

FINAL REPORT

A THREE-STAGE INVESTIGATION INTO THE BALANCE OF HEALTHY VERSUS LESS HEALTHY FOOD PROMOTIONS AMONG NORTHERN IRELAND FOOD RETAILERS

FS305021

08/03/16

ULSTER UNIVERSITY BUSINESS SCHOOL,

ULSTER UNIVERSITY



© Crown Copyright 2016

This report has been produced by Ulster University under a contract placed by the Food Standards Agency (the Agency). The views expressed herein are not necessarily those of the Agency. Ulster University warrants that all reasonable skill and care has been used in preparing this report. Notwithstanding this warranty, Ulster University shall not be under any liability for loss of profit, business, revenues or any special indirect or consequential damage of any nature whatsoever or loss of anticipated saving or for any increased costs sustained by the client or his or her servants or agents arising in any way whether directly or indirectly as a result of reliance on this report or of any error or defect in this report.

Foreword and Acknowledgements

Ulster University would like to thank all those who contributed to this research project and the production of this report:

- Ruth Balmer and Sharon Gilmore (Food Standards Agency in Northern Ireland)
- Philippa McKeown-Brown and Paulino Garcia (Consumer Council for Northern Ireland)
- Gerard McFall (Subject Librarian, Ulster University)
- Food industry representatives and other key stakeholders who took part in the study

Prepared by:

Dr. Lynsey Hollywood (Ulster University Business School, Department of Hospitality and Tourism Management)

Dr. Sinéad Furey (Ulster University Business School, Department of Hospitality and Tourism Management)

Dr. Amy Burns (Ulster University Business School, Department of Hospitality and Tourism Management)

Professor Una McMahon-Beattie (Ulster University Business School, Department of Hospitality and Tourism Management)

Dr. Ruth Price (Ulster University, School of Biomedical Sciences, NICHE)

Dr. Maresa Duffy (Ulster University Business School, Department of Hospitality and Tourism Management)

Professor Elizabeth Dowler (University of Warwick, Faculty of Social Sciences, Department of Sociology)

Professor Barbara Livingstone (Ulster University, School of Biomedical Sciences, NICHE)

Professor Paul Humphreys (Ulster University Business School, Business and Management Research Institute)

Mrs Clare Moore and Miss Fiona McCullagh (Millward Brown Ulster, Belfast)

This research was commissioned and funded by the Food Standards Agency in Northern Ireland and the Consumer Council Northern Ireland. The views expressed reflect the research findings and the authors' interpretation; they do not necessarily reflect the funders' policy or opinions.

Contents

	Page number	
Project Summary	12	
Executive Summary	13	
Chapter 1 Setting the scene		
1.0	Introduction	15
1.1	Report structure	15
1.2	Research aim & objectives	16
1.3	Definitions	17
1.4	Methodology	17
1.5	Ethical approval and permissions	18
1.6	Conclusion	18
Chapter 2 Stage 1: Rapid Evidence Assessment		
2.0	Introduction	20
2.1	REA procedure	20
2.2	The food retailing environment	24
2.3	Key drivers of promotional buying behaviour	25
2.4	Consumers' response to food retail promotions	26
2.4.1	Value-seeking	26
2.4.2	Volume-seeking	27
2.4.3	Brand switching	27
2.4.4	Impulsivity	28
2.4.5	Variety-seeking	29
2.5	Factors influencing promotional effectiveness	29
2.5.1	Low prices	29
2.5.2	Store format	30
2.5.3	Prominence	31
2.5.4	Seasonality	31
2.5.5	Product offering	31
2.5.6	Shopper profile	31
2.6	Using food retail promotions to promote healthy diets	32
2.6.1	Switching not shifting behaviour	32
2.6.2	Buy more, eat more	32
2.6.3	Pay less, buy healthy	33
2.6.4	Meaningful message framing makes for healthier choices	33
2.6.5	Price focus is superior to labelling for health	34
2.6.6	Nature of the deal may nurture healthy outcomes	35
2.6.7	Prominence provides potential to improve healthy choices	36
2.6.8	Promoting product categories can persuade purchase decisions	37
2.7	Policy recommendations in respect of food retail promotions	39
2.7.1	Policy – Local implications	39
2.7.2	Policy – National implications	39

2.7.3	Policy – International implications	39
2.8	Concluding remarks	40
2.8.1	Communication messages: Consumer	40
2.8.2	Communication messages: Stakeholder	40
2.8.3	Research Gaps	40
2.9	Conclusion	42

Chapter 3 Stage 2a: In-store audit of food retail promotions

3.0	Introduction	45
3.1	Development of the audit tool	45
3.2	Sample	45
3.3	Data collection	46
3.4	Measurements	47
3.4.1	Nutritional profiling	47
3.4.2	Promotional price	48
3.5	Exploratory data analyses and data screening	49
3.6	Data analysis	49
3.6.1	Descriptive statistics	49
3.6.2	Statistical associations between categorical variables	49
3.6.3	Statistical differences between continuous and categorical variables	49
3.7	Results	50
3.7.1	Types of promotional offers available in-store	51
3.7.2	The promotional costs and percentage saving across promotional offers	52
3.7.3	The ‘prominence’ of promotional items in specific promotional sites in-store	56
3.7.4	The nutritional content of promotional offers across retailers	58
3.7.5	The ‘healthiness’ of promotional products across retailers	70
3.7.6	The ‘healthiness’ of promotional items in specific promotional sites in-store	73
3.7.7	The promotional price and percentage saving in relation to ‘healthiness’	78
3.8	Conclusion	80

Chapter 4 Stage 2b: Online audit of food retail promotions

4.0	Introduction	84
4.1	Development of the audit tool	84
4.2	Sample	84
4.3	Data collection	84
4.4	Measurements	85
4.5	Exploratory data analysis	86
4.6	Data analysis	87
4.6.1	Descriptive statistics	87
4.6.2	Statistical associations between variables	87

4.6.3	Statistical differences between continuous and categorical variables	87
4.7	Results	87
4.7.1	Types of promotional offers available online	88
4.7.2	The promotional costs and percentage saving across promotional offers available	89
4.7.3	The nutritional content of promotional offers across retailers online.	93
4.7.4	The 'healthiness' of promotional products across retailers	105
4.7.5	The promotional price and percentage saving in relation to 'healthiness' online	108
4.8	Comparison between in-store and online	110
4.9	Conclusion	112

Chapter 5 Stage 3: Interviews and case studies on food retail promotions

5.0	Introduction	115
5.1	Data collection	115
5.2	Sample	115
5.3	Development of a topic guide	116
5.4	Interview procedures	116
5.5	Data analysis	117
5.6	Reporting participant quotes	117
5.7	Results	118
5.7.1	Theme 1: Policy levers	118
5.7.2	Theme 2: Promotional activity	123
5.7.3	Theme 3: Perceived effectiveness of promotional offers	134
5.7.4	Theme 4: Perceptions on performance	143
5.8	Conclusion	147

Chapter 6 Conclusion and recommendations

6.0	Introduction	149
6.1	Analytical reflections	149
6.2	Recommendations	155
6.3	Conclusion	159
	References	160

Appendix

Appendix 1	Stage 1 Technical report and data output
Appendix 2	Stage 2a Technical report and data output
Appendix 3	Stage 2b Technical report and data output
Appendix 4	Stage 3 Technical report and data output
Appendix 5	Undergraduate research papers of online food retail promotions
Appendix 6	Undergraduate research paper on Kantar data

List of tables

Table 1	Search strategy stages	20
Table 2	Inclusion criteria	21
Table 3	Agreed search terms	21
Table 4	QAT scoring scale	24
Table 5	Summary of main findings	43
Table 6	Sampling plan	46
Table 7	Frequency and percentage of products assessed in each store category	47
Table 8	Definition of promotions	47
Table 9	Chi-squared tests for All Stores between Phase 1 and Phase 2 for FSA FOP categories red, amber and green	65
Table 10	Chi-squared tests for All Stores between Phase 1 and Phase 2 for FSA FOP categories red and amber/green	66
Table 11	Chi-squared tests for supermarkets/discounters between Phase 1 and Phase 2 for FSA FOP categories red, amber and green	67
Table 12	Chi-squared tests for supermarkets/discounters between Phase 1 and Phase 2 for FSA FOP categories red and amber/green	68
Table 13	Chi-squared tests for convenience stores between Phase 1 and Phase 2 for FSA FOP categories red, amber and green	70
Table 14	Chi-squared tests for convenience stores between Phase 1 and Phase 2 for FSA FOP categories red and amber/green	70
Table 15	Data characteristics	84
Table 16	Definition of promotions	85
Table 17	Chi-squared tests for All Stores between Phase 1 and Phase 2 for FSA FOP categories red, amber and green	100
Table 18	Chi-squared tests for All Stores between Phase 1 and Phase 2 for FSA FOP categories red and amber/green	101
Table 19	Chi-squared tests for supermarkets only between Phase 1 and Phase 2 for FSA FOP categories red, amber and green	102
Table 20	Chi-squared tests for supermarkets only between Phase 1 and Phase 2 for FSA FOP categories red and amber/green	103
Table 21	Chi-squared tests for convenience stores between Phase 1 and Phase 2 for FSA FOP categories red, amber and green	104
Table 22	Chi-squared tests for convenience stores between Phase 1 and Phase 2 for FSA FOP categories red and amber/green	105
Table 23	Participant sample	116
Table 24	Explanation of promotional types	142
Table 25	Evidence source for identified recommendations	156
Table 26	Recommendations	157

