasing goals.

Findings from the second research phase indicated that risk and benefit orientations (as established through comparison of MEC findings for innovators/early adopters and laggards) are diffused throughout the networks of meaning primed by labelling stimuli, and influence the valence of activated network routes. The presence of conflicting networks of associations within and between consumer segments

observed in this analysis reflects the underlying characteristic of participants in the respective segments and highlights the importance of communication strategy which accounts for consumers' subjective understanding of information provided.

Differences in the structures of hierarchical value maps were also evident, with the central role of health and wellbeing in positively contributing to the attainment of multiple values underscoring the multifinal goal structure of the more benefit-oriented innovator/early adopter consumers. This contrasted with risk-oriented laggards, whose cognitive structures reflected a more fractious network of meanings, with the individual values identified having distinct routes through which goal attainment or frustration could occur. Although innovators were cognisant of potentially negative consequences arising from consumption, dominant network structures were predominantly positively valenced, particularly when compared with those in the laggard segment.

The application of effortful information platforms which build on pull technology represents an interesting case in the low-involvement context. In seeking to understand and account for consumer usage of digitalised labels in the food category a paradox in the extant literature was identified. This paradox stemmed from an apparent incompatibility of explanations drawn from the innovativeness and risk literatures in explaining consumer usage of pull technology in the low involvement context and was represented diagrammatically in Figure 3.1. This paradox acted as the basis for considering the digitalisation of food labelling through pull marketing applications such as QR codes.

Findings from the first research phase highlighted a general lack of attention and awareness of QR codes, thereby reinforcing the need to fundamentally consider their value in the labelling context. In research phase 2, findings suggest the potential for usage of QR codes among category innovators/early adopters. Despite the relative value of the additional information QR codes could provide, unsurprisingly it did not appear that adoption among laggards was likely. Thematic analysis of interview data for participants in the respective segments highlighted trust concerns surrounding pull marketing related not only to the motives of the information provider, but also to the veracity of the information provided. Additionally, drawing on discussion which

situated QR considerations within the typical shopping context, a perceived incongruency between current retail environments and digital labelling undermined established shopping practices. Findings from this element of the study add valuable insights to an area which is currently under researched, despite the clear practical (see Section 8.5) and theoretical (see Section 7.3) implications which QR codes present.

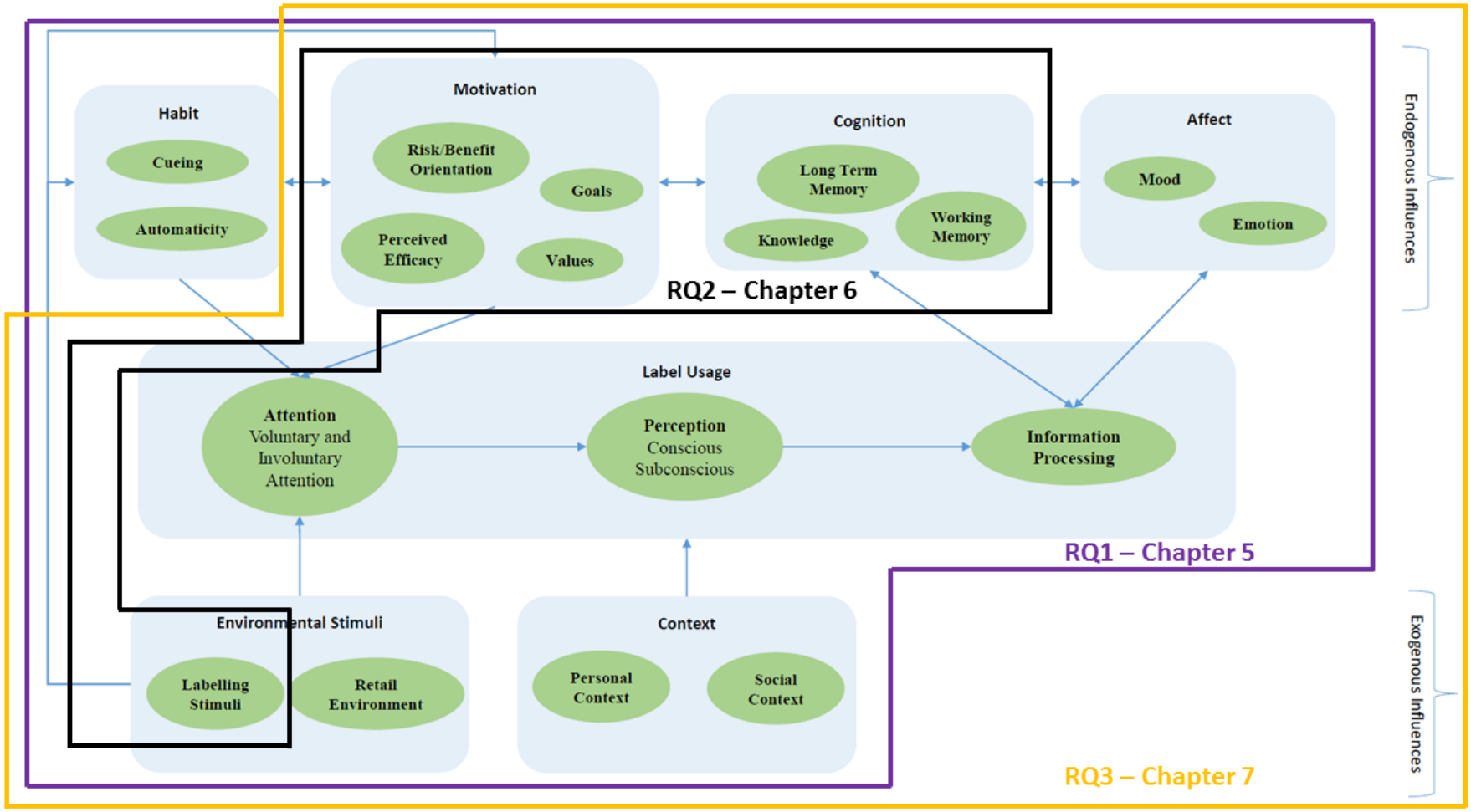
8.3 Theoretical and Original Contribution

Having summarised the key findings presented in this thesis, their contribution to existing consumer behaviour, risk/benefit and motivation literatures is considered below. The first section considers the primary theoretical contributions of the work, while the second section considers the methodological contribution this work represents.

8.3.1 Theoretical Contribution

The following section provides an overview of the key findings presented in this thesis, with regards to the primary research objectives. As noted throughout the thesis, these objectives reflected key considerations arising from the conceptual framework of existing labelling literature presented in Figure 3.5. As such, the relationship with each objective and the findings which they gave rise to with respect to this framework is depicted in Figure 8.1. Findings are presented thematically and their relevance with respect to existing literature is discussed. A summary is provided at the end of this section in Table 8.1.

Figure 8.1: Alignment of Conceptual Framework of Endogenous and Exogenous Influencers of Label Usage and Research Objectives



Research Objective 1

The first research objective drew on the stepwise approach to label usage proposed by Grunert and Wills (2007), to consider *attention, perception* and *information processing*, as they relate to food label information. The scope of this objective with regards to the broader literature is depicted visually in Figure 8.1. Our current understanding of the attentional mechanisms underpinning label usage has been informed by predominantly behaviourist approaches. However, as outlined in Chapter 2, the behaviourist school of thought, and the introspection which it excludes, has a number of limitations (Dember, 1974). In addressing this research objective, the following research question was considered:

RQ1: How and to what extent do endogenous and exogenous factors influence attention to labelling stimuli and subsequent information processing?

This resulted in two main findings, presented here thematically, which help to further our current understanding of label usage.

1. Goal System Architectures and Food Label Usage Strategies

Through the first phase of data analysis, three groups of consumers were identified, based on the specificity and negotiability of their individual health goals. Although previous research has highlighted the role of goal type, specifically health goals on label usage patterns and product evaluations (e.g. Visschers, Hess & Siegrist, 2010; Chrysochou & Grunert, 2014; Sanjari, Jahn & Boztug, 2017), findings presented in this study suggest that the negotiability of health goals has implications for label usage and purchasing outcomes (see Section 5.2.2). Highly specified health goals, stemming here from increased levels of risk importance, appear to produce more consistent label usage patterns, with the importance of negative consumption outcomes reducing purchasing goal negotiability. As such, consumers exhibiting higher levels of risk importance demonstrated lesser degrees of variation in their label usage strategies than those with more negotiable goals. Indeed, the presence of risk importance appeared to act as a mechanism for focusing consumers' consideration of information. This suggests that risks can influence the extent to which goals are specified and negotiable as well as the importance of goal attainment. Whereas those

with specific health protection goals had higher levels of risk importance, those with general health approach goals were more concerned with the general health benefits which food products could deliver.

Most interesting, perhaps, from a marketing perspective, was the impact of generalised approach health goals, which exhibited varying degrees of specificity across participants and were equifinal in nature i.e. multiple routes to health goal attainment existed among those with general health approach goals (Kruglanski et al., 2015). From a communication and labelling design perspective, consumer segments with goals exhibiting the property of equifinality present a unique challenge. As illustrated through the framework of label usage developed in phase 1 (see Figure 5.5), variations in underlying knowledge structures arising from low goal specificity may result in conflicting routes to goal attainment. In the yogurt category, this was evidenced in the potential of low-fat yogurt products to both support and undermine health goals (see Section 5.2). Indeed, the goal system architectures underpinning these consumers' information search and the implications for knowledge structures appear to support the argument in favour of needs-based information provision, as was explored in research phase 2.