List of figures

Figure 1	Project overview	18
Figure 2	Systematic search criteria	22
Figure 3	Promotional types for All Stores, supermarkets/discounters and convenience stores for Phase 1 (P1) and Phase 2 (P2)	51
Figure 4	Promotional price (£) of promotional product (per 100g/ml) across the various promotional types	53
Figure 5	Percentage saving on promotional product (per 100g/ml) across the various promotional types	54
Figure 6	Price (£) promotional product per 100g/ml between the supermarkets/discounters and convenience stores	55
Figure 7	Percentage saving on promotional product per 100g/ml between supermarkets/discounters and convenience stores	56
Figure 8	Percentage prominence of promotional offers	58
Figure 9	Percentage of promotional products in the FOP red, amber and green for <u>energy</u> only	59
Figure 10	Percentage of promotional products in the FOP red and amber/green for <u>energy</u> only	60
Figure 11	Percentage of promotional products in the FOP red, amber and green for <u>sugar</u> only	60
Figure 12	Percentage of promotional products in the FOP red and amber/green for <u>sugar</u> only	60
Figure 13	Percentage of promotional products in the FOP red, amber and green for <u>fat</u> only	61
Figure 14	Percentage of promotional products in the FOP red and amber/green for <u>fat</u> only	61
Figure 15	Percentage of promotional products in the FOP red, amber and green for <u>saturated fat</u> only	62
Figure 16	Percentage of promotional products in the FOP red and amber/green for <u>saturated fat</u> only	62
Figure 17	Percentage of promotional products in the FOP red, amber and green for <u>salt</u> only	63
Figure 18	Percentage of promotional products in the FOP red and amber/green for <u>salt</u> only	63
Figure 19	Percentage of promotional products in the FOP red, amber and green for the mean of <u>energy, sugar, fat, sat fat, and salt</u>	64
Figure 20	Percentage of promotional products in the FOP red and amber/green for the mean of <u>energy, sugar, fat, sat fat, and salt</u>	64
Figure 21	Percentage of products within each of the <i>eatwell plate</i> categories for All Stores	72
Figure 22	Percentage of products within each of the <i>eatwell plate</i> categories for supermarkets/discounters	72
Figure 23	Percentage of products within each of the <i>eatwell plate</i>	73

	categories for convenience stores	
Figure 24	Prominence and 'healthiness' using FSA FOP labelling categories red, amber and green for the total study period for All Stores	74
Figure 25	Prominence and 'healthiness' using FSA FOP labelling categories red and amber/green for the total study period for All Stores	74
Figure 26	Prominence and 'healthiness' using FSA FOP labelling categories red, amber and green for the total study period for supermarkets/discounters only	75
Figure 27	Prominence and 'healthiness' using FSA FOP labelling categories red and amber/green for the total study period for supermarkets/discounters only	76
Figure 28	Prominence and 'healthiness' using FSA FOP labelling categories red, amber and green for the total study period for convenience stores only	77
Figure 29	Prominence and 'healthiness' using FSA FOP labelling categories red and amber/green for the total study period for convenience stores only	77
Figure 30	Promotional types for All Stores, supermarkets and convenience stores for Phase 1: Winter/Autumn (P1) and Phase 2: Spring/Summer (P2)	88
Figure 31	Promotional price (£) of promotional products per 100g/ml across all the various promotional types	90
Figure 32	Percentage saving on promotional products per 100g/ml across the various promotional types	91
Figure 33	Price (£) promotional product per 100g/ml between the supermarkets and convenience stores	92
Figure 34	Percentage saving on promotional product per 100g/ml between the supermarkets and convenience stores	92
Figure 35	Percentage of promotional products in the FOP red, amber and green for <u>energy</u> only	94
Figure 36	Percentage of promotional products in the FOP red and amber/green for <u>energy</u> only	94
Figure 37	Percentage of promotional products in the FOP red, amber and green for <u>sugar</u> only	95
Figure 38	Percentage of promotional products in the FOP red and amber/green for <u>sugar</u> only	95
Figure 39	Percentage of promotional products in the FOP red, amber and green for <u>fat</u> only	96
Figure 40	Percentage of promotional products in the FOP red and amber/green for <u>fat</u> only	96
Figure 41	Percentage of promotional products in the FOP red, amber and green for <u>sat fat</u> only	97
Figure 42	Percentage of promotional products in the FOP red and amber/green for <u>sat fat</u> only	97
Figure 43	Percentage of promotional products in the FOP red, amber and	98

	green for <u>salt</u> only	
Figure 44	Percentage of promotional products in the FOP red and amber/green for <u>salt</u> only	98
Figure 45	Percentage of promotional products in the FOP red, amber and green for the mean of <u>energy, sugar, fat, sat fat</u> and <u>salt</u>	99
Figure 46	Percentage of promotional products in the FOP red and amber/green for the mean of <u>energy, sugar, fat, sat fat</u> and <u>salt</u>	99
Figure 47	Percentage of products within each of the <i>eatwell plate</i> categories for all stores	107
Figure 48	Percentage of products within each of the <i>eatwell plate</i> categories for supermarkets	107
Figure 49	Percentage of products within each of the <i>eatwell plate</i> categories for convenience stores	108
Figure 50	Overview of the food retail policy landscape	118
Figure 51	Factors influencing promotional activity	123

Appendix 1 - List of Tables

Table A	Evidence search
Table B	Keyword search results
Table C	Keyword search results of grey/ non-academic literature
Table D	Results of abstract review
Table E	Maryland Scale - Increasing methodological quality
Table F	Results of the Maryland Scale process
Table G	Quality Assessment Tool
Table H	Results Quality Assessment Tool – Scoring
Table I	Reasons for including studies for full review
Table J	Review of studies with measures of healthiness

Appendix 2 – Protocols and list of tables

Protocol 1	In-store audit tool
Table A	Descriptive statistics (n, %) of promotional types for Phase 1, Phase 2, Total Study Period for All Stores, supermarkets/discounters and convenience stores
Table B	Descriptive statistics ($x \pm SD$) of promotional price (£) per 100g/ml and percentage saving on promotional price per 100g/ml for all promotions combined
Table C	Descriptive statistics ($x \pm SD$) of promotional price (£) per 100g/ml for individual promotional offers
Table D	Descriptive statistics ($x \pm SD$) of percentage saving on promotional price per 100g/ml for individual Promotional offers
Table E	Descriptive statistics (n, %) of prominence of promotions for Phase 1, Phase 2, Total Study Period for All Stores, supermarkets/discounters and convenience stores
Table F	Descriptive Statistics ($x \pm SD$, n, %) of nutritional content of promotional for Phase 1, Phase 2, Total Study Period for All

	stores, supermarkets/discounters and convenience stores
Table G	Descriptive statistics ($x \pm SD$) of the 'healthiness' of promotional products using FSA FOP score; FSA FOP category; Nutritional Quality Index; and the <i>eatwell plate</i> nutritional categories
Table H	Descriptive characteristics (n, %) of the 'healthiness' of promotions in relation to their promotional sites

Appendix 3 – Protocols and list of tables

Protocol 1	Online audit tool
Table A	Descriptive statistics (n, %) of promotional types for Phase 1, Phase 2, Total Study Period for all stores, supermarkets and convenience stores
Table B	Descriptive statistics ($x \pm SD$) of promotional price (£) per 100g/ml and percentage saving on promotional price per 100g/ml for all promotions combined
Table C	Descriptive statistics ($x \pm SD$) of promotional price (£) per 100g/ml for individual promotional offers
Table D	Descriptive statistics ($x \pm SD$) of percentage saving on promotional price per 100g/ml for individual promotional offers
Table E	Descriptive Statistics ($x \pm SD$, n, %) of nutritional content of promotional for Phase 1, Phase 2, Total Study Period for all stores, supermarkets (SM) and Convenience Stores
Table F	Descriptive statistics ($x \pm SD$) of the 'healthiness' of promotional products using FSA FOP score; FSA FOP category; Nutritional Quality Index; and the <i>eatwell plate</i> nutritional categories
Table G	Comparisons between in-store and online
Table H	Descriptive statistics ($x \pm SD$) of promotional price (£) per 100g/ml and percentage saving on promotional price per 100g/ml for all promotions combined
Table I	Descriptive statistics ($x \pm SD$) of promotional price (£) per 100g/ml for individual promotional offers
Table J	Descriptive statistics ($x \pm SD$) of percentage saving on promotional price per 100g/ml for individual promotional offers
Table K	Descriptive statistics ($x \pm SD$, n, %) of nutritional content of promotions

Appendix 4 – Protocols

Protocol 1	Interviews (face-to-face/telephone) with membership organisations related to retail (e.g. NIRC)
Protocol 2	Interviews with the person with responsibility for promotional strategies within each retailer and/or a key point of contact within the organisation
Protocol 3	Interviews with store managers to evaluate potential strategies for developing a healthy store environment

Project Summary

In July 2014 the Food Standards Agency in Northern Ireland (FSA in NI) in conjunction with the Consumer Council Northern Ireland (CCNI) commissioned the Ulster University Business School (in conjunction with its project partners: Northern Ireland Centre for Food and Health (NICHE), University of Warwick and Millward Brown Ulster) to undertake research into the balance of *healthy* versus *less healthy* food promotions among Northern Ireland (NI) food retailers.

More specifically, the key research questions posed include: (1) *To what extent are consumers influenced by food promotions?* (2) *Do consumers face a healthy choice of food promotions in retail stores?* (3) *Do food promotions focus on less healthy products?* and (4) *What type of evidence will help to influence food retailers in relation to communicating healthy eating messages?*

It is anticipated that the research findings will help encourage retailers to promote/further promote healthy products in-store and encourage consumers, in a time of austerity, to purchase healthy food options. To fulfil the aim and objectives of the proposed study a three stage research methodology was proposed. Stage one included a Rapid Evidence Assessment (REA) of international research published to date on food retail promotions. Stage two involved an independent retail audit both in-store and online of NI retailers. Stage three included interviews with retailers and other key stakeholders to explore the feasibility of promotional strategies in delivering public health targets.

The work has provided the Dietary Health Team in the FSA in NI and the CCNI with an updated, NI-specific critical body of evidence on food promotions across food retailers.

Executive Summary

In July 2014 the Food Standards Agency in Northern Ireland (FSA in NI) in conjunction with the Consumer Council Northern Ireland (CCNI) commissioned Ulster University Business School (in conjunction with its project partners: Northern Ireland Centre for Food and Health (NICHE), University of Warwick and Millward Brown Ulster), to conduct research investigating the balance of *healthy* versus *less healthy* food promotions among Northern Ireland (NI) food retailers. This report provides an overview of the main findings of the three-stage investigation and identifies a series of recommendations for change.

Stage 1: Rapid evidence assessment of relevant food retail promotions literature

Results identified no UK/NI-specific studies focused on the healthy balance of food retail promotions. While the international nature of the findings may not be fully applicable to the NI context it may be possible to elicit key learnings and policy recommendations based on international evidence.

Stage 2a and 2b: In-store and online audits of food retail promotions

Results reported that in-store and online food retail promotions in NI were balanced in terms of their *healthy* versus *less healthy* nutritional quality. The healthiness (*nutritional status*) of each product was assessed using a scoring system according to the FSA front of pack (FOP*) nutrient labelling methodology (FSA, 2013)^[1]. In line with this, each product item was assigned an **individual nutrient score** from 1 to 3 [i.e. high (red) =1, moderate (amber) =2 and low (green) =3] for each FOP nutrient: energy (kcal), sugar (g), fat (g), saturated fat (g) and salt (g). This **individual nutrient score** was calculated to create an overall **FOP mean composite score** (i.e. 1 = red, 2 = amber or 3 = green) for each product item. The **FOP mean composite score** per product score ranged from 5 to 15. These scores were then assigned to the appropriate FOP category [i.e. high (red) =1, moderate (amber) =2 and low (green) =3]. A tertile split was used to assign the cut of values for the **FOP mean composite score** as follows: Red = < 8; Amber = 9 to 12 and; Green = 13 – 15, meaning the higher the score the healthier the product item. In using the FOP scoring system the FSA in NI encourages consumers to select products in both amber and green categories and reduce the number of products in the red items consumed as part of a healthy diet. The outcome of the in-store audit identified a positive balance in the healthiness of food retail promotions (52.5% categorised as amber/green and 47.5% of products categorised as red). The outcome of the online audit also identified a positive balance in the healthiness of food retail promotions (53% categorised as amber/green and 47% of products categorised as red).

Stage 3: Interviews and case studies

Results revealed retailers' commitment to achieving this balance. Retailers and membership organisations all expressed the desire to collaborate with the goal of investing in current and future customers' health.

Conclusion

This report concludes that NI retailers are currently achieving a balance in the healthiness of food retail promotions (amber/green versus red FOP categories) however all parties agree that this should continue in the interest of achieving the identified overarching theme of making the healthier choice the affordable and easy choice. As a result of this investigation, seven evidence-informed recommendations have been developed as calls to action for government, consumer bodies and NI food retailers.

* Front of Pack labelling is the colour coding of the key public health nutrients: fat, saturated fat, sugar and salt (and energy) on a per portion/per 100g basis

Chapter 1

Setting the scene

1.0 Introduction

Across the United Kingdom and, more specifically NI, concern about the perceived cost of achieving a healthy diet for consumers has risen^[1]. The British Retail Consortium^[2] identified from bespoke consumer research that the main barrier mentioned by just over one-fifth (21%) of shoppers to eating a more healthy diet is price. Consumers' views included that healthy foods are too expensive, unhealthy foods are promoted and healthy foods are not promoted. Recent CCNI^[3] research found that nine out of ten consumers are worried about the rising cost in food. These concerns cut across age and income brackets: 82% had changed the way they shop, cook and eat.

In NI the direct and indirect costs of overweight and obesity in 2009 were estimated to be £369,799,820^[4]; the equivalent of more than £1 million per day highlighting that a great deal of attention in public spending is focused on public health. Compounding this is the fact that in NI, food prices have risen by 26% between June 2007 and June 2011^[5] (equating to a 12% rise in real terms, taking inflation into account), while wages have not kept pace with inflation thus exacerbating the problem.

In recognition of this, a cross-departmental policy imperative, the obesity prevention strategy for NI – *A Fitter Future for All: Framework for Preventing and Addressing Overweight and Obesity in Northern Ireland 2012-2022* – has recognised the importance of retail food promotions in consumers' food purchasing behaviour and has committed to encouraging and enabling food retailers to “consider reducing point of sale placement of foods which are high in fat, salt, sugar and increasing exposure to promotion of healthier foods” (p.73)^[6].

Subsequently, the FSA in NI (in partnership with CCNI) have been given the responsibility to deliver against this outcome. To date limited NI-specific evidence exists on determining the healthiness of food retail promotions, therefore the FSA in NI and CCNI commissioned Ulster University to undertake the research required to inform and support the delivery of this call to action.

This report presents the results of a three-stage investigation.

1.1 Report structure

This report is organised into six chapters wherein Chapters 2 – 5 discuss the results from each stage of the investigation concluding with Chapter 6, which addresses the next steps for policy makers and practitioners. The remainder of this introductory chapter will explain the aim and objectives of the research, identify the core research questions to be addressed, summarise the methods employed within the study and conclude with a brief overview of the policy implications relating to this study.

The aim of each chapter is summarised as follows:

- **Chapter 2 – Stage 1: REA** - discusses a summary of the evidence to date on food retail promotions
- **Chapter 3 – Stage 2a: In-store retail audit** - presents the results on the healthiness of in-store food retail promotions

- **Chapter 4 – Stage 2b: Online retail audit** - presents the results on the healthiness of online food retail promotions
- **Chapter 5 – Stage 3: Retailer interviews** - explores the perspectives of key stakeholders and retailers on the feasibility of promotional strategies in delivering public health targets.
- **Chapter 6 – Next steps** – identifies key findings from the research, addresses the research questions and sets out recommendations.

1.2 Research aim & objectives

The overarching aim of this research was to investigate the balance of *healthy* versus *less healthy* food promotions among NI food retailers. The specific objectives of this research were to:

1. Review the existing body of literature on promotional offers, health and buying behaviour.
2. Determine whether consumer grocery shopping behaviour is affected by promotional activity.
3. Develop an audit tool for assessing the type and nutritional quality of promotional offers.
4. Assess the nutritional quality of promotional offers amongst food retailers in NI
5. Understand the perceptions of key stakeholders relating to promotional offers within the context of the NI food retail environment.
6. Investigate the different factors influencing the retailers' commitment to promoting certain foods using price offers.
7. Formulate recommendations on creating a healthy shopping environment for consumers¹.

More specifically the aim and objectives of this research were to find evidence to answer the following research questions:

- What is the definition of food retail promotions?
- Do consumers alter their shopping behaviour in response to food retail promotions?
- Do consumer responses to food retail promotions differ in differing retail environments? For example, do consumers shopping in multinational supermarkets react differently to those shopping in local convenience stores?
- Does consumer buying behaviour of food retail promotions differ according to whether the offer is for a *healthy* or a *less healthy* food product?

¹ Please note that this three-stage investigation did not include primary consumer research.

- Do retailers have a rationale for their promotional strategy? What are the factors that affect retail food promotion strategies?
- What previous audits of retailer food promotions have been undertaken, and what methodologies did they employ?
- Are there any areas of interest meriting further research?

1.3 Definitions

There is no clear definition of retail food promotions, which can be considered an umbrella term that includes a range of price related and promotional (including advertising) factors. However, some promotional tactics identified within the grey/non-academic literature included brand matching, loyalty discounts, coupons/vouchers and competitions [7, 8, 9].

For the purposes of this study, our focus on retail food promotions will be defined as 'forms of promotion which are primarily associated with a temporary reduction in price'^[10]. To further explain this 'definition, these price promotions may include direct price reduction (e.g. save 50%: was £2 now £1), bulk discount deals (e.g. Buy one get one free), multi-buy promotions (e.g. any 2 for £3), mix and match promotions (e.g. any 3 for 2: cheapest free), certain % extra free (e.g. 33% extra free), standalone offers (e.g. no pre-promotional price provided: Only £1) and meal deals (e.g. product combinations from a number of choices which make a lunch/dinner at a specified price).

1.4 Methodology

To meet the aims and objectives of the study a three-stage research methodology was implemented.

Stage 1 included a REA to gather and synthesise the existing research in relation to healthy/less healthy food retail promotional offers. The REA, conducted in conjunction with the University of Warwick, included: (a) a rapid review of the academic literature using key search terms; and (b) grey/non-academic literature (e.g. unpublished reports) from key stakeholders within relevant organisations and charities both internationally and specific to NI. The REA search uncovered an abundance of literature on food promotion to children and young people, particularly with respect to television food promotions, which the research team recognises as being only one form of promotion. A television food promotion is considered too specific for the purposes of this REA. Therefore several boundaries have been identified to assist in narrowing the scope of this research. For the above reasons, the focus of this REA is squarely on food *retail* promotions.

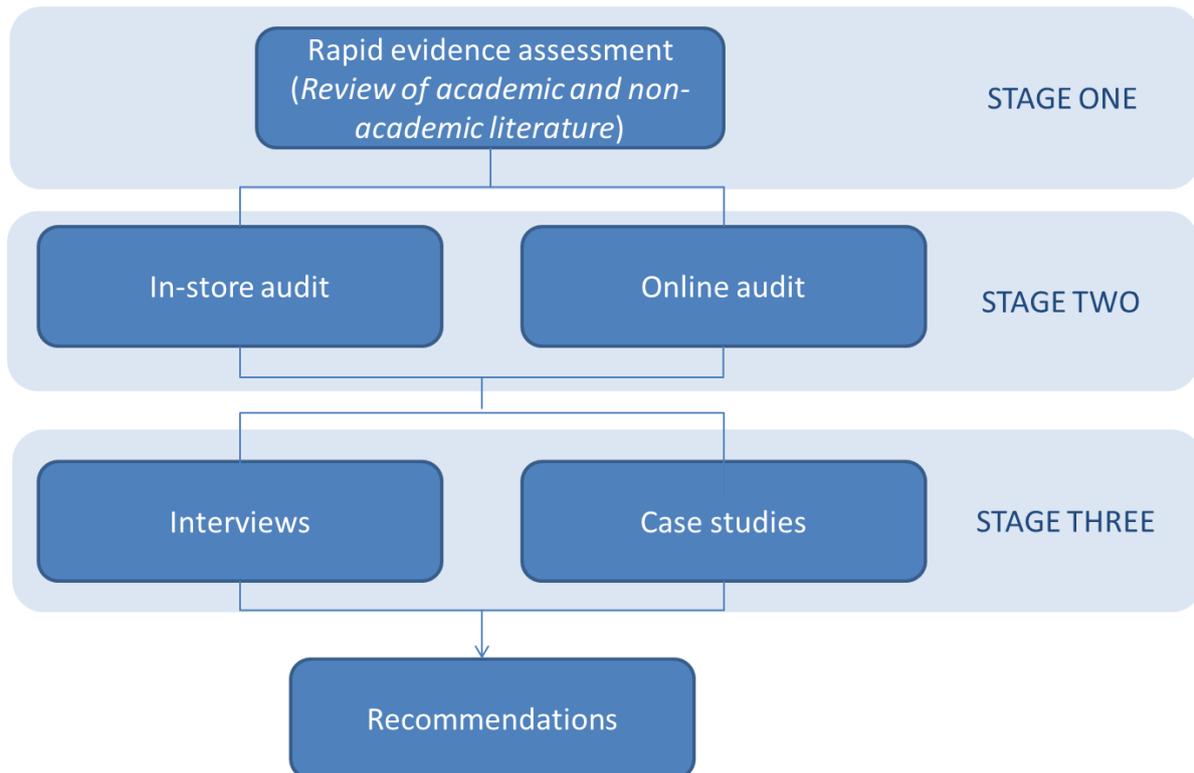
Stage 2 involved the development and implementation of a fit-for-purpose audit tool to determine the current provision of food retail promotions consumers face from retail stores across NI, taking into account the urban/rural divide, areas of deprivation and region. This audit used two approaches (a) in-store and (b) online.

Stage 3 involved conducting interviews/case studies with key individuals and stakeholders, for example: (a) membership organisations related to retail (e.g. Northern Ireland Retail Consortium); (b) the person with responsibility for promotional strategies within each retailer

and; (c) store managers to evaluate potential strategies for increasing consumers' exposure to healthier food promotions both in-store and online.

The project adopted a management structure which identified responsibilities for the progression of the work in line with key tasks, milestones and deliverables set out in the original proposal and in the contract with the funders. Figure 1 provides information relating to each task. All tasks were completed and all deliverables were met within the specified timeframe.

Figure 1 Project overview



1.5 Ethical approval and permissions

The Research Ethics Sub-Committee within the Ulster University Business School approved all procedures involving human subjects. Written informed consent was obtained from all retailers involved within the project. Permission from Head Office and from the store manager of each retailer was sought and granted before conducting the in-store audit.

1.6 Conclusion

This chapter sought to provide an overview to the context of the research and the design of the study.

Chapter 2
Stage 1:
Rapid Evidence Assessment

2.0 Introduction

As part of the first stage of this investigation a REA was undertaken to identify and evaluate the current body of evidence on food retail promotions. This chapter will firstly discuss the procedure undertaken to identify the most methodologically robust studies to date. Secondly, the results of the REA will be discussed in relation to the research questions posed in Chapter one.