2. Non-Volitional Attention and the Motivational Relevance Gap

Eye-tracking data presented in this study support previous findings, which suggest that environmental stimuli can disrupt information search behaviours and capture attention (Antúnez et al., 2015; Siegrist, Leins-Hess & Keller, 2015; Peschel, Orquin & Mueller Loose, 2019). It has been asserted that, "*eye-movements do not necessarily reflect mental processes, but they do reflect ongoing processes to the extent that the processes depend on the encoding of information*" (Anderson, Bothell & Douglass, 2004, p.230). Indeed, leveraging the interpretivist lens underpinning this study, qualitative exploration of eye-tracking data suggests a gap between attention and information processing. This finding appears to reflect the limitations of the eye-mind hypothesis which underpins eye-tracking research (Bojko, 2013) and the sole usage of eye-tracking to infer cognition and motivation. This, in turn, provides support for the use of self-reported measures as a means to capture the motivational components of label usage (Miller et al., 2015).

This gap between attention and processing was conceptualised in this study as being attributable, in part, to a lack of motivational relevance to process information attended to. Indeed, as evidenced in both the eye-tracking data and subsequent participant reporting, associations and knowledge held in memory influenced the patterns of label usage and information processing. Additionally, this study introduced the concept of information checkpoints. These checkpoints represent pivotal moments in the label usage processes, whereby associations and knowledge held in memory are used to determine whether interaction with a given labelling stimuli should (dis)continue. Checkpoints were highly idiosyncratic in nature and dependent on individual knowledge structures and purchasing goals and could represent strong affective responses. Given that consumer attention is a limited resource (Davenport & Beck, 2001; Crogan & Kinsley, 2012), findings presented here highlight the need for researchers to consider the efficacy of labelling in attracting attention to information which has motivational relevance.

Research Objective 2

The second research objective was rooted in the knowledge structures and networks of meaning activated by labelling stimuli. Specifically, this objective considered the extent to which risk and benefit orientations influenced the networks of meaning activated by environmental stimuli. In addressing this research objective, the following research question was considered:

RQ2: Does product category innovativeness/risk aversion influence associations activated through label usage?

The following section outlines the findings which contributed to addressing this research question and their relationship to the literature.

3. Needs-Based Segmentation and Food Labelling

There is precedent for considering the role of positively and negatively valenced outcomes within the motivation literature, as evidenced in the case of the VIE model (Van Eerde & Thierry, 1996; Bjørnebekk & Gjesme, 2009) and approach/avoidance theory of motivation (Elliot, 1999; Arnold & Reynolds, 2012). However, the risk/benefit lens has been less applied in the consumer behaviour domain

owing to the exclusively negative orientation of risk research as conducted with the perceived risk domain (Stone & Grønhaug, 1993).

In seeking to account for variations in label usage, the second study phase considered a priori two consumer segments to establish whether, and to what extent, risk and benefit orientations influenced the networks of meaning activated through label usage. Within the consumer behaviour literature more broadly, and in line with the trend towards usage of psychographic segmentation variables (Raaij & Verhallen, 1994), both benefit segmentation (Haley, 1968; Botschen, Thelen & Pieters, 1999; Olsen, Prebensen & Larsen, 2009) and risk segmentation (Mitchell & Boustani, 1993; Mitchell & Harris, 2005; McCarthy & Henson, 2005) have yielded identifiable consumer segments.

Previous research has highlighted that risk avoiders are more likely to seek out information relating to risks in their decision-making process (Kuttschreuter, 2006). This research adds to this literature through confirming substantive differences in the cognitive structures of consumers with risk and benefit orientations. In so doing, this research highlights not only the impact of risk/benefit orientations in the consideration of information, but also the valence of the networks of meaning primed by environmental stimuli such as labelling.

The analysis of innovator/early adopter's and laggard's accounts of label attributes, and the consequences arising from these, illustrated that purchasing orientation influenced both the content and nature of networks of associations. When compared with innovators/early adopters, those within the laggard segment were far more loss oriented, as evidenced through the relative frequency of occurrence of negative ladders in the HVM for those within the laggard segment. Differences between the HVMs generated were not confined to the valence of network routes. Indeed, consumers within the innovator/early adopter segment appeared to place far more emphasis on the health-related consequences of consumption, with the subordinate goal of health and wellbeing serving to facilitate progression to a number of superordinate goals such as caring for others and responsibility. Although certain considerations and personal values transcended consumers' purchasing decisions and were observable in both consumer segments, the laggard consumers were observed to

be driven by a desire for greater control within their food system, which reflected the scepticism they held towards the food industry and concerns regarding the negative consequences of consumption.

Within the context of the labelling research more broadly, these findings add to existing literature concerning subjective understanding of labelling information (Grunert and Wills, 2007). More broadly speaking, there has been consideration of risk and benefit framing in communication strategy (Frewer et al., 2016). Findings presented in this thesis support the role of risk/benefit framing of information. However, differences in valence of cognitive structures activated by consumers within consumer cohorts highlight the need for risk and benefit communication strategies to also consider extant knowledge structures and purchasing orientations of consumers.

Research Objective 3

The final research objective addressed a currently under researched aspect of food labelling, namely the digitalisation of food labelling, as facilitated through pull-technology, with QR codes acting as the vehicle to consider digitalisation of labelling. In addressing this objective, the following research question was considered:

RQ3: Does understanding, interpretation and perceived utility of QR codes vary across innovators/early adopters and laggards?

Although this research question was aligned to the second research phase, findings from phase 1 data provided a frame of reference which supported our understanding of consumer attention to and interaction with labelling stimuli. Similar to other label information, QR codes, were subject to low levels of attention, highlighting the need to promote non-volitional attention to QR codes, through "*attention-grabbing*" measures (Corbetta & Shulman, 2002), such as stylised codes (Lin, Luo & Chen, 2013; Lay & Chen, 2018; Xu et al., 2018). However, promoting attention through motivational relevance is also necessary (Chun, Golomb & Turk-Browne, 2011). As such the second phase built on existing literature concerning consumer willingness to adopt QR codes. Although the literature highlights that QR code usage is more likely for high involvement categories (Narang, Jain & Roy, 2012), there has been little consideration of its role in the low-involvement context. Two key issues of importance were identified with respect to consumer willingness to adopt

digital labelling, which reflected the role of credibility and dominant attitudes towards QR codes.

4. The Nuanced Role of Credibility in QR code Adoption

Although trust has repeatedly been considered as a determinant of consumer usage of mobile marketing broadly (Atkinson, 2013; Ström, Vendel & Bredican, 2014), and QR codes specifically (Spence et al., 2018), data suggested that the nature of trust considerations differed fundamentally across innovators/early adopters and laggards. Source credibility (Westerman, Spence & van der Heide, 2014; Hussain et al., 2017) was a central issue in acceptance of QR codes and framing of usage considerations. It is worth noting that for both consumer segments, trust concerns related to the information provider, rather than the QR code as a conduit of information in its own right, yet, these trust concerns were intricately associated with QR codes as the mechanism through which information was exchanged.

Source trustworthiness was the primary concern among laggards, reflecting considerations regarding the extent to which purchaser and information provider motives were aligned and highlighting the broader orientation of suspicion of those in the laggard segment. Indeed, distrust and suspicion were particularly important among laggards, who ascribed ulterior profit driven motives to manufacturers using QR codes, which were viewed solely as a mobile marketing tool. Trust for innovators/early adopters centred around the issue of source expertise, reflecting the higher degrees of self-confidence and experience within the product category. Here, concerns were related to the extent to which information provided was of sufficient quality as to add value to the decision-making process. Findings suggest that risk and benefit orientations may have implications for trust concerns arising from information usage. Although the impact of trust on risk/benefit perceptions has been previously explored (Siegrist, Cvetkovich & Roth, 2000), to the best of the author's knowledge, the implications of risk and benefit orientations, as they relate to source trustworthiness and source expertise considerations, have not been considered to date and represent an area which merits further investigation.

5. Consumer Attitudes to QR codes as a form of Digital Labelling

Attitudes towards QR codes and their value within the food context varied starkly across participants, regardless of their risk/benefit orientations. In the absence of knowledge of and familiarity with QR codes and their purpose, participants engaged in a process of associative reasoning, whereby features of other technologies within the food sector were ascribed to QR codes. These assigned features varied across participants, such that QR codes were viewed as being akin to UPC barcodes, online food purchasing, manufacturer websites, retailer website and online review and discussion forums. This inconsistent understanding of the code led to disparate, disjointed and oftentimes ambivalent attitudes towards QR codes on food labels.

The low-involvement nature of the case food (yogurt) selected for this study was reflected in prevailing consumer attitudes relating to the perceived value of digital labelling within the decision-making process. Ease of substitution and low levels of financial loss associated with product failure appeared to substantially offset potential benefits associated with QR codes. Traditional print labelling was judged as sufficient for making purchasing decisions at the product level, particularly among category laggards, who were less likely to engage with the more effortful information search associated with QR codes. This suggests that, for companies to meaningfully add value to product labels through digitalisation, information and associated benefits may be best framed in terms of the broader foodscape, rather than at the product or brand level. Indeed, as evidenced in this study, alignment of food offerings to superordinate purchasing goals, such as health and wellbeing (as is evidenced in the case of applications such as MyFitnessPal), may promote additional interaction with product offerings. Specifically, this may include means through which to build a relationship with consumers highlighting how product offerings align to broader values and concerns held by the consumer, such as provenance and sustainability.

Furthermore, a perceived lack of complementarity between the physical retail space and digital labelling was observed, with QR codes being viewed as decoupling food offerings and shopping process more broadly, from the retail environment. This decoupling appeared to relate to both means through which information pertaining the product offering was received and the congruency with smartphone usage in the context of existing shopping routines. This lack of complementarity was particularly

evident in participants' perception that QR codes could potentially undermine the social dimension of shopping, especially where they removed the need to engage with others in the retail environment for informational purposes.

Whereas previous research concerning pull technology has considered acceptance at the technology level (Jong-Hyuok, Somerstein & Eun Seon, 2012; Shin, Jung & Chang, 2012; Atkinson, 2013; Ryu, 2013; Ryu & Murdock, 2013; Higgins, McGarry Wolf & Wolf, 2014), this study considered acceptance with respect to the product category, considering domain-specific innovativeness (Goldsmith & Hofacker, 1991; Goldsmith, 2000) in exploring consumer attitudes and acceptance of digital labelling. In so doing, this study highlights the role of product category specific factors in influencing consumer technology acceptance and offers new insights into QR code adoption. As such, this research suggests that future technology acceptance research may benefit from considering innovativeness not only at the technology level, but also innovativeness in the domain in which the technology is to be applied.

Key research findings, their relevance with regards to existing label usage literatures and their role within the label usage framework presented in Figure 8.1 are summarised in Table 8.1 below.

Table 8.1: Summary of Key Findings and Relationship to Extant Literature

Key Finding/Theme	Summary of Findings	Relevant Section(s)	Relevant Literature	Element of Conceptual Framework Addressed
1. Goal System Architectures and Food Label Usage Strategies	In the presence of poorly specified goals, a greater number of subordinate goals were seen as contributing to the attainment of superordinate goals, such that goal structures exhibited the property of equifinality. Risk importance decreasing goal negotiability and increased goal specificity leading to more consistently applied information search strategies.	Section 5.2.2	• Goal System Architecture (Chun et al., 2011; Höchli, Brügger & Messner, 2018) • Goal-Specificity & Behaviour Performance (Latham & Brown, 2006; Wallace & Etkin, 2018)	**Endogenous Influencers of Label Usage** • Motivation • Goals • Knowledge Structures
2. Non-Volitional Attention and the Motivational Relevance Gap	Despite the efficacy of environmental stimuli to disrupt established information search routines and result in non-volitional attention, information attended to was not necessarily applied to decision-making. This gap between attention and processing appears to be reflected in a lack of motivational relevance and a perceived incongruence between information viewed and attainment of personally salient goals. Highlighting the need to consider both attention capture and perceived congruency of information with goal attainment.	Section 5.2.1 Section 5.2.4	• Non-Volitional Attention (Corbetta & Shulman, 2002; Siegrist, Leins-Hess & Keller, 2015) • Attention Economy (Davenport & Beck, 2001; Crogan & Kinsley, 2012) • Motivation and Goals (Deci & Ryan, 1985; Reeve, 2009)	**Attention** • Non-Volitional Attention **Exogenous Influencers** • Environmental Stimuli **Endogenous Influencers** • Motivation • Goals

Key Finding/Theme	Summary of Findings	Relevant Section(s)	Relevant Literature	Element of Conceptual Framework Addressed
3. Needs-Based Segmentation and Food Labelling	Findings suggest that risk/benefit orientations influenced the network of associations primed by labelling, including the valence of network routes. The role of needs-based information provision merits further consideration in the communication of product offerings. Specifically, there is a need to consider not only the information provided, but impact of purchasing orientation on the valence of anticipated consequences.	Section 6.2 Section 6.3	• Risk/Benefit (Fischhoff et al., 1978; Alhakami & Slovic, 1994) • Knowledge (Brucks, 1986; Bruwer, Li & Reid 2002; Grunert & Wills, 2007) • Knowledge Structures (Gutman, 1982; Mulvey et al., 1994; Grunert & Grunert, 1995; Costa, Dekker & Jongen, 2004) • Values (Rokeach, 1973; Gutman, 1982; Schwartz & Bilsky, 1987) • Cognition (Quillian, 1967; Baddeley, 2000; Minton, Cornwell & Kahle, 2017)	**Cognition** • Knowledge Structures **Motivation** • Risk/Benefit Orientation • Values • Goals **Exogenous Influencers** • Labelling Stimuli (as Prime)
4. The Nuanced Role of Credibility in QR Code Adoption	Trust has an important role to play in the adoption of digital labelling and QR adoption. However, findings suggest that concerns underlying credibility perceptions of QR codes vary across consumer segments, including concerns regarding source trustworthiness and source expertise.	Section 7.3.2	• Source Credibility (Wiener & Mowen, 1986; Westerman, Spence & van der Heide, 2014; Hussain et al., 2017)	**Motivation** • Risk/Benefit Orientation
5. Consumer Attitudes to QR codes as a form of Digital Labelling	Owing to a lack of familiarity with QR codes, and reliance on associative reasoning to frame QR code understanding, attitudes towards QR codes appear varied, inconsistent, conflicting and highly context dependent.	Section 7.2 Section 7.3	• Knowledge and Understanding (Brucks, 1986; Page & Uncles, 2004; Grunert & Wills, 2007) • Information Processing and Incidental Learning (Kahneman, Slovic & Tversky 1982; Stanovich & West, 2000; Jayanti & Singh, 2010; Sanjari, Jahn & Boztug, 2017) • Affect (Schwarz 1990; Forgas, Chan & Laham, 2001; Zeelenberg & Pieters, 2006)	**Cognition** • Knowledge **Affect** • Moods and Emotions **Motivation** • Goals **Exogenous Influences** • Labelling Stimuli • Retail Environment

8.3.2 Methodological Contribution

With regards to eye-tracking applications in labelling research, work to date has been concerned with label specific factors, such as the impact of format, chromaticity, and information content on attention (Antúnez et al., 2013; Ares et al., 2013; Peschel, Orquin & Mueller Loose, 2019). Consequently, eye-tracking applications within the labelling domain have been primarily restricted to quantitative applications, incorporating closed-end experimental designs (for example: Siegrist, Leins-Hess & Keller, 2015; Oliveira et al., 2016).

However, as illustrated throughout this thesis, attention and decision-making are influenced by both endogenous and exogenous factors, leading some to question the efficacy of eye-tracking over self-reported measures of attention in capturing the motivational component of label usage (Miller et al., 2015). Consequently, the absence of introspective data better suited to inform our understanding of endogenous factors influencing label usage, is a limitation of recent eye-tracking research and eye-tracking methodology more broadly. Hyrskykari et al. (2008, p.1) summarise the problem thusly: "*although eye-tracking tells us what users look at, it does not tell us why*".

Within the consumer behaviour literature, these paradigmatically opposed research approaches have not been adequately integrated to date, despite other fields of research, particularly UX research, employing a qualitative approach in studies employing eye-tracking (Hyrskykari et al., 2008). This study presents a means for eliciting salient product attributes and identifying label usage patterns for further exploration through integrating eye-tracking, RTA and semi-structured interviewing, thereby offering an alternative approach to using eye-tracking technology in consumer behaviour research. In so doing, this research provides an approach to the behaviourist aligned eye-tracking, which addresses the limitations of behaviourism (Dember 1974; Locke 1996; Miller 2003), through incorporating introspective research techniques.

8.4 Strengths and Limitations of the Research

As stated elsewhere, transparency in qualitative research requires the researcher to not only espouse the strengths of the research undertaken, but also to clearly state any research limitations. This section provides an overview of the strengths and limitations of the research presented in this thesis.

Research Strengths

As indicated above, "*although eye-tracking tells us what users look at, it does not tell us why*" (Hyrskykari et al., 2008, p.1). This aspect of eye-tracking methodology was a central concern to the author when undertaking this research. The mixing of paradigmatically opposed methods through the integration of eye-tracking experimentation, retrospective think-aloud protocols and semi-structured interviewing represents one of the strengths of this thesis. Through integrating multiple data collection methods, this research offers new insights into the mechanisms underpinning attention to labelling stimuli and addresses the potential for unchecked speculation and inference making, arising from exclusive use of eye-tracking data to understand usage motivations. The protocol established for the use of eye-tracking as a means of eliciting salient attributes, and viewing behaviours to guide probing during subsequent interviewing, allowed for more focused probing, which captured aspects of label usage, which may otherwise have gone unexplored during interviewing.

The subjectivism underpinning the interpretivist paradigm does not preclude the need for ensuring trustworthiness and goodness in qualitative research. Indeed, given the subjectivism of the qualitative field of enquiry, it is paramount that researchers in the qualitative tradition engage in best practice to produce credible research findings. This research benefited from a rigorous adherence to principles of trustworthiness in the design, implementation, analysis and reporting stages, as demonstrated through adherence to the trustworthiness criteria identified by Miles, Huberman and Saldana (2013), for both study phase 1 (see Table 4.9) and study phase 2 (see Table 4.12) respectively. Specifically, this research benefited from an iterative and consultative process of refinement of study design, research instrument development, data analysis and reporting with research supervisors.

Finally, in line with principles of good scholarship, findings presented in this thesis have undergone a peer review process in the form of papers submitted to academic journals[31] and through presentation of findings at discipline-relevant

[31] A research paper has been published in the journal *Appetite*, while a second paper has been accepted in the *International Journal of Retail & Distribution Management.*

conferences[32] (see Research Dissemination). Through this peer-review process both the quality of analysis and reporting of data collection protocols and results have been improved, thereby ensuring that the research conducted is of a publishable standard.

Research Limitations

Qualitative research, and the interpretivist paradigm upon which this research rests, acknowledges that findings and data are time and context bound (Teddlie & Tashakkori, 2009). Consequently, findings presented in this thesis are not necessarily generalisable to the population. However, they do offer additions and insights to the existing body of literature, which may contribute to further developments in the field.