2.1 REA procedure

The scope of the REA was based on the following procedure: (1) identification of literature and (2) screening and selection of the literature.

Identification of literature

To identify the literature to date a seven-stage search strategy was undertaken. Table 1 documents each stage of the search strategy

Table 1 Search strategy stages

Stage	Action
1	Previous academic experience within the research team was utilised to devise original search terms.
2	Ulster University Business School's Subject Librarian was approached to corroborate the relevance of defined search terms and sources of relevant literature/information.
3	The final list of search terms was quality assured and cross-checked with FSA in NI's Project Officer and agreed.
4	Key search terms were inputted into a range of relevant electronic databases across multiple disciplines (e.g. business, psychology, nutrition and health).
5	Additional search terms from the on-going review were generated and incorporated into the review.
6	Key search terms were refined and used to search online sources for grey/non-academic literature (e.g. market reports, government reports, trade and media articles).
7	Relevant policy experts / stakeholders within and across the discipline were approached to identify additional literature and to augment the scope of the study.

Inclusion criteria

To determine the conceptual boundaries of the research question and to ensure the rapid nature of this process, the Research Team proposed the following inclusion criteria as displayed in Table 2.

Table 2 Inclusion criteria

Criteria	Rationale
Language	Limit to English studies only.
Recency	Only studies from 2004 onwards to present day (2014) were eligible for assessment due to the dynamic nature of the NI retail environment.
Relevance	The inclusion of individual articles on basis of academic judgement as to the appropriateness to the central research question(s).
Robustness	All searches (excluding grey/non-academic literature) were limited to peer-reviewed journals and scholarly journals only.
Search terms	The research team agreed key words and phrases to be searched across 11 electronic databases and the grey/non-academic literature.

Evidence search

The Research Team identified 11 electronic databases to be searched using the key terms (see Appendix 1) and identified a range of government and non-government websites to include within the grey/ non-academic literature search (see Appendix 1, Table A).

Identification of key search terms

Key search terms were defined by the Research Team, FSA in NI Project Officer, and Subject Librarian taking into account the overarching research question. Basic Search Tips and Advanced Booleans were agreed by the Research Team. Table 3 displays agreed search terms.

Table 3 Agreed search terms

Academic literature search terms (*taking account of regional differences, if any):	• Food/ Promotions / Food Promotions / Special Offers
	• Supermarkets / Multiples / Multinational(s) / Large food retailers
	• Convenience store / Symbol / Symbol group / Forecourt / Independent retailer
	• Consumer/ Consumer behaviour/ Consumer shopping behaviour / Consumer purchasing behaviour
	• Healthy/ less healthy (unhealthy)/balance AND purchase/ shopping/ grocery/ retailers
	• Promotions AND strategies/ cycles/ pricing AND health
	• Market segmentation AND healthy/ food
Grey/ non-academic literature search terms	• Supermarket sales promotions
	• Food retail promotions
	• Health AND food promotions

The Research Team took due account of the above protocol for conducting a REA and all steps were comprehensively detailed in a final technical report in order to arrive at a fully reproducible REA.

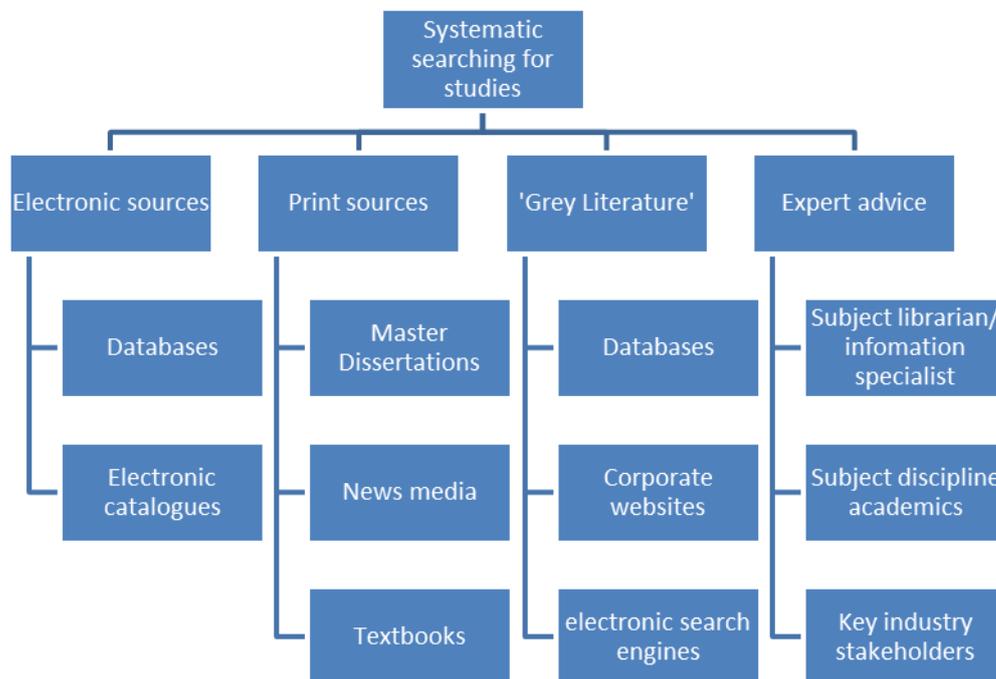
Search strategy types

The Research Team adopted a REA approach as a pragmatic response to providing evidence to the FSA in NI within the timeframe available. The Research Team acknowledges that this approach introduces an element of risk due to the potential for likely biases to be introduced and the potential for important studies to be missed. However, as a contingency the Research Team has purposefully sought to exploit good subject knowledge of the discipline complemented with supplementary advice from the appropriate subject librarian/information specialist(s) and advisory academic/industry partners.

Systematic searching for studies

The Research Team adopted a sequential process for the search. Figure 2 identifies the different sources of information incorporated within the REA. Concessions within the grey/ non-academic literature search terminology were made owing to the rapid turnaround of media updates and in order to meet the prescribed timescales.

Figure 2 Systematic search criteria



Data collection

The Research Team saved all papers relevant to the study on to a secure networked server. A record of the search terms and outcome of every search (academic studies and grey/ non-academic literature) were recorded. Results are reproduced in Appendix 1, Tables B and C).

A total of 58,200 documents were identified via the keyword searches and a final total of 131 documents excluding grey/non-academic literature, after the removal of irrelevant studies which did not meet the specified inclusion criteria and duplicates, was uploaded onto the secure server to progress to full review.

Screening and selecting studies

The Research Team adopted the following approach to screening potential studies. Each abstract was screened and compared and scored against the inclusion criteria which consisted of two core questions:

- i. Did the abstract discuss the balance of *healthy* versus *less healthy* food promotions among food retailers [the scope of this study was widened to include NI, GB, UK, EU and international studies]?
- ii. Was the abstract based on primary research?

Each abstract was then screened and scored for both questions based on the following system: Question 1: 0 = No; 1 = broad context; and 2 = promotions; 3 = healthiness of promotions; Question 2: 1 = review material; 2 = secondary data analysed in a primary manner; and 3 = primary data. A maximum score of six could be achieved. (Please refer to Appendix 1, Table D for the results of the abstract review). A total of 131 abstracts were reviewed. If the study scored ≥ 4 it progressed for full review.

Results identified a total of 75 studies which passed this quality benchmark. Full papers were read and reviewed against the Maryland Scale (please refer to Appendix 1, Tables E and F) and were considered to be sufficiently robust for inclusion in the REA^[11]. Co-moderation was undertaken to ensure consistency across the screening of the full paper review. Two members of the Research Team conducted the scoring of the Maryland Scale (scoring between 1 and 5 to represent increasing methodological robustness) individually then discussed their results to minimise any inter-subject variability. Minimal discrepancies between scores were identified and all results were agreed.

A final total of 29 studies progressed beyond Maryland Scale for the team to conduct a critical appraisal using the Quality Assessment Tool (QAT)^[12].

Each of the 29 studies was marked according to four areas:

1. sample selection
2. bias
3. data collection
4. data analysis

The average scores for each component were then added together to provide an overall score for the study. The minimum score available was 4, with a maximum score of 20. Those studies with the lowest scores were considered the most methodologically robust.

As a minimum requirement, two reviewers assessed the 29 papers or studies. All of the reviewers then discussed the studies at a team review meeting where any discrepancies between the QAT scores were resolved and a common score agreed.

The strength of each study's methodology was then graded using the scoring scale displayed in Table 4 along with the assessment results.

Table 4 QAT scoring scale

Score	Interpretation	Results
4 to 7	Considered as methodologically strong	26 studies
8 to 10	Considered average	3 studies
11 and 12	Considered weak but eligible for consideration	0 studies
>than 12	Excluded from further consideration as they were considered to be so poor methodologically that the results could not be relied upon	0 studies

This final report is based on the findings from the 29 studies identified as *methodologically robust* by the QAT scale (please refer to Appendix 1, Table G). This dataset was utilised in synthesising the findings of the REA, and informing a thorough discussion of the identified research questions. The results of the QAT scale are identified in Appendix 1, Tables H and I.

2.2 The food retailing environment

Retailing has undergone a revolution in terms of the arrival of the UK multiples (Tesco, Sainsbury's and Asda) into NI and, more recently, the changing nature of the format and frequency of household shopping habits^[13] and associated increasing reliance on convenience retailers^[14]. This rising number of, and reliance on, convenience stores and their in-town locations has led to greater intensity of competition in the channel.

In response, retailers are employing a range of different promotional tactics to attract consumers into the store, seeking to compete in terms of price and to increase overall sales. Retailers are including promotions in their retail offering to attract customers, compete and increase sales and revenue by creating differentiation, building brand loyalty and allowing customers to trial new product developments^[15,16]. In this way, promotions not only influence *how much* and *when* consumers buy but also influence brand perceptions and the reference price of individual products. The literature is also clear that effective use of promotions allows retailers to benefit from the *shopping momentum* effect whereby consumers are generally more receptive to additional, unrelated purchases and overall sales volume is increased^[17].

In considering this retail context alongside the macroeconomic situation in NI it is clear that price and the affordability of food are key determinants in deciding where to shop and that promotions are important in managing the household shopping budget^[7]. Many studies^[18, 19, 20] have found that price is the principal influencing factor in food choice, and that price is especially significant for lower-income consumers^[21, 22, 23, 24] who appear less concerned about the health aspects of food. The grey/ non-academic literature^[3, 16, 25] supports this statement. For example Dobson's^[26] study into the impact of retail pricing on overeating and food waste found that retailers offer a wide range of special offers and that price promotions are extensively used by all retailers for all product categories. However, limited evidence^[27] exists on how individual types of promotion may mediate increased food category consumption, hence the need for this study. Hamlin et al^[28] agree that there is no consensus in the literature that price promotion activity at the product level has been effective at either increasing profitability or increasing market share of individual products and brands in the long term.