There are, of course, some limitations associated within this research. Firstly, the trade-off between ecological validity and experimental control necessitated by the choice between remote and mobile eye-tracking systems warrants consideration. The use of a remote (computer-based) eye-tracking experiment allowed for ease of comparison between participants, facilitated the preparation of materials in the intermission between the eye-tracking experiment and RTA protocol and was a more cost-effective means of data collection. However, experimental control comes at a cost. Use of a mobile eye-tracker may have allowed for the capture of broader contextual factors typically encountered within the retail environment, and provided additional insights into label usage. Although broader contextual factors typically influencing purchasing behaviour and label usage were explored through semi-structured interviewing, another approach would have been to use an in-store design. However, this would have posed additional challenges and potential limitations. Specifically, the lack of experimental control associated with an in-store design results in dynamic as opposed to static experimental stimuli. Dynamic stimuli reduce the ease of comparison of findings between participants. Additionally, in-store study designs vastly increase the complexity of the eye-tracking data elicited, as participants are exposed to additional stimuli in-store, thereby adding to the difficulty of retrospective

[32] Work relating to the findings presented in this thesis has been presented at the following conferences: *Colloquium on European Research in Retailing (CERR) 2018; 2018 Irish Academy of Management (IAM) Annual Conference,* and academic settings: *TRADEIT Entrepreneurial Summer Academy 2016; Cork University Business School (CUBS) Postgraduate Research Symposium 2017 & 2018*.

think-aloud tasks for participants, as the nature of the task is more complex requiring a greater amount of information to be remembered.

In the first phase, a purposive quota-based maximum variation sampling approach was adopted. This may, in part, account for the diversity of associations discussed in Section 5.2.2. Nevertheless, it has been argued that similarities in heterogeneous samples can be highly indicative of core occurrences relative to a given phenomenon, with Patton (2002, p.235) arguing that "*any common patterns that emerge from great variation are of particular interest and value in capturing the core experiences and central, shared dimensions of a setting or phenomenon"*. Furthermore, this issue was explored in greater depth in research phase 2, where the impact of said associations was considered through two distinct consumer segments.

With regard to phase 2, participants were recruited using a screening questionnaire incorporating Goldsmith and Hofacker's (1991) DSI scale, to identify innovators/early adopters and laggards. This survey was administered in three retail outlets in various geographical locations. However, given that an intercept survey approach was used, there is a potential self-selection bias in this sample, as evidenced by the relative frequency of innovators/early adopters when compared with laggards. Furthermore, the DSI scale is a self-reported measure of innovativeness, which introduces additional potential for bias. However, the scale has been demonstrated to be a valid self-report measure of innovativeness (Flynn & Goldsmith, 1993; Goldsmith, 2000). Additionally, upon analysing the MEC and semi-structured interview data, it was clear that the characteristics of participants in the laggard and innovator/early adopter categories in the sample broadly reflected characteristics typically associated with their assigned segments. Furthermore, although innovators/early adopters and laggards were equally represented in the subsequent study, study participants in the 51-64 age category were overrepresented. Finally, this study focussed on domain-specific innovativeness within the product category, however, participants within the study demonstrated varying degrees of technological experience. As such, future research may consider how technological innovativeness may further inform pull-marketing applications within this domain-specific innovativeness context.

Despite the presence of these limitations, steps were taken, and have been outlined in Chapter 4 and here, to mitigate the potential impact of these factors on the veracity and credibility of findings presented in this thesis, with a transparent approach to acknowledging limitations adopted by the researcher.

8.5 Research Implications and Future Directions for Research and Policy

In line with the proceeding discussion, research implications arising from this thesis are methodological, theoretical and practical in nature. The following sections highlight areas in need of additional consideration and propose a number of recommendations arising from the findings presented in this study.

Consumer Understanding

In considering label usage in the first instance, this thesis sought to clearly lay out the difficulties and challenges associated with providing food labelling which is accessible to the average consumers and allows individuals to make informed food purchasing decisions. Notwithstanding the interpretivist position adopted in this study, which considers the individual experience in understanding a given phenomenon, practically speaking there is a need to consider the place of labelling in society as a whole. This study raises a number of issues for consideration, such as the value of needs-based information provision.

Harmonisation of labelling information achieved through the enactment of Regulation (EU) 1169/2011 represents an important step in empowering consumers in making cross-product comparisons on nutritionally salient product characteristics, while limiting the potential for misleading claims and product information. Nevertheless, as demonstrated in both study phases, prior knowledge and existing associations can have profound implications for product evaluations. Although it was beyond the scope of this study to objectively consider the accuracy of product evaluations arising from interactions with labelling stimuli presented, the existence of conflicting and contradicting product evaluations is illustrative of the broader need to more clearly communicate the composition of food offerings and their health and wellbeing implications. Some efforts have been made in this regard, such as the introduction of FoP labelling schemes, including health logos, traffic light labelling

and guideline daily amounts. Yet, in line with previous research, this study illustrates the potential for misinterpretation and oversimplification of purchase outcomes. Particularly, findings presented in this research have demonstrated how existing knowledge, incidental learning and inference making continue to shape consumer interpretation of labelling information, leading to potentially erroneous estimations of consumption outcomes.

In particular, there has been significant research on the respective roles of considerations such as label design (Siegrist, Leins-Hess & Keller, 2015; Oliveira et al., 2016; Peschel, Orquin & Mueller Loose, 2019), nutritional information format (Hodgkins et al., 2012; Wąsowicz, Styśko-Kunkowska & Grunert, 2015) and nutrition knowledge (Grunert, Wills & Fernández-Celemín, 2010; Miller & Cassady, 2012) in facilitating consumers to navigate a complicated information landscape and reach 'healthy' purchasing decisions. However, the research presented here highlights the need to fundamentally reconsider consumer motivation to engage with labelling information in the first instance, including the extent to which their desire to engage and depth of information processing leads to meaningful understanding of information provided.

Use of Eye-Tracking Applications in Consumer Research

A consistent consideration throughout this thesis, which is reflective of the consumer behaviour literature at large, is the complexity and multifaceted nature of the consumer decision-making process. With regards to eye-tracking applications, this study has demonstrated how an alternative application of eye-tracking technology and the blending of various schools of thought (i.e. through the combination of behaviourist and interpretivist methods) can help to offer new insights and supplement existing research techniques. In this instance eye-tracking proved an effective tool for the identification of patterns of label usage among individual participants, which led to more efficacious and meaningful probing of participants during subsequent semi-structured interviewing. Future research may consider how integration of 'objective' (Visschers, Hess & Siegrist, 2010; Bialkova & van Trijp, 2011; Ares et al., 2013; Miller et al., 2015) and 'subjective' (Bialkova, Grunert & van Trijp, 2013; Miller et al., 2015; Rebollar et al., 2015) label measures can be used to deepen our understanding of the complex, multifaceted processes underpinning consumer

behaviour and decision-making. Within the context of this study, the ongoing cognitive processes during the eye-tracking experiment were established using a cued-retrospective think-aloud protocol, with the cue used to promote recalling being the original experimental stimuli. Future research may seek to establish the relative efficacy of alternative configurations of the RTA protocol as a means of capturing the sequences of cognitive events during the eye-tracking experiment.

Food Industry Implications

Owing to the sometimes disjointed and conflicting understanding of labelling information arising from consumers' networks of meanings and the experiences which have contributed to their development, a fundamental challenge manufacturers in the yogurt sector face relates to the nature of consumer interpretation of nutritional claims and trust therein. In particular, there is a need for clearer communication of food product attributes in instances where negative associations and connotations exist, to address instances where seemingly unfavourable label attributes lead consumers to discontinue label usage. This may involve the establishment of new cues or cue combinations, particularly in the case of FoP labels, to reduce the likelihood of attention to products being discontinued in instances where potentially negative associations exist. In particular, the perceived relationship between fat-free products and sugar content requires further consideration and may involve communication of product attributes which move consumers beyond considering products in terms of individual attributes to considering consumption outcomes in a more holistic fashion. In particular, given the apparent role of broader media communication and word of mouth communication in framing consumer interpretation of labelling information, there is a need for greater transparency in relation to the health implications associated with consumption of product constituent components.

Furthermore, the research presented here highlights future barriers to acceptance of QR codes as well as their potential applications within the food industry, including the potential for QR codes to be established as cues which are used to infer transparency and build trust with consumer. In particular, there is a need for industry to aid consumers in developing clear expectancies surrounding the use of QR codes in the purchasing context, while ensuring that benefits delivered move beyond traditional

labelling information and are aligned to purchasing goas. Future implications for QR codes and digitalisation of labelling more broadly are discussed below.

Practical and Policy Implications for QR codes on Food Labels

Findings from research phase 1 suggest that in their present form, QR codes are not attended to, with participants in both study phases generally exhibiting a lack of familiarity with the convention. In the context of this study 'plain' QR codes were presented on the experimental stimuli, as this reflected contemporaneous use within the marketplace. This being said, QR codes can be adapted and stylised to include logos, symbols and artwork within the body of the code (Lin, Luo & Chen, 2013; Lay & Chen, 2018; Xu et al., 2018), thereby promoting non-volitional (exogenous) attention, and acting as a point of differentiation from the UPC barcodes, with which many participants had come to association QR codes. A continued lack of awareness of the QR code convention, despite its presence on the market place over the last number of years appears indicative of the entrenched consumer search behaviours typical of low-involvement routinised purchases. Given interest among those in the food industry in QR codes for a variety of applications, including ensuring transparency (Spence et al., 2018) and demonstrating traceability within supply chains (Yang et al., 2016) future research, including in the eye-tracking domain, may seek to establish the efficacy of stylised QR codes in disrupting search behaviour.

However, concerns echoed by some participants included a worry that necessary information may be relegated to QR codes and not be provided on traditional print labels (see Section 7.2.2). Although this should not occur in the presence of a robust regulatory system, there is also a need to recognise that the perceived personal importance of a given piece of information varies across consumers. In the American case, recent legislation has mandated the disclosure of product ingredients including genetically modified (GM) components, while affording manufactures the option to present said information either in the form of text, a symbol or alternatively through an electronic or digital link (Wenner, 2018). The option for provision of indicators of the presence of GM ingredients through QR codes has come under criticism regarding the ease and likelihood of use among consumers compared to traditional labelling (Bovay & Alston, 2018; Tallapragada & Hallman, 2018). Indeed, it has been argued that QR codes can act as a barrier to information which provide an "*out of sight, out*

of mind" solution to important consumption related decision-making criteria (Wenner, 2018, p.626). As discussed, QR codes, as a form of pull marketing, represent a more effortful platform for the provision of information. Given the low involvement nature of food products, and in line with findings presented in this thesis, consumers may view the time costs associated with this form of information platform as outweighing potential consumption benefits, particularly given the general shift of food risk from the short term to the long term (Rozin, 2005).

Additionally, in an increasingly digital world, an ongoing challenge for both consumers and regulators is monitoring of information content, as QR codes and other similar technologies link physical food products to the digital world. Bovay and Alston (2018) raise concerns regarding the role of regulators in addressing instances where QR codes containing necessary information link to broken or outdated websites. This raises questions regarding the feasibility of regulators ensuring compliance in terms of manufacturers' information provisions and trustworthiness of information being provided to consumers.

Digitalisation of Food Labelling and The Quantified Self

Digitalisation in the labelling space presents a number of opportunities and challenges within the food sector. However, using QR codes as a vehicle to understand some of the challenges and implications associated with the more effortful information search (which pull-marketing technologies represent) in the low involvement context, this research offers a guide and a number of recommendations for future advancements in the area of food labelling. Smart labelling is expected to expand in diversity of application in the coming years (Skinner, 2015) and this research highlights the importance of considerations such as trust and alignment of supplemental product information to the broader food space going forward.

Owing to the increasingly individualistic nature of society, there has been heightened interest in self-monitoring and the quantified self (Lupton, 2016; Didžiokaitė, Saukko & Greiffenhagen, 2017; Sharon, 2017). However, the promises which these trends offer are dependent on the extent to which the broader environment allows for consumers to engage in a process of self-monitoring as well as the extent to which consumers are active participants within this process. In the context of food,

integration of QR codes or similar information rich portals may be one means through which to align food offerings to these broader societal trends. Indeed, this research suggests that the more effortful information search associated with these conventions becomes meaningful only when information is aligned to its broader context, rather than focusing at a product specific or brand level. Therefore, future research in the areas of personalised nutrition, self-monitoring and the quantified self may be further advanced through considering information portals such as those offered by QR codes.

In considering the value of this research, as it relates to broader trends in technology, it is worth considering the movement towards self-monitoring and the quantified self. To this end, Lupton (2016, p.3) argues that

> *"while the quantified self overtly refers to using numbers as a means of monitoring and measuring elements of everyday life and embodiment, it can be interpreted more broadly as an ethos and apparatus of practices that has gathered momentum in this era of mobile and wearable devices and of increasingly sensor-saturated physical environments*".

With regards to self-monitoring and self-quantification, the work of Bandura and Cervone (1983), which considers the role of feedback and self-evaluation in providing motivational impetus to facilitate goal attainment, is worth considering. One of the barriers to self-evaluation as a means of motivating behaviour within the food domain is a lack of knowledge and information regarding progression towards goal attainment. As such work by Bandura and Cervone (1983) suggests that these trends may have value from a motivational perspective through facilitating consumers to self-monitor their goal progression. In relation to food and health, such goals may relate to nutritional and caloric intake and exercise goals for example. Similarly, work by Höchli, Brügger and Messner (2018) highlights the motivational properties of a simultaneous awareness of the subordinate and superordinate goals towards which behaviour enactment contribute. In such instances, an awareness of the incremental impact of subordinate goals towards superordinate goal attainment may have motivational properties. These two areas (self-evaluation and goal system architecture) within motivation studies, may offer a useful point of reference for

situating future research concerning QR codes and similar interfaces, which bring information presented on physical labels into the digital space and offer a means of delivering on the potential of digitalised labels to situate products within the broader foodscape.

8.6 Conclusion

This thesis sought to add to the body of research within the consumer behaviour domain, through considering the role of motivation in label usage using a risk/benefit lens. Label usage is a multistage, multifaceted process, influenced by endogenous and exogenous factors. Through the blending of research traditions underpinning eye-tracking and introspective techniques, this research allowed for a more nuanced understanding of the interaction of these endogenous and exogenous determinants within the attention process. Additionally, this research sought to understand the under researched yet increasingly relevant area of digitalisation of food labelling, using QR codes as a vehicle for considering broader challenges and opportunities that digital labels present.

To conclude, theoretical and methodological contributions with respect to extant literature have been outlined throughout the thesis and have been summarised here. This thesis adopted a novel approach to data collection, as outlined in the case of research phase 1, and in terms of the theoretical lens underpinning the study, i.e. the risk/benefit lens on information usage motivation. In accounting for emerging trends in labelling and technology more broadly, the digitalisation of food labelling acted as a running thread throughout both study phases. Although QR codes acted as the vehicle for considering more effortful information search, the findings presented here have broader applications for considering future developments in labelling and labelling research.

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Appendices

Appendix 2.1 Risk Relievers

Table A.1: Risk Relievers[33]

Type of Risk Reliever	Risk Reliever	Clarifying / Simplifying
Interaction With others	Ask a family of friend	C
	Ask the sales person	C/S
	Using someone known socially or through business	S
	Visit or call the retailer	C/S
	Referral from other professionals	S
	Using someone in a convenient location	S
	Joint decisions	C/S
	Delegation of buying responsibilities to others more competent	S
Information Provided by Manufacturer	Information from printed advertisements	C
	Information from TV commercials	C
	Information from packaging and merchandising	C
	Country of origin	C/S
	Warranty quality	C/S
Prior Knowledge/ Experience	Buy a well-known brand	S
	Brand loyalty	S
	Past experience	C/S
	Well-known or reputable manufacturing company	S
	Store reputation/image	S
Information Provided by Third Parties	Private testing/consumer reports	C
	Government tested and approved	S
	Endorsements/testimonials	S
	Yellow pages	S
	Information from direct mail	C
	Information from journal papers and articles	C
Information from Retailers	A free gift	S
	Coupons	S
	Price Information	S
	Free sample/trial size	C
Other	Money-back guarantee	S
	Number of brands examined	C/S
	Shopping around	C/S
	Spend more time gathering information	C
	Pre-purchasing deliberation	S
	Product newness	S
	Service contract	C/S
	Postpone decision	S
	Goal avoidance	S

[33] Adapted from Mitchell & McGoldrick (1996)

Appendix 4.1 Phase 1 Screening Questionnaire

Date:	
Venue:	
Number:	

1. Do you regularly buy yogurt product? ☐ Yes ☐ No	IF NO: EXCLUDE. Thank you for your time, however I am looking for people who buy yogurts regularly. Unfortunately you would not be suitable for this study.
2. How often do you buy yogurt? ☐ Weekly ☐ Less than weekly but more than monthly ☐ Monthly ☐ Less often	
3. What proportion of the household shopping are you responsible for? ☐ Less than half ☐ Half or more	IF LESS THAN HALF: EXCLUDE Thank you for your time, however I am looking for people who are the primary purchasers for their households, Unfortunately you would not be suitable for this study.
4. As I mentioned, the study will involve you viewing a number of labels while a camera records your eye movements. For this to work, you must have a certain standard of vision. Do you have normal or corrected to normal vision? ☐ Yes ☐ No	IF NO: EXCLUDE. Thank you for your time, however I require people with normal or corrected to normal visions for this study. Unfortunately you would not be suitable for this study.
5. What age are you? Please tick the relevant box: ☐ <18 ☐ 18-35 ☐ 36-50 ☐ 51-64 ☐ 65+	IF UNDER 18: Thank you for your time. However, I require people 18 years and over. Unfortunately you are not suitable for this study.

6. Please select the box which describes you best: ☐ Single ☐ Cohabiting ☐ Married ☐ Civil Partnership ☐ Separated/Divorced ☐ Widowed	
7. Please select the box which describes you best: ☐ Student ☐ Employed (including self-employed) ☐ Unemployed ☐ Retired	
8. Do you have children ☐ Yes ☐ No If yes, what age are they: ☐ 0-10 years ☐ 11-20 years ☐ 21-30 years ☐ 31+ years	
9. Are there any specific health concerns which influence your purchase decision? ☐ Yes ☐ No	
10. Observe: ☐ Male ☐ Female	

If still not eligible:

Thank you for your time, however you are not suitable for this study

If eligible:

Contact Information

Name:	
Number:	
Email:	

Appendix 4.2 Phase 1 Labelling Stimuli

Appendix 4.2 has been withheld by the author.

Appendix 4.3 Phase 1 Experiment Outline Protocol

Information on Eye-Tracker

In this study you are going to view a number of labels on this computer monitor, while your eye-movements are recorded using the camera below the monitor here (show participant eye-tracking camera). The camera will let me see where you are looking on the screen.

Because everyone's eye movements are different, we have to do a short exercise to calibrate the eye-tracker so it is used to how your eyes move. You will see a number of dots on the screen and I will ask you to follow this with your eyes. Afterwards I will check if the eye-tracker was properly calibrated. This can take a few times to get right, as you get used to the eye-tracker, but this is normal.