This REA answers each of the posed questions and seeks to summarise the main findings in meaningful themes. It is important to note that no studies were identified specific to the Republic of Ireland, UK and/or NI therefore the following international studies must be considered as culturally disparate from NI and results may not be replicated in the NI context. As these studies are largely based on the American market it cannot be concluded that the same situation applies in NI.

2.3 Key drivers of promotional buying behaviour

In recent years, the consumer has been impacted by a range of macro-issues; namely, the recent recession in terms of rising food, fuel and housing costs alongside downward pressure on wages and Welfare Reform^[29]. Indeed, a Department of the Environment, Food and Rural Affairs report^[30] on consumers' reactions to rising food prices showed people noting and responding quite dramatically even before the introduction of austerity measures. Other important macro-issues of note include: concerns in relation to public health; food waste; and the potential for price promotions to mislead today's consumers.

More recently, consumers are changing their shopping behaviour based on the key drivers of price and convenience meaning that they are buying less but buying more often^[13, 31]. While this shift in shopping habits has primarily been motivated by the recession the changing nature of the weekly grocery shop has increased the propensity for some consumer groups to make more impulsive purchases leading to reliance on food retail promotions^[7].

In turn, consumers have adopted quite sophisticated strategies^[7] to continue to provision their households. Methods employed include increasingly buying just what they need, cutting back on non-essential items, waiting for promotions / special offers to buy the products they want, using promotions to keep costs under control by seeking out promoted and keener priced products to manage their shopping budgets, and even accepting that their shopping habits are largely dictated by whatever is on special offer – although promotions need to be relevant and appeal to their personal circumstances to be meaningful to them.

2.4 Consumers' response to food retail promotions

Consumers today are 'value' conscious and prone to seek the best deal, thus promotional offers provide consumers with the opportunity to purchase a certain product at a certain price within a specified time period as the major goal of many shoppers is to reduce their weekly expenditure (Glendall et al) ^[32]. Goswami and Mishra's study ^[33] cited in McNeill ^[34] identified store offers as one of the strongest mechanisms used to attract customers to a store. Meanwhile, Waterlander et al ^[35] cite previous research ^[36] that demonstrated how using the word 'sale' beside a price (without actually varying the price) can increase demand by more than 50%.

The academic literature ^[32, 37, 38, 39] is clear that consumers benefit from food retail promotions in terms of brand switching, product switching, category switching, and temporal switching (stockpiling). Ramanathan et al ^[17] discuss how promotional cues (price discounts/savings coupons and vouchers) with expiration dates cause shoppers to add more items to their shopping baskets, *including un-promoted food products*. This has previously been coined the "shopping momentum effect"^[40] to describe consumers who initially approach a shopping situation with a deliberative mind-set, trying to decide what to buy, but who, after they make an initial purchase, shift to another mind-set that makes them more receptive to additional, unrelated purchases. Despite the short term nature of sales promotional offers results from the REA suggest that they can encourage consumers to alter their shopping behaviour in a variety of ways. This section of the report identified several behaviours, which consumers exhibit when responding to sales promotions.

2.4.1 Value-seeking

Research ^[41, 42] suggests that people hold a negative view about price discounts not least due to consumer fatigue with price discounting. Simpson ^[42] (p.238) states "consumers are becoming less responsive to retail sales promotion techniques such as price discounting, where every aisle is filled with 'special price' tickets for products discounted by only minimal amounts". However, consumers reportedly view bonus packs more positively because they focus on the notion that they are getting something "free" for the same price. Because the monetary value associated with bonus packs is unclear, consumers evaluate the bonus part independently of the price, which leads to a more positive evaluation when the focus is on the bonus part and not on its monetary value. Finally, additional and recent studies ^[43, 44] report little, if any, long term changes in consumer choice and therefore little, if any, positive strategic outcomes for the retailer/manufacturer arising from price promotions. These studies suggest that sales promotions stimulate quicker and greater purchases for an immediate but limited period of time but some adverse effects are apparent including reinforcement of switching behaviour, increased price and deal sensitivities and a loss of brand equity.

As we know, consumers are diverse and Foster et al ^[45] (p. 1359) note that lower socioeconomic groups may respond differently to price reductions than other socioeconomic groups. This is because, as stated above, price is especially significant for lower-income consumers ^[22, 23, 46] who appear less health conscious. Several studies ^[22, 23, 46, 24] confirm price as the primary influential factor when lower-income consumers buy food, and further explain the positive relationship between dietary quality and dietary costs whereby more price-sensitive consumers appear less concerned about the health aspects of food. Waterlander et al ^[35] conclude the proficiency of price as a tool to stimulate healthier food

choices among lower-income consumers which is important given how the NCC's ^[47] Health Responsibility Index survey found that stores with less-healthy promotion scores tended to serve lower-income consumers.

2.4.2 Volume-seeking

There is potential to view volume-seeking in terms of both promotional/price bundling and perhaps more prevalent volume-based promotions. Often these types of volume-seeking promotions can be perceived as greater value for money relative to the unit price. With respect to promotional/price bundles, the practice of marketing two or more products in a single package for a special price, Kwon et al ^[48] (p.339) hypothesised that it is a significant predictor of willingness to purchase bundled food products. Specifically, willingness to purchase bundled food products is greater when the discount information for each food product is shown than when the price discount information is presented as a whole. Similarly, diverse consumer groups may respond differently to various types of retail food promotion. Mishra and Mishra ^[49] recount prior research ^[50, 51] that has explored consumer preference for different types of promotional offers. Although promotions tend to be preferred to regular offerings, consumers react differently to price discounts than to volume promotions. Specifically, Mishra and Mishra ^[49] found that people prefer a volume promotion to a price discount because consumers do not suffer from guilty feelings or a need to justify a larger purchase of healthy foods. In contrast, consumers cannot generate good justifications for buying less healthy foods in volume promotions because this would result in consuming more of the "vice food" items. However, when utilising volume based promotions McNeill ^[34] (p.244) recommends that sales promotion should be one of the first points of action for aligning retailer and manufacturer strategy in the industry.

Glendall et al's (2006) study ^[32] is interesting because it starts to address consumer behaviour pertinent to a retail food promotion. The authors asked a sample of grocery shoppers "If the price of this product was reduced substantially for a short time period, would you buy quite a bit more than usual and stock up?" Using Litvak et al's ^[52] taxonomy of stock-up versus non-stock-up products, Glendall et al ^[32] concluded that stockability is a continuum and there are several characteristics that determine whether a particular product is amenable to stockpiling. Stock-up products tend to be relatively cheap, non-perishable and frequently used. Other products may have one or two of these characteristics, but are not commonly stockpiled either because they are perishable (for example, milk, cheese), may lose their freshness (for example, tea bags, instant coffee), or because they are infrequently used (for example, aluminium foil). Some products, such as paper towels and tomato sauce, are stockpiled by some consumers and not by others.

2.4.3 Brand switching

Teng ^[53] demonstrates that when a price discount with and without a minimum purchase requirement is applied to a brand in a hold set (those brands outside of the consumer's consideration when shopping but about which the consumer still holds a negative/neutral or positive attitude or purchase intention), the brand moves from the consumers' hold set to the consideration set, ultimately making the product available to a broader customer base. Teng ^[53] concluded that both types of price discounts are an effective promotional tool (there are no significant differences between the two types of price discount) and may successfully

persuade consumers to shift both their attitudes and overall purchase intentions towards products. He further found (p.19) that as “consumers' attitudes and purchase intentions toward a particular brand increase, their attitudes and purchase intentions toward competing brands decrease”.

A company employing an efficient marketing strategy for their brand, including, but not limited to, promotion and advertising, may not only increase consumers' attitudes and purchase intentions towards their brand, but also may also decrease consumers' attitudes and purchase intentions towards competing brands”. Raghubir et al ^[54] (cited in Teng ^[53]) found that price discounts remove financial barriers, which may prevent consumers from purchasing a certain product based on budgetary factors, and allow them to make a purchase based on quality and other services. Additionally, previous studies ^[55] (cited in Glendall et al ^[32]) concluded that deals on national brands are perceived more positively than deals on generic or private brands.

2.4.4 Impulsivity

Extant studies ^[56] identify that the average shopper arrives at the store undecided about what to buy and is influenced by aspects of the store environment such as displays and packaging. These findings suggest that food shopping is a modifiable behaviour that can be influenced very late in the decision-making process, including at the point of purchase ^[56]. This would indicate that it is fortuitous for retailers that the majority of supermarket purchases are unplanned, allowing for unexpected situational factors to have a major influence on food purchase decisions ^[42]. Indeed, Fam et al ^[57] (cited in McNeill ^[34]) contend that today's grocery consumers are said to be increasingly short on time and somewhat 'jaded' to marketing messages, and are thus more likely to be influenced at the retail interface.

Framing the language of retail food promotions is considered very important in the literature. Glendall et al ^[32] declare that if retailers make the decision to discount, then how this discount is expressed will almost certainly affect consumers' response to it. This response will depend on the product category concerned, whether the brand is a national brand or a store brand, the level of the discount offered, the original price of the product, and the type of store offering the discount. Glendall et al ^[32] cite supporting research ^[58] which suggests that consumers perceive deals framed as gains (for example 'buy two get one free' as better value than those framed as reducing losses (for example 'three for the price of two').

The literature ^[32] is equally unanimous that message framing for price promotions is important. For example, Ramanathan et al ^[17] discuss the managerial implications of sales promotions and highlight the importance of consistency between the positioning strategies retailers use to differentiate themselves and the price promotional strategies (message framing) they use; for example everyday low price retailers would benefit from using temporary price promotions with more restrictions and savings messages framed as “Save £X” while retailers offering unique products and new items would benefit from volume promotional offers (“buy one get one free” etc.) offers with few temporal restrictions.

2.4.5 Variety-seeking

Unfortunately, most academic research focuses on how sales promotions affect aggregate sales of the promoted brand, and not on individual consumer responses to promotions (Ramanathan et al, 2010^[17]). Additional promotional methods employed by retailers include in-store samples. Heilmann et al ^[59] (pp.1261-1262) investigated if in-store samples encouraged a greater number of shoppers to purchase the product on trial. Their research found that shoppers who sampled the product in-store were significantly more likely than non-samplers to purchase the product thereby increasing category and store sales on the day of the promotion. Their research also reported a 60 per cent brand switching rate among samplers i.e. the promoted brand was not the one they typically purchased in the category. Meanwhile, 29 per cent of those who saw but did not participate in the in-store sampling but purchased the promoted brand were “brand switchers”. However, Heilmann et al ^[59] (p.1263) found that while consumers look forward to in-store free samples and feel they make the shopping experience more festive, free samples do not appear to influence store choice.

2.5 Factors influencing promotional effectiveness

The retail food market in NI is largely controlled by the three main multiples (Tesco, Sainsbury's and Asda). However, the NI consumer displays differing shopping behaviours from those typically relied upon by consumers in other regions of the United Kingdom. The Food Standards Agency's *Food and You* ^[14] biannual survey reported in 2012 how 22% of NI consumers shop in symbol group stores, independents and garage forecourts (compared to between 4% and 8% reliance in the rest of the UK). In addition, the rise of the discount retailer within the province has witnessed an increased share of the grocery market leading to intensified retail competition ^[13, 60]. Results from the REA highlighted that retailers exhibited differences in the effectiveness of their promotional offers due to a variety of factors. This report has identified several factors which retailers utilise to ensure the effectiveness of their food retail sales' promotional offer.

2.5.1 Low prices

There was general agreement across the studies that price reducing promotional strategies served consumers to make a purchase. McNeill ^[34] cites Fam et al ^[57] who reported that food retail is an increasingly crowded marketplace with sales promotion-weary consumers but concludes that supermarket shoppers are still looking to be engaged and excited, albeit in different ways. Food retail promotions work differently in diverse countries and consumer cultures. McNeill ^[34] studied a range of supermarket retailers' promotional strategies in China, Malaysia, Singapore and New Zealand and her study sample was adamant that price discounting is the most useful retail sales promotion tool available to them. This finding was based on retailers' perceptions of consumer preference for this tool. Simpson ^[42] is similarly resolute that the most effective promotional tool for grocery sales is price-based or linked to price reductions (price discounting, coupons, discount-linked point-of-purchase or end-of-aisle displays, combination and volume offers).

McNeill ^[34] found that price discounting was probably the most important retail tool used in Chinese stores; price promotions and point of purchase and end of aisle displays tended to be the most used sales promotion methods in Singapore and New Zealand as primarily a competitive strategy; and Malaysian supermarkets emphasised combination and volume

offers and price discounting, with relatively fewer point of purchase and end of aisle displays. Her research cautions a key problem for retail food promotional strategy as there remains a mismatch between retailer and manufacturer needs in terms of sales promotion use. Simpson ^[42] similarly highlights the potential for discord between retailers' and manufacturers' objectives for promotional strategy. The retailer is focused on driving sales at the lowest price possible thereby defeating manufacturers' longer-term goals for brand preference and repeat sales.

However, it is important to note that consumers expect their food purchases to satisfy their quality expectations ^[18, 20, 19, 25] before price is taken into account. Kwon et al ^[48] reinforce the importance of retailers' promotional strategies emphasising food quality before trying to gain additional effects from price presentation strategies.

2.5.2 Store format

As outlined above the retail environment is revolutionising with the entrance of the discounter, the increasing demand for omni-channel retailing and the rising numbers of convenience stores leading to more intense competition in the sector ^[61]. Again, it is important to highlight that the studies referred to in this section are based on the American (and to a lesser extent, New Zealand) markets and therefore may not translate to NI.

The question of whether consumers respond differently depending on the retail context is also interesting because previous studies ^[62, 63, 64, 65, 66] have found that US corner stores are less likely to carry healthy foods such as fresh fruits or vegetables, heavily advertise unhealthy products, and are laden with convenience items that are often high in calories.

Nowhere is sales promotion used as extensively, or has such a large proportion of the marketing budget allocated to it, as in the supermarket retail industry ^[67]. However, the smaller retailer has its role to play and researchers ^[59] have recommended the merits of replicating supermarket studies in other store formats (for example, discount stores and convenience stores) to determine whether the impact of in-store sampling promotions varies across these store formats. Dannefer et al ^[68] (p.e30) conclude that "customers may need motivation and time to adjust their purchasing choices" in light of smaller retailers' attempts to introduce new healthier products in their inventories". They further conclude that "behaviour change among customers may take time as new products are introduced and promoted" ^[68] (p. e31).

Grigsby-Toussaint et al. ^[69] found that non-carbonated drinks (97.7%), fruit and cereal bars (76.9%), and soda (62.2%) were most likely to have some type of marketing technique across all stores (corner, convenience and grocery). Perhaps surprisingly, they also found that when compared to convenience stores the grocery stores were significantly more likely to have promotions for impulse and top-up purchases, for example, breads and pastries (34.6% vs. 17.9%), breakfast cereals (52.0% vs. 22.9%), cookies and crackers (54.2% vs. 25.3%), dairy (70.8% vs. 42.7%), and ice cream (23.8% vs. 9.8%). Similarly, Glendall et al ^[32] cite Krishna et al's ^[55] conclusion that larger stores promoted proportionally more unhealthy products in prominent locations. Store type/format also affects consumers' deal value perceptions; sales offered in discount stores and department stores are perceived to have a lower value than deals in specialty stores and supermarkets and when the store type

is not explicitly mentioned. It is therefore possible to conclude from the REA that store format impacts on the availability and perception of food retail promotions.

2.5.3 Prominence

Kerr et al ^[70] concluded that the *prominence* of locations was more important than the *number* of locations. Van Kleef et al ^[71] suggest that increasing the prominence of healthy products by enlarging their availability, while concurrently permitting access to less healthy food products, is a promising strategy to promote sales. Indeed, recent University of Cambridge, University of East Anglia and MRC Human Nutrition Research ^[72] found that end of aisle displays significantly increase purchases of carbonated drinks by 52% after controlling for price, price promotion and the number of display locations for each product. The researchers recommend that prohibiting or limiting this marketing tactic for less healthy options, or utilising for healthier ones, holds the promising possibility of encouraging healthier lifestyle choices ^[72].

2.5.4 Seasonality

The selected and screened literature does not address the area of the potential impacts of seasonality on the relative success of food retail promotions. The Research Team is aware of the influence of seasonality on food retail promotions and will compensate for this gap in the literature by exploring the impact that seasonality has on retailers' promotional strategies. Findings from the grey/non-academic literature reported the popularity of seasonal offers, such as on retailer's £20 Valentines Dinner for two which was used to challenge consumers' perceptions on the price and value of the retailer when compared to other supermarket multiples ^[74]. In addition, market reports have noted consumers' increased interest in consuming locally sourced and seasonal food subsequently providing opportunity for retailers to promote such items ^[75, 2].

2.5.5 Product offering

Likewise, the REA found no discussion of promotional strategies differing by product offering, instead maintaining a focus on store format which, by necessity, has implications for the number of product categories available to choose from in-store. However, the literature does discuss healthy, less healthy, vice and virtue foods (refer to section 2.6).

2.5.6 Shopper profile

The literature makes much of the fact that it is important to understand the profile of the shopper to target and offer meaningful food retail promotions. McNeill ^[34] (p.255) commented that, "*successful promotions were designed with customer motivations in mind and unsuccessful sales promotions generally occurred when there was little consideration of the needs of the other channel partner or how the promotion would actually work in the retail environment*".

2.6 Using food retail promotions to promote healthy diets

In recent years the academic literature and government policies have identified the importance of retail grocery stores as prime locations for shaping consumers' food choices and to promote healthy dietary behaviours [73]. For this reason the REA explored the use of food retail promotions to promote healthy dietary behaviours. Results from the REA indicated that there remains a lack of robust intervention research into retail food promotions. Much of the existing literature [73, 76, 77, 78] on promoting healthier purchases in supermarkets has been conducted in "middle-class areas among educated consumers and leveraged the health attributes of products or used price discounts" [45] (p.1360). However, several studies did uncover interesting insights relating to the influence of food retail promotions on dietary behaviour. Within Appendix 1, Table J, a review of the studies relevant to the development of the Stage 2 audit tool is presented to identify product categories and their measures of healthiness.

2.6.1 Switching not shifting behaviour

Van Heerde and Neslin [79] posit a model for consumer response to a price promotion on a single product over time identifying short and long-term effects on unit sales. Different theorists [37, 38, 39] explain that there is a strong consensus within the literature that price promotions have a significant impact on short term sales, but do not shift dietary patterns. The sources of this sales 'bump' have been identified as brand switching, product switching, category switching, and temporal switching (stockpiling).

Milliron et al [56] focus on point-of-purchase food shopping interventions as those that involve modifying the food store environment to promote healthy purchasing patterns. In a review of ten environmental food shopping interventions tested since the mid-1970s, Seymour et al [80] (cited in Milliron et al [56]) found wide variability in intervention effectiveness. Half of the studies showed no change in sales of targeted food items (ie, low-fat foods, fresh produce), and half of the studies showed an increase in *some* of the targeted food items.

2.6.2 Buy more, eat more

Martin-Biggers et al [81] cites several studies [82, 37, 83, 84] that indicate that not only do sales promotions have an impact on our short-term shopping behaviour but also have the potential to influence consumer purchasing and may encourage consumers to buy and eat more. For example, Nederkoorn [85] cites Hawkes' [37] hypothesis that sales promotions of food contribute to increased consumption of food. She tested the expectation that high-impulsive people are less resistant to sales promotions and found that sales promotion, weight status, and inhibitory control appeared to have an effect on participants' purchases of snack food. Results showed that participants with less inhibitory control and who were overweight bought more calories of snacks in the sales promotions condition, but not in the control condition. Conversely, normal weight and/or high inhibitory control participants were not affected by sales promotions when purchasing snacks. Dobson's [26] study into the impact of retail pricing on overeating and food waste found that retailers offer a wide range of special offers and that price promotions are extensively used by all retailers for all product categories.

2.6.3 Pay less, buy healthy

More recent studies have also produced mixed results. A 2010 trial by Ni Mhurchu et al ^[84] (cited in Milliron et al ^[56]) evaluated the effect of price discounts and computer-generated educational mailings (tailored to match participants' purchasing habits) on supermarket purchases. Electronic scanner sales data were used to assess change from baseline in percentage energy from saturated fat and other nutrients purchased, as well as change in the number of healthier food items purchased. After six months, the change in percentage of energy from saturated fat or other nutrients purchased did not differ between controls and participants who received price discounts, nutrition education, or both. However, participants who received price discounts on healthy foods bought significantly "more healthy" foods at six and 12 months.

Only one previous published study (cited in Ball et al, ^[86] p.2), the SHOP trial in New Zealand ^[84], has investigated the effectiveness of individually-targeted nutrition education in conjunction with price reduction strategies in promoting healthy eating in a real-world setting, using a randomised controlled trial design. That study found a significant and sustained effect of price discounts on food purchasing (but no impact of the education strategies on food purchasing or nutrient intakes).

A review ^[87] of price-related nutrition interventions (cited in Ball et al, ^[86] p.2) concluded that price reduction strategies show considerable promise as effective approaches to promoting healthy eating (meanwhile, price elevation of less healthy food products has been found to have an associated beneficial effect on their healthier counterparts), but cautioned the need for further research on the effectiveness of such strategies in the broader community, such as through supermarkets.

The academic literature is clear that there is a disparity presented between the cost and healthiness of food. For example, Waterlander et al ^[21] cite several studies ^[22, 23, 24, 46] confirming that lower-income consumers' consideration that price is the primary influencing factor when buying food is important. This is an interesting contrast to the general consumer response whereby food must first meet quality expectations before price is considered ^[18,19, 20, 25]. These studies explain that dietary quality and dietary costs are positively related and more price-sensitive consumers appear less concerned about the health aspects of food.