Just like a normal camera, if you move too much, you will fall out of focus, so once we have calibrated the eye-tracker, it is important that you do not move too much. Before we start, I'll ask you if you are in a comfortable position and remind you to try to limit your movements.

Do you have any questions?

Information on Experiment Structure

You are going to be presented with labels for 5 fictitious products. For each product you will first see the label for the front of the product, followed by the label for the back of the packet. You can spend as much or as little time looking at a label as you like.

Once you have finished viewing the image you can press the space bar to move onto the next image. You will see a small cross in the middle of the screen before the image appears. Please look at this cross until the image appears. Once the cross disappears you will be presented with the next image.

So you will see the front of the label for the first product, when you are finished looking at this you can push the space bar. A small cross will appear followed by the label for the back of the first product. This will repeat for the front of the second

product, followed by the back of the second product and so on until you have seen all 5 products. Once you finish viewing the label you cannot go back.

Please look at the labels and consider the products as you would during a typical shopping trip. You do not have to try to remember any of the information on the labels or make any decisions about which ones you prefer while you are viewing them on the screen. You can view the label in as much or as little detail as you like. You do not have to look at everything you are presented with on the screen, only the information that is important to you.

Please remember to limit your head and body movements while you are doing this task, so you do not fall out of focus from the eye-tracking camera. You may like to put your hand on the spacebar before you start, so you do not have to look down once we have calibrated the eye-tracker.

Do you have any questions about what is involved?

Appendix 4.4 Phase 1 Interview Schedule

<table>
<tr><th colspan="2">Opening</th></tr>
<tr><td colspan="2">[Participant's name], Thank you very much for giving up your time to participate today, your contribution and insights are very important. During the interview I would like to ask you some questions relating to the labels you viewed a short while ago, as well as some general questions relating to your food purchases.
Also, before we begin I would like to assure you that everything you say here today will be kept confidential, and should any quotes or excerpts from the interview be used at a later stage, they will be fully anonymous. In order to ensure that I have understood you correctly, I would like to record our conversation for later, is this ok with you?
What is important here also, is that there are no right or wrong answer, but rather your experiences and opinions will help us to gain a better understanding. If at any stage you need clarification, please do not hesitate to ask.</td></tr>
<tr><th colspan="2">TQ1: What (overall) Goals Drive Label Usage?</th></tr>
<tr><td colspan="2">So I would like to begin by getting a sense of a typical food shop for you, such as, how often you go food shopping, where you typically go, how much time you typically spend shopping, and so on.</td></tr>
<tr><td colspan="2">1. Could you please describe a typical food shop for you?</td></tr>
<tr><td>Probes</td><td>1.1 Is there anything in particular which you have to take into account when shopping for yourself or for others (such as dietary restrictions, food preferences, medical conditions etc.)
1.2 When shopping for others, as opposed to for yourself, do you notice any changes in how you shop and look for products?</td></tr>
<tr><td colspan="2">2. During a typical shopping trip, when buying a yogurt product what is most important to you?</td></tr>
<tr><td>Probes</td><td>2.1 Why is this important to you?
2.2 Does [insert product attribute(s)] also influence your decision?
2.3 Why is this (not) important to you?
2.4 When do you normally eat/use yogurt?</td></tr>
</table>

3. I would like you to think of a time recently where you bought a new food product. How do you find out whether the product met your needs?	
Probes	3.1 Do you normally use this approach? 3.2 Why do you do this? 3.3 What other ways of finding out about the product, if any would you consider?
4. Turing to look at the dairy category specifically, when it comes to making decisions, do you think food labels help you to make a choice?	
Probes	4.1 What products do you normally look at this information for? 4.2 What do you look for on the label when buying yogurt? 4.3 Why do you feel this helps when deciding whether or not to buy a product?
TQ2: How do label Specific Factors Influence Label Usage?	
1. Moving on to the product labels themselves, earlier you viewed a number of different products. I would like to discuss these with you now. [Present participant with labels (without heat maps)]. Here are the labels you saw previously. I would like to get a sense of what you were thinking of while looking at these, in particular what information you were looking for while looking at each label.	
2. While viewing label [insert label number] you spent quite a bit of time looking at [insert label element]. Do you typically look at [insert label element] when purchasing a product?	
Probes	2.1 Why is [insert label element] important to you? 2.2 If [insert label element] was not provided, do you believe this would influence your decision to purchase the product? 2.3 When looking at labels, do you normally look just at the front of the packet, or both the front and the back?
3. Looking at the labels you viewed, you typically viewed [insert label element] early on when viewing. Why do you believe this was the case?	

Probes	3.1 Do you ordinarily look for this information straight away?
	3.2 Do you have expectations about where certain information should be/will be placed?
4. When viewing label [insert label number] what information did you use in order to make your decision?	
Probes	4.1 Looking at the eye-tracker results, you spend quite a while looking at [insert label element]. Why was this important to you? 4.2 If [insert label element] was not present what impact do you believe this would have on you? 4.3 Why is knowing [insert label element] important to you? If [insert label element] was high/low, what do you think could happen as result. How do you believe this could affect you?
5. I see you also viewed (did not view) the QR codes on the product labels, are you familiar with these? **If Yes:** Have you ever used these to find out more information about a product?)	
Probes	5.1 Do you think that QR codes will give you more information than the standard label? 5.2 In your opinion are there any advantages or disadvantages to using QR codes? 5.3 On label [insert label number(s)] Facebook and Twitter information was provided. Have you ever looked up a company's social media page before or after buying a product?
TQ3: How do Personal Factors/Dispositions Influence Label Usage	
1. In the context of a general shop to what extent do you feel that labels help you to make a decision?	
	1.1 Why/why not?
	1.2 (If No) Do you believe there might be any advantages to using product labels when making a decision
2. Have you ever found yourself wanting to use the product label but did not?	

Probes	2.1 Do you ever have difficulty finding the information you need? 2.2 Do you find the information presented on labels accessible?
3. In relation to QR codes, you mentioned that you typically (do/do not) use these. Can you explain to me the reasons for this?	
Probes	3.1 Is there anything stopping you from using QR codes?
	3.2 You mentioned that you do/would use QR codes to find out more information. Where do you think you would use these?
4. Have you ever found yourself interested in product information, but unable to use the label presented?	
Probes	4.1 Why do you feel you were unable to use the label? 4.2 What could have been done to make the label easier to be used? 4.3 Can you imagine any circumstance that would affect your ability to use the label?
TQ4: How is label usage related to risk avoidance and benefit seeking behaviours?	
1. Earlier you mentioned that [insert issue] is important to you when you buy a product, what do you believe would happened if the product did not meet this requirement?	
Probes	1.1 Why is [outcome mentioned above] important to you? 1.2 What outcome do you expect if the product meets this requirement?
2. What do you think the main advantages of reading product labels are, if any?	
Probe	2.1 How could this affect you?
3. In your opinion are there any potential disadvantages to using labels?	
Probe	3.1 What impact do you believe this could have on you?

Appendix 4.5 Confirmation of Ethical Approval



UCC
Coláiste na hOllscoile Corcaigh
University College Cork, Ireland

Oifig an Leas -Uachtaráin Taighde agus Nuálaíochta
Office of the Vice President for Research and Innovation

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Cork, Ireland.

+353 (0)21 4903500
vpresearch@ucc.ie
www.ucc.ie

Sean Tanner
Department of Food Business & Development
Room 2.23a
O'Rahilly Building
University College Cork

13 August 2018

Dear Sean
Thank you for submitting your research projects, Log 2016-102 and Log 2017-098 (Phase 1 and 2 of your research entitled "Exploring the factors influencing consumers' motivation to use food product labels in their purchase decisions.") to SREC for ethical perusal. I am pleased to say that we see no ethical impediment to your research as proposed and we are happy to grant approval.
Approval dates were 28 October 2016 (Log 2016-102) and 16 September 2017 (Log 2017-098).

We wish you every success in your research.

Yours sincerely,

Mike Murphy,
Chair of Social Research Ethics Committee

Professor Anita R. Maguire BSc PhD CChem MRSC
Vice President for Research and Innovation

Ollscoil na hÉireann, Corcaigh
National University of Ireland, Cork

Appendix 4.6 Phase 1 Study Information Sheet

Information Sheet



Purpose of the Study. As part of the requirements for the degree of PhD at UCC, I am carrying out a research study. The study is concerned with peoples' use of food labels when making a purchase decision.

What will the study involve? The study will require participants to view a number of food product labels on a computer screen while a camera records participants' eye movements. Participants will then be asked to participate in an interview to discuss their general food purchases and the labels they have viewed.

Where will the study take place? The study will involve only one visit to UCC campus and should last for approximately one and a half hours. As a token of appreciation, you will be provided with a voucher to the value of €30 upon completion of the study.

Why have you been asked to take part? You have been asked because you have indicated that you regularly consumer yogurt products and are the person responsible for purchasing food for yourself and/or your household in addition to having normal or corrected to normal vision.

Do you have to take part? No! Participation is voluntary. Before commencing the study, you will be provided with a consent form outlining your rights. If at any stage before or during the study you wish to withdraw from the study you are free to do so. You may also withdraw from the study up to two weeks after study completion.

If you choose to withdraw from the study within this time frame all data collected relating to you will be destroyed accordingly.

Will your participation in the study be kept confidential? Yes! I will ensure that no clues to your identity appear in the thesis. Any extracts from what you say that are quoted in the thesis or any other publications arising from the research will be entirely anonymous.

What will happen to the information which you give? The data will be kept confidential, available only to me and my research supervisor. It will be securely stored on a password protected computer. On completion of the project, they will be retained for a further ten years and then destroyed.

What will happen to the results? The results will be presented in the thesis. They will be seen by my supervisors, and the internal and external examiners. The thesis may be read by future students and the study may be published in a research journal.