2.6.4 Meaningful message framing makes for healthier choices

Price reduction is a prevalent promotional strategy. Waterlander et al ^[21, 35, 88, 89] have written and published prolifically in this area. Waterlander et al ^[89] conducted a web-based experiment investigating three levels of price reduction (10%; 25%; and 50%) and three labels ('special offer', 'healthy choice' and 'special offer & healthy choice') on healthy foods defined following the Choice front-of-pack nutrition label².

² CHOICE is an Australian consumer group, which, along with representatives of government, industry and the public health groups, developed a health star rating system. It is a front of pack nutrition labelling scheme which provides a star rating and information about key nutrients (sodium, saturated fat, sugars and kilojoules). The star rating ranges from a half star to five stars (the more stars the better) and is determined by a calculation that considers the good and bad nutritional aspects of the food, providing an objective indication of healthiness. Available from: <http://www.choice.com.au/media-and-news/consumer-news/news/new-star-ratings-for-food-products.aspx>

Participants receiving a 50% price discount purchased significantly more healthy foods for their household in a typical weekly shop than the 10% discount and the 25% discount group. No significant differences were observed in the number of unhealthy foods purchased. The proportion of healthy foods was not significantly higher and the discounts led to an increased amount of energy purchased.

However, Waterlander et al's research ^[89] is in line with earlier studies ^[90, 91, 92] and confirms that it is essential to design price discounts carefully ^[93]. For example, the possibility should be noted that there is some threshold level of 'money off' discount that is meaningful to consumers below which the absolute value of the discount may be too small to elicit any demand effect from most consumers. For example, saving five cents, even if it is a 10 per cent discount, may be perceived by consumers as too small an incentive in real terms, and therefore disregarded (Glendall et al)^[32]. Waterlander et al ^[89] did not observe differences in food purchases between the label conditions, showing that promotion and health labels had similar effects. Indeed, Waterlander et al ^[89] found that price effects overshadowed food labels. However, price discounts seem to have ambiguous effects; they do encourage the purchase of healthy products, but also lead to increased energy purchases.

2.6.5 Price focus is superior to labelling for health

Waterlander et al ^[89] attributed no significant effects in the use of promotional (special offer) or health (healthy choice) labels on food purchases and concluded that price effects overshadowed food labels and, importantly, appear to have ambiguous effects whereby they encourage the purchase of healthy products, but also lead to increased total food purchases. Given that the authors found no significant effects attributable to the labels and no effects of nutrition education alone, Waterlander et al ^[35, 89] recommended focusing on pricing strategies when designing future interventions or policy and restricting price discounts to fruits and vegetables (opposed to all healthier foods). This was because their pricing experiment revealed that 50% price discounts on fruits and vegetables led to significantly increased fruit and vegetable purchases and no changes in other food categories. Importantly, Waterlander et al ^[35] found a considerable increase in the percentage of participants who consumed sufficient fruit and vegetables in the groups receiving the price discounts. The authors explain how significant effects could only be achieved by combining price with information about healthiness, ingredients and production processes, and promotion techniques. In general, pricing strategies focusing on encouraging healthy eating were valued to be more helpful than pricing strategies, which focused on discouraging unhealthy eating.

Sturm et al's ^[94] data improve upon Waterlander et al ^[89] insofar as finding that participation in an up to 25% rebate program for healthy foods in 432 designated supermarkets across South Africa led to increases in purchases of healthy foods and to associated decreases in purchases of less-desirable foods. Specifically, Sturm et al ^[94] found that a 10% rebate predicts a 6% increase in the ratio of expenditure on healthy foods to total food expenditure; a 5.7% increase in the ratio of expenditure on fruits and vegetables (a subcategory of healthy foods) to total food expenditure, and a 5.6% decrease in the ratio of expenditure on less-desirable foods to total food expenditure. A 25% rebate predicts a 9.3% increase in expenditure on healthy foods; an 8.5% increase in expenditure on fruits/vegetables, and a

7.2% decrease in expenditure on less-desirable foods. The price effects remain stable over time.

2.6.6 Nature of the deal may nurture healthy outcomes

Mishra and Mishra ^[95] explain how prior research has examined the various influences of promotional offers on consumer behaviour. They use Wertenbroch's ^[96] terms "virtue" and "vice" consumption to denote healthy versus unhealthy food consumption. This terminology differentiates between products that offer positive payoffs in the short run (vices) and those that offer positive payoffs in the long run (virtues). They conclude that promotions not only influence *how much* and *when* consumers buy but also influence brand perceptions and reference price. They suggest that it is necessary to account for the compatibility between the type of food (whether it is healthy or less healthy) and the promotion (price discount or bonus pack). Mishra and Mishra ^[95] found that consumers prefer bonus packs, as opposed to price discounts, for healthy foods, but they want a price discount rather than a bonus pack for indulgent foods. They explain that this is because consumers do not suffer from guilty feelings or a need to justify a larger purchase of healthy foods. In contrast, consumers cannot generate good justifications for buying less healthy foods in bonus pack promotions because this would result in consuming more of the vice.

Conversely, Mishra and Mishra ^[95] believe that a price discount on a "vice food" can be justified because it acts as a guilt-mitigating mechanism. For virtue foods, the absence of both anticipated post-consumption guilt and the resultant need to justify leads consumers to prefer a bonus pack to a price discount. Huyghe and Van Kerchove (p.421) ^[97] comment that prior research has shown that, all else being equal, consumers prefer bonus packs to price discounts. However, such findings contradict that of the Consumer Council research ^[3] wherein 35 per cent of householders (and 84 per cent responding to the online survey) would prefer to see discounts on single items, across a range of goods, rather than as part of a multi-buy/BOGOF type deal. Consistent with Mishra and Mishra's study ^[95], Huyghe and Van Kerchove ^[97] found that decreasing the price is more effective for promoting unhealthy food, whereas a larger package size is more useful for promoting healthy food. They found that altering the price of a healthy option did not affect its choice likelihood. These findings are equally true for interventions focused on decreasing the value of a product.

The grey/non-academic literature places great emphasis on retail food promotions. Extant GB research ^[26] into the role of food retailers and whether their pricing techniques contribute to the excessive consumption of less healthy food that causes overbuying and obesity found that retailers offer a wide range of special offers and there is a healthy choice of supermarket offers available. The research found that offers are not, on average, less healthy than non-offers (except for sugar levels) and as a general trend, straight discounts are, on average, more skewed towards less healthy items, while multi-buys are more skewed towards healthier items. Dobson ^[26] concluded that consumers need to shop carefully and avoid overbuying less healthy food (particularly for very prominent offers, which can appear very tempting).

2.6.7 Prominence provides potential to improve healthy choices

Marteau ^[72] reported on University of Cambridge, University of East Anglia and MRC Human Nutrition Research that found that end of aisle displays significantly increase purchases of carbonated drinks purchases by 52% after controlling for price, price promotion and the number of display locations for each product. The researchers recommend that prohibiting or limiting this marketing tactic for less healthy options, or utilising for healthier ones, holds the promising possibility of encouraging healthier lifestyle choices. The academic literature supports this finding.

Various studies ^[68, 70, 71] comment that larger stores promote proportionally more unhealthy products in prominent locations and use this statement to purport the potential for prominence to be used positively to encourage consumers to make better informed choices by examining the effect of manipulating the assortment structure and shelf layout of healthier product categories.

Foster et al ^[45] (p. 1359) critically reviewed retailers' promotional strategies, particularly providing price discounts (for example coupons and rebates) to increase the sales of healthier products (eg, coupons, rebates). Foster et al ^[45] (p.1367) found that promoting products via simple placement (stacking products vertically rather than horizontally and positioning at prime placement at eye level) and product availability (increasing the number of healthier variants while simultaneously decreasing the number of less healthy options in a product category) strategies were able to significantly influence the purchase of healthier items in the milk categories.

With particular regard to previous supermarket interventions on healthier items, van't Riet ^[76] (cited in Foster et al ^[45] p.1360) found that these were primarily point-of-purchase approaches (nutrition education posters, shelf-tags, and pop-out flyers) to promote the nutritional value of selected healthier products. Such approaches have had mixed results on the sale of healthier products ^[76]: some studies ^[98] have reported increased sales, perhaps due to their ability to be applied store-wide; whereas others ^[84] found no change, perhaps because they are geared toward educated consumers.

Given their scalability, Foster et al ^[45] hypothesised that in-store marketing strategies that draw attention to healthier products may be effective and sustainable for improving diet quality and health. They applied four major marketing strategies across all categories, with placement as the dominant strategy (increasing the number of facings of the recommended products, placing recommended products at arm/eye level and in the middle of the category aisle, and secondary placements (end caps, dead space stacks, etc); and promotion as the secondary strategy (signage and shelf runners below recommended products: cross-promotion and taste-testings to increase visibility of and access to healthier options). They found that "straightforward placement strategies can significantly enhance the sales of healthier items in several food and beverage categories. Such strategies show promise for significant public health effects in communities with the greatest risk of obesity" (Foster et al, ^[45] p.1359).

Foster et al's ^[45] conclusion regarding increased visibility and accessibility of healthy products is reinforced elsewhere in the literature. For example Kerr et al ^[70] conclude that areas of high promotional prominence have an apparent power and the placement of healthy

products in high-promotional-prominence areas is a more effective approach than simply increasing the number of locations for healthy products. Equally, Bodor et al ^[99] (cited in Dannefer et al ^[68], p.e27) found that strategies such as increasing shelf space, in-store advertising, and locating foods in prime areas have all been demonstrated to increase sales for the promoted items. [*For this reason, phase two of the three-stage investigation focuses on high-prominence areas in stores (power/lead aisles, end of aisle, and promotional buckets)*]. Foster et al ^[45] highlight that such an approach may have to be countered by government incentives given that the strategy of product placement is likely to be motivated by payments by the product manufacturer and profitability of the items.

Turning to the smaller retailer, many interventions ^[99, 100, 101, 102] have been developed to increase their healthy offerings, using a variety of strategies (for example, monetary incentives, in-store promotional materials, recommendations for stocking and promoting healthy foods, guidelines for interacting with customers, nutrition education, cooking demonstrations and taste tests) to change the store environment. Such interventions returned significant increases in stocking healthy foods, and consumer purchases of some healthy foods (for example, low-sodium canned goods, low-fat milk, whole-grain bread, healthier snacks and sandwiches) increased. Dannefer et al ^[68] (p.e30) recommend that simple changes, such as adding healthier versions of products already for sale and moving healthier items to make them more prominent, were the most successful strategies in the smaller retailer setting. Therefore, again prominence, visibility and accessibility are considered important promotional strategies.