What are the possible disadvantages of taking part? I do not envisage any negative consequences for you in taking part. It is possible that talking about your experiences may cause some distress.

What if there is a problem? At the end of the procedure, I will discuss with you how you found the experience and how you are feeling. No harm is anticipated, but some of the questions are of a personal nature. If you have any concerns after the study, please contact my research supervisors Dr. Mary McCarthy or Dr. Seamus O'Reilly at {redacted}.

Who has reviewed this study? This study has been reviewed and approved by the Social Research Ethics Committee of UCC.

Any further queries? If you need any further information, you can contact me:
Sean Tanner,
Tel: {redacted}
E-mail: {redacted}

If you agree to take part in the study, please sign the consent form provided.

Appendix 4.7 Phase 1 Study Consent Form

Consent Form



I……agree to participate in Sean Tanner's research study.

The purpose and nature of the study has been explained to me in writing.

I am participating voluntarily.

I give permission for my interview with Sean Tanner to be audio-recorded.

I understand that I can withdraw from the study, without repercussions, at any time, whether before it starts or while I am participating.

I understand that I can withdraw permission to use the data within two weeks of the interview, in which case the material will be deleted.

I understand that anonymity will be ensured in the write-up by disguising my identity.

I understand that disguised extracts from my interview may be quoted in the thesis and any subsequent publications if I give permission below:

(Please tick one box:)

I agree to anonymised quotation/publication of extracts from my interview ☐

I do not agree to quotation/publication of extracts from my interview ☐

Signed: ……..…….

Date: ……..

PRINT NAME: ……..……

Appendix 4.8 Phase 2 Retailer Information Sheet

Respondent Recruitment in Retail Stores

What is the purpose of the study?

We are interested in peoples' use of food labels when making purchasing decisions, in particular how they use and make sense of food product labels.

What will the study involve?

For the study, we would like to gather information from a broad sample of customers which would involve administering a short questionnaire to collect demographic data and ask questions relating to the perceptions of different products.

Once questionnaires have been collected their answers will be reviewed and eligible individuals will be invited to participate in the study. The study will last approximately 1 to 1.5 hours and will involve a short task where participants are asked to rate labels for a number of fictional products followed by a short interview to discuss their choices. The study will also seek to understand consumers' opinions of and interest in using QR codes and other digitally enabled labelling innovations. The interviews will be audio-recorded.

We are aiming to have approximately 40 individuals take part in the study which will run between September and December 2017.

What are we asking retailers to do?

We would like your permission to set up a table in the supermarket on agreed dates to administer the short questionnaire. All information will be kept confidential and will not be shared with anyone outside of the project team.

Any further queries?

Sean Tanner **{Phone Number}** **{Email Address}**

Appendix 4.9 Phase 2 Retailer Consent Form

Retailer Consent Form

I……agree to participate in Sean Tanner's research study at the retail outlet ……

The purpose and nature of the study has been explained to me in writing.

I give permission to Sean Tanner to hand out questionnaires to customers for the purpose of recruitment in the aforementioned store.

I understand that personal details or store information will not be shared in future publications, unless agreed in advance.

Signed: _____ Date: _____

PRINT NAME: _____

Appendix 4.10 Phase 2 Initial Participant Contact Outline

Initial Contact Outline

Excuse me, my name is Sean Tanner and I am a student in UCC, as part of my degree I am carrying out a research study, which is concerned with peoples' use of food labels when making a purchase decision.

At the moment I am looking for people who buy yogurt products to participate in my study. The study would involve short tasks where you make decisions relating to an array of yogurt product labels and a follow up interview relating to your purchasing behaviour and label usage. The study would take approximately and hour and a half in total.

I am interested in people who regularly buy yogurt products and represent different ages, genders and circumstances. I would like to ask you a number of questions to see if you are eligible to take part in the study. If there are any questions, which you prefer not to answer, please let me know.

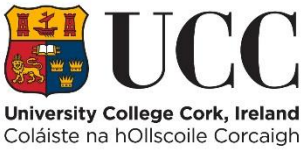
Would you be interested in taking part?

[**If yes:** Administer questionnaire & Provide Consent form]

Thank you very much for giving me your time, I will be in contact with you in the coming days to discuss your participation in the study. Please take a copy of the information sheet and my contact details should you have any further questions.

Appendix 4.11 Phase 2 Screening Questionnaire Consent Form

Questionnaire Consent Form



I……agree to participate in Sean Tanner's research.

The purpose and nature of the study has been explained to me.

I am taking part voluntarily.

I understand that I still have two weeks to decide if I do not want my information to be used, in which case all my information will be deleted.

I understand that my information will be joined with the other information collected and may be used in future papers and presentations but my name or any personal details will not be shared outside of the research team.

Signed: ……. Date: ……..

PRINT NAME: …….

Appendix 4.12 Phase 2 Screening Questionnaire

For Researcher Use Only:

Date:	
Venue:	
Number:	

1. Please tick as appropriate:

☐ Male ☐ Female ☐ Other

2. How often do you buy yogurt?

☐ Weekly ☐ Less than weekly but more than monthly
☐ Monthly ☐ Less often
☐ Never

3. How much responsibility do you have for shopping in your household?

☐ Primary Responsibility
☐ Shared Responsibility
☐ Little to No Responsibility

4. What age are you? Please tick the relevant box:

☐ <18 ☐18-35 ☐ 36-50 ☐51-64 ☐65+

5. Please select the box which describes you best:

☐ Single ☐ In a Relationship ☐ Cohabiting
☐ Married ☐ Civil Partnership
☐ Separated/Divorced ☐ Widowed ☐ Other

6. Please select the box which describes you best:

☐ Student ☐ Employed (including self-employed)
☐ Unemployed ☐ Retired

7. Do you have any diagnosed health problems which have diet-related solutions or consequences (e.g. coeliac disease, high cholesterol, diabetes, cardiovascular disease etc.)?

☐ Yes ☐ No

8. Do you own a smartphone?

☐ Yes ☐ No

9. If you own a smart phone, have you ever used QR codes or NFC tags using your smart phone?

☐ Yes ☐ No ☐ Not Applicable

Using the scale provided, indicate the extent to which you agree or disagree with the following statements.

1. In general, I will be among the last in my circle of friends to buy new dairy products.

Strongly Agree 1 2 3 4 5 Strongly Disagree

2. If I heard there was a new dairy product available in store, I would be interested enough to buy it.

Strongly Agree 1 2 3 4 5 Strongly Disagree.

3. Compared to my friends I buy few dairy products.

   Strongly Agree 1 2 3 4 5 Strongly Disagree.

4. I will buy a new dairy product, even if I have not heard of it.

   Strongly Agree 1 2 3 4 5 Strongly Disagree

5. In general, I am the last in my circle of friends to know about new dairy products which come out in stores.

   Strongly Agree 1 2 3 4 5 Strongly Disagree

6. I know more about new dairy products before other people do.

   Strongly Agree 1 2 3 4 5 Strongly Disagree

Are you interested in being involved in future research with us? If yes, please fill in your name and contact details below:

Name: _____

Phone Number: _____

E-mail: _____

Appendix 4.13 Phase 2 Interview Information Sheet

Information Sheet



Purpose of the Study. As part of the requirements for the degree of PhD at UCC, I am carrying out a research study. The study is concerned with peoples' use of food labels when making a purchase decision.

What will the study involve? The study will require participants to view various yogurt product labels and make decisions relating to their preferences. Participants will then be asked to participate in an interview to discuss their general food purchases and the labels they have viewed. Participants will not be asked to taste or consume any yogurt products as part of the study.

Where will the study take place? The interview will take place in your local supermarket, community centre or the UCC campus and should last between 1 and 1.5 hours.

Why have you been asked to take part? You have been asked because you have indicated that you regularly consume yogurt products and are the person responsible for purchasing food for yourself and/or your household and are in a group of interest for this study.

Do you have to take part? No! Participation is voluntary. Before commencing the study, you will be provided with a consent form outlining your rights. If at any stage before or during the interview you wish to withdraw from the study you are free to do so. You may also withdraw from the study up to two weeks after you have completed the interview.

If you choose to withdraw from the study within this time frame all data collected relating to you will be destroyed accordingly.

Will your participation in the study be kept confidential? Yes! I will ensure that no clues to your identity appear in any published works. Any extracts from what you

say that are quoted in the thesis or any other publications arising from the research will be entirely anonymous.

What will happen to the information which you give? The data will be kept confidential, available only to me and my research supervisors. It will be securely stored on a password protected computer. On completion of the project, they will be retained for a further ten years and then destroyed.

What will happen to the results? The results will be presented in the thesis. They will be seen by my supervisors, and the internal and external examiners. The thesis may be read by future students and the study may be published in a research journal.

What are the possible disadvantages of taking part? I do not envisage any negative consequences for you in taking part.

What if there is a problem? At the end of the procedure, I will discuss with you how you found the experience and how you are feeling. No harm is anticipated from participating in this study. If you have any concerns after the study, please contact my research supervisors Prof. Mary McCarthy or Dr Seamus O'Reilly at {redacted}.

Who has reviewed this study? This study has been reviewed and approved by the Social Research Ethics Committee of UCC.

Any further queries? If you need any further information, you can contact me:

Sean Tanner,

Tel: {redacted}

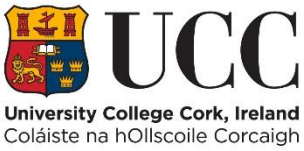
E-mail: {redacted}

Appendix 4.14 Phase 2 Labelling Stimuli

Appendix 4.14 has been withheld by the author.

Appendix 4.15 Phase 2 Interview Consent Form

Consent Form



I…….agree to participate in Sean Tanner's research study.

The purpose and nature of the study has been explained to me in writing.

I am participating voluntarily.

I give permission for my interview with Sean Tanner to be audio-recorded.

I understand that I can withdraw from the study, without repercussions, at any time, whether before it starts or while I am participating.

I understand that I can withdraw permission to use the data within two weeks of the interview, in which case the material will be deleted.

I understand that anonymity will be ensured in the write-up by disguising my identity.

I understand that disguised extracts from my interview may be quoted in the thesis and any subsequent publications if I give permission below:

(Please tick one box:)

I agree to anonymised quotation/publication of extracts from my interview ☐

I do not agree to quotation/publication of extracts from my interview ☐

Signed:……..…….

Date: ……..

PRINT NAME: …….……

Appendix 4.16 Phase 2 Interview Schedule

Opening
[Participant's name], thank you very much for giving up your time to participate today, your contribution and insights are very important. During the interview I am going to present you with a number of different product labels and ask you some questions relating to these products. Before we begin I would like to assure you that everything you say here today will be kept confidential, and should any quotes or excerpts from the interview be used at a later stage, they will be fully anonymous. In order to ensure that I have understood you correctly, I would like to record our conversation for later analysis, is this ok? What is important here also, is that there are no right or wrong answer, but rather your experiences and opinions will help us to gain a better understanding. If at any stage you need clarification, please do not hesitate to ask.

Part 1: Laddering Interview

1. Attribute Elicitation
I am going to present you with a number of different product labels. For each product, you will be able to see the front and back of the label relating to that product. What I would like you to do is to take some time to look at these, and when you are ready, I would like you to group together the products which you think are similar. You can have as many or as few groups of products as you like, and it is up to you to decide which products you believe are best grouped together. Please do take as long as you like to go through the different products. Do you have any questions about what is involved? [Present participant with stimuli and ask them to begin the free sorting task]
2. Laddering Interview
Now that you have had a chance to look at the products I would like to ask you some questions about the products you have just sorted. Before we start, it is important to remember that there are no right or wrong answers, I am just trying to understand what you think of the products. The answers to some of the questions which I will ask, may seem very obvious to you but please do give the answer that you feel best represents your decisions, however obvious or simple it may seem to you. Do you have any questions?

[Begin the laddering interview by starting to construct ladders from the product attributes elicited in previous exercise. Below are a number of techniques that can be used when encountering difficulties while probing responses. Not all techniques may be appropriate in a given interview context.]

1. Attribute Elicitation

I would like to begin by asking you to explain why you have grouped the products together in this way?

Probes	1. Why have you grouped these products together? 2. How is this group of products different from that group of products? 3. What do products in this group have in common with each other? 4. What do products in this group have that the other products do not? 5. Which group of products do you prefer? Why?

2. Negative Laddering

You stated that you do not like products with [attribute]. Why is this the case?

Probes	1. What do you believe would happen if you bought a product which had [undesirable attribute]? 2. Why is that important to you? 3. Why does [consequence] matter to you? 4. So if I understand you correctly you are saying you are concerned that [attribute] will lead to [consequence]?

3. Positive Laddering

You stated that you like products with [attribute]. Why is this the case?

Probes	1. What do you believe would happen if you bought a product which had [attribute]? 2. Why does [consequence] matter to you? 3. So if I understand you correctly you are saying that [attribute] will lead to [consequence]? Why is [consequence] important to you?

4. Using Situational Context

You said you normally consume yogurt when [insert consumption context] why is that?

Probes	1. What would you do if you could not consumer yogurt [insert consumption context]? 2. What is the benefit of having yogurt when [insert consumption context]? 3. Why is this important to you?

5. <u>Proposing the Absence of an Attribute or Object</u> You mentioned that [product attribute] was important to you, what do you think would happen if [product attribute] was not present?	
Probes	1. So, are you saying that [product attribute] results in [insert consequence]? 2. Why is that important to you? 3. What is the importance of [consequence] to you?
6. <u>Third-person Probing</u> Do you think your friends/family think this is important?	
Probes	1. Why do you think this is (not) the case? **2.** What do you think is different between them and you? **3.** Why is [insert here] important to you?
7. <u>Age-Regression Contrast Probe</u> You said that [attribute] was important, would this have always been the case?	
Probes	If no: 1. Why is that? 2. What has changed between then and now? 3. Why is [insert attribute/consequence] important to you now?

<u>Part 2: Sub-Group Exploration</u>

I would like to move on now to ask you some general questions about yourself and your purchasing.	
TQ1: Establish Purchasing Motives and Contextual Factors	
1. Could you please describe a typical food shopping experience for you?	
Probes	1.1 Is there anything in particular which you have to take into account when shopping for yourself or for others (such as dietary restrictions, food preferences, medical conditions etc.) 1.2 When shopping for others, as opposed to for yourself, do you notice any changes in how you shop and look for products?
2. When it comes to buying food, what is important to you?	
Probes	2.1 Why does this matter? 2.2 Does […] ever impact your decision? 2.3 Do others in the household affect your purchases?

3. What makes you want to try/avoid new food products?	
Probes	3.1 Why is this important to you? 3.2 Are you or have you ever been afraid or reluctant to try a new product? If yes, why was that?
4. What do you typically look for in a new food product?	
Probes	4.1 Why is this important? 4.2 What do others think of this?
5. If you were buying a new food product, where would you typically hear about it?	
Probes	5.1 When you buy new products, are you typically searching for something new or do you happen upon it?
TQ2: Assessing Product Category and Health Knowledge	
1. In relation to food, how confident do you feel in your ability to understand the information presented to you on the label?	
Probes	1.1 What information is most important to you when reaching a decision? 1.2 Is there anything you which you believe could be easier to understand? 1.3 Why is that the case?
2. Do you feel comfortable using the nutritional information presented on food labels?	
Probes	2.1 How did you learn to understand the nutrition information on food labels? 2.2 Why is this information [not] important to you?
3. Is there any information which is important to you that you do not find on the label?	
Probes	3.1 Why would this be helpful? 3.2 How would this impact your decision?
TQ3: Risk/Benefit Orientation	
1. How do you feel when you buy a new product?	
Probes	1.1 Do you ever feel nervous when it comes to trying new products? 1.2 Why do you think that is the case?

2. If your regular brand of yogurt was no longer available how would that make you feel?	
Probes	2.1 Do you believe it would be difficult to find a new product? Why? 2.2 Would you have any concerns about having to change product?
3. How often do you consider trying new products?	
Probes	3.1 What triggers you to buy new products? 3.2 What concerns/hope do you have when buying a new product? 3.3 How would you feel if that did (not) happen when you bought a product? 3.4 What would typically lead you to (not) repurchase a new product?

Part 3: Digital Labelling and Social Media Usage

Nowadays of course a lot of information on products is available online and some food products now carry tags and codes which you can use to find out more information about a product, particularly using apps on a mobile phone. You may already be familiar with some of these or used them in the past. So, what I would like to do now, is to ask you about some of these types of label features and what your opinions are of these.	
TQ1: What knowledge and experience of QR/NFC do consumers have?	
1. Have you ever looked up information on products online? If yes, why?	
Probes	1.1 Can you describe a time that you have looked up a product online? 1.2 You mentioned [insert here] why was that important to you? 1.3 What is the benefit to you of looking products up online? 1.4 Where else do you find out about new products?
2. Have you ever heard of or used digital labels such has QR codes or NFC tags?	

Probes	2.1 If yes: I would like you to describe your experience of using these to me. Can you describe a time where you have used these in the past? 2.2 You mentioned [insert] can you provide some more information? 2.3 Why was [important]? If no: Explain QR codes/NFC tags to participant (see below) A QR code is a type of barcode which consists of black squares arranged in a square grid on a white background, which can be read by an imaging device such as a camera {present image of QR code}. They can be used to store information. Many manufacturers now include QR codes on their products. Scanning this using your camera, and a free app on your phone can take you to the company website or another website, where you will be given more information. An NFC tag is an electronic chip that can be printed onto plastic, such as food labels. You can then scan the label with your smartphone by just holding your phone near the label, without the need to use a camera. The NFC tag is read by your phone and it can take you to the company's website or another website to find out more. 2.4 What is your opinion of these technologies? 2.5 Could you visualise yourself using QR codes or NFC tags if they were available on new products? Why (not)?
3. Do you/would you find it difficult to use QR codes or NFC tags?	
Probes	3.1 If yes, what problems have you, or would you expect to encounter? 3.2 Is there anything which has/would stop or discourage you from using QR codes? If yes, what?
TQ2: Do Wider Brand Communities and Social Media Enhance Product Engagement Across Segments?	
1. Are you active on social media, including Facebook, twitter, blogging etc.?	
Probes	1.1 Why is this important to you? 1.2 Do you follow any companies or brands online? Why (not)?
2. Do you ever leave online reviews of products you have tried or share products that you have tried?	

Probes	2.1 Can you provide me with an example of a time where you left a review of a product or shared a product online? 2.2 Why was this important to you? / How did this make you feel? 2.3 If No: Is this something you would consider doing?
3. When finding out about new products or deciding to buy a product, do you look up products online?	
Probes	3.1 Have you ever searched for product reviews or information online before trying a product? Why (not)? 3.2 How do you typically come across new products online? 3.3 What type of information are you looking for online that you might not find elsewhere?
4. Are there any food companies which really stand out to you online?	
Probes	4.1 Can you describe an instance where a company online really stood out to you? 4.2 Is there anything else that they could do to make your experience better?
5. Do you believe information you would get from using QR codes or NFC tags would differ from what you would normally look up online?	
Probes	5.1 If yes, what do you think would be different? 5.2 Why is that important to you?