2.6.8 Promoting product categories can persuade purchase decisions

Dobson's ^[26] findings that promotional offers are not, on average, more unhealthy than non-offers (except for sugar levels) are in accordance with earlier National Consumer Council research ^[103] which found that 54% of in-store promotions advertised high fat/high sugar foods, while only one in eight promotions features fruit and vegetables. In summary, NCC reported the highest promotions categories for soft drinks, alcohol, confectionery and meat/poultry/fish (a finding reflected in recent NI Kantar shopping data ^[104]), and the lowest promotion categories for fruit and vegetables and the dry grocery sector (for example pasta and canned goods). Additionally, the NCC's ^[47] *Health Responsibility Index* survey found that stores with less-healthy promotion scores tended to serve lower-income consumers.

The grey/non-academic literature ^[3] presents the consumer perception that retail food promotions are typically for less healthy food products. Waterlander et al ^[21] cite research ^[105, 106] that suggests, in the current market-driven economy, fruit and vegetables are promoted less than more lucrative, highly processed foods containing higher levels of fats and sugars. Indeed, Grigsby-Toussaint et al ^[69] found that the items most likely to have some type of marketing technique were non-carbonated drinks (97.7%), fruit and cereal bars (76.9%), and soda (62.2%).

Waterlander et al ^[21] provide a useful summary for effective promotional strategies for healthier food product categories including: reducing the price of healthier options of comparable products (for example, wholemeal bread) compared to unhealthier options (for example, white bread); providing a healthy food discount card for low-income groups; and combining price discounts on healthier foods with other marketing techniques such as

displaying cheap and healthy foods at the cash desk. The grey/ non-academic literature is in agreement. The NCC ^[103] previously recommended (p.5) that retailers, as policy, should “ensure that at least 30 per cent of price promotions are for fruit and vegetables, and run fewer multi-buy promotions on fatty and sugary foods”.

While it has been outlined above that this REA does not focus specifically on the promotion of foods to children, there is an abundance of literature ^[107, 108, 109, 110] that comments on supermarkets’ marketing of *fun* foods to children throughout every product category. Indeed, a study of US parents ranked in-store promotions and cartoon characters on packages second only to TV commercials in terms of their impact on children's eating habits ^[111]. This is important because the nutritional profile of fun foods tends to be poor ^[111], with up to 89 per cent of supermarket fun foods - and as many as 65 per cent of "better for you" fun foods - qualifying as high fat, high sugar or high salt foods ^[108,112, 113]. While industry advocates ^[114] argue that supermarkets already promote healthy foods to children, it is also important to note that Australian parents reserve their "highest level of concern" for child-targeted food marketing encountered at the supermarket "including the placement of products at supermarket checkouts, packaging of food products designed to attract children and the use of premium offers" (Kelly et al, 2008 ^[115], p.3 - cited in Den Hoed and Elliott, 2013 ^[107]).

The literature has much to report on the use of food retail promotional strategies. Waterlander et al's ^[21, 116] studies contribute much to the debate informed by both expert and consumer panels. Their 2009 Delphi study ^[116] identified highly regarded strategies as: making healthy foods cheaper combined with making unhealthy foods more expensive; providing a healthy food discount card exclusively for low-income groups; and combining price discounts on healthier foods with other marketing techniques such as displaying affordable and healthy foods at the checkout. Waterlander et al ^[116] concluded that overall, pricing strategies focusing on encouraging healthy eating were considered to be more constructive than pricing strategies that focused on discouraging unhealthy eating. Meanwhile, their 2010 ^[21] consumer study agreed on the potential success of (a) putting healthy foods more frequently on offer; (b) providing discount cards for low-income consumers; (c) making healthy food items cheaper while making unhealthy food items more expensive; and (d) offering little extras (for example, little gifts or stickers) with healthy food (in particular when directed at children).

When Waterlander et al's studies' ^[21, 116] results are considered together, it can be observed that the experts and the consumers agree on the potential success of making healthy foods cheaper by either discounts or price cuts, as well as offering little extras with healthy foods. In addition to being effective, the experts judged these strategies to be both feasible and affordable. The academic literature ^[86, 45] agrees that there remains a lack of robust intervention research about the most effective means of changing behaviours and promoting healthy eating. Indeed, Kerr et al ^[70] comment that an objective observational measure of grocery store marketing and promotion environments would be useful in evaluating store-based environmental interventions and their likely health effects.

Finally, it is recognised that since none of the studies reviewed were undertaken within a UK/NI/ROI context, the applicability of the learning to NI needs to be considered within Stages two and three of this investigation. This is particularly relevant when considering the socio-demographic factors that affect the NI retail environment.

2.7 Policy recommendations in respect of food retail promotions

The REA has informed policy recommendations at different levels as follows:

2.7.1 Policy – Local implications

The preceding review of the literature has important policy implications locally. It is recognised that the literature does not cite from local studies and therefore caution must be applied in extrapolating policy solutions for NI. However, there remain valuable lessons to be gained, which may impact positively on the multi-disciplinary policy delivery partners' actions in contributing towards their published commitment ^[6] to arrive at increasing consumers' exposure to the promotion of healthier foods through healthy product placement strategies in-store. Notably these include consideration of the meaningfulness of promotions to different consumer groups; potential for price reduction strategies to stimulate healthy food purchases; exploration of potential strategies for smaller convenience retailers, upon which the NI consumer increasingly relies, to use the promotional strategies for healthier product categories that have been proven to work in promoting less healthy foods including their prominent accessibility and availability; and education efforts to raise consumer awareness of the variety of healthy food promotions that are available in-store to reduce the perception that only less healthy food products are promoted.

2.7.2 Policy – National implications

Again it is recognised that the literature does not cite from national studies and therefore caution must be applied in extrapolating policy solutions for the UK. However, given the (inter)national domain of the multiples in the UK, there is greater scope to use the scalability, accessibility and sustainability of their promotional strategies for greater effect at the population level. Specifically, consideration should be given to the greater alignment between retailer and supplier promotional strategies that are ultimately consumer-centric in their design; modification of the in-store environment to afford greater prominence to healthy product categories; and greater use of novel and enticing pricing strategies that encourage consumers, and particularly lower-income consumers, to afford to purchase product categories previously beyond their budget, and allow them to make a purchase based on quality and other higher-order services.

2.7.3 Policy – International implications

It is worth noting that the results from the REA benefit from the international nature of the studies included within the sample. Of particular note is the importance attached to working in partnership, whereby suppliers and retailers can work together towards the achievement of the communal public health objective of obesity reduction. There is much general agreement across the literature that the private retail sector can contribute significantly to informing consumer healthy choices and subsequent healthy diets. This suggests the opportunity for food retailers to play an active role in improving the availability, affordability, accessibility and acceptability of food retail promotions via a healthy food retail environment. Importantly, all partners (suppliers, retailers and stakeholders) by disseminating good practice(s) share responsibility for communicating with and engaging consumers in a public health conversation around the balance of health within food retail promotions. The

research took cognisance of international strategies where health and/or retail were identified as deliverables, for example, WHO Global Action Plan (2013 – 2020) ^[117].

2.8 Concluding remarks

In pulling together the results from the REA the Research Team has identified the following research, policies and practices worthy of highlighting and further consideration.

2.8.1 Communication messages: Consumer

While the private and public sectors can do much to stimulate, simplify and sustain healthy promotional practices, there remains a responsibility on the consumer to make informed and healthy food choices. Consumers need to shop carefully and avoid overbuying less healthy food (particularly for very prominent offers, which can appear very tempting). However, policy should continue to educate the consumer on healthy/less healthy choices so they are a confident, well-informed shopper.

2.8.2 Communication messages: Stakeholder

The REA has uncovered much scope for different stakeholders' consideration. For example, the literature recommends that public health practitioners should be encouraged to work with supermarket chains to increase the relative purchase of healthy foods versus non-core food. This is achievable by incorporating consumer education into food stores by promoting fruit and vegetable consumption; promoting alternatives to sweetened soft drinks; and removing confectionery displays adjacent to check-out counters (Vinkeles-Melchers et al, 2009 ^[118]). Indeed, much progress has been made with some retailers to remove sweets from check out areas generally ^[119, 120] while another has a policy to remove checkout confectionery with characters or designs likely to appeal to children from some tills ^[121].

Price promotion is a proficient tool to stimulate healthier food choices, particularly among lower-income consumers. However, significant effects could only be achieved by combining pricing strategies with information and promotion techniques. In general, pricing strategies focusing on encouraging healthy eating were valued to be more helpful than pricing strategies, which focused on discouraging unhealthy eating. Whereas some studies ^[94, 122, 123] have found positive effects, others ^[84, 124] have not, and some studies ^[83] have shown that price reductions often promote higher energy intake.

Much can be achieved by giving due consideration to prominence of promotional offers for healthy product categories through increasing the availability and accessibility of food retail promotions which will serve to strengthen the triple bottom line in terms of profitability, sustainability and public health. Such an approach will go some way in satisfying consumers, shareholders and regulatory bodies.

2.8.3 Research gaps

This REA has explored a wealth of literature on the subject of retail food promotions. It has sought to answer the questions commissioned by the FSA in NI and CCNI (refer to Chapter 1). Answering these questions has identified further elements (prominence, slotting fees

(manufacturer payments for product placement), and promotion/pricing strategies etc) worthy of attention in the future, some of which will be explored as a function of later stages of this investigation.

Research Gap 1: Investigate retailers' rationale for promotional strategies

The academic literature recommends that future retail food promotion studies should identify how supermarkets decide which foods to promote and how their decisions could play a role in encouraging and strengthening dietary behaviours consistent with public health policy recommendations (Martin-Biggers et al, 2013 ^[81]).

Research Gap 2: Understand shoppers' perceptions of promotional prominence

Theorists recommend gaining a more in-depth understanding of how promotions in prominent locations are perceived by individuals, as well as more information on which promotion locations are encountered most often by customers (Kerr et al, 2012^[70])³.

Research Gap 3: Explore how competitive trading impacts on health

Some theorists (Wilkie et al, 2002 ^[125] – cited in Kerr et al, 2012 ^[70]) recommend that “slotting fees” should be investigated from a health perspective to complement what is already understood from a competitive angle.

Research Gap 4: Investigate optimal proportionality of promotional space

Additionally, “future studies should investigate health-promoting policies that require placement of healthy food items in prominent promotional locations and control the percentage of promotional space given to less-healthy products” while cautioning that incentives may be required for stores to implement such policies, as they may lose income because of reduced sales of less healthy, high-profit products (Kerr et al ^[70], 2012, p.602).

Research Gap 5: Investigate the influence of pricing and labels on shoppers' behaviour

Waterlander et al ^[89] call for more research to unravel how pricing strategies can best be designed to result in overall improved food purchases and what role food labels could play in reaching this goal. They recommend that this research should be specifically aimed at finding ways to direct consumers towards interchanging unhealthier options for healthier alternatives.

Research Gap 6: Conduct experiments into the role of promotional offers on shoppers' choices

Finally, no studies within the REA discussed the influence of introductory product lines on variety-seeking behaviour, however it should be highlighted that consumers may exhibit a propensity to trial a new product simply because it is on promotion.

³ *Slotting allowances* are payments made by manufacturers to obtain retail shelf space. They are widespread in the grocery industry and a concern to antitrust authorities. A popular view is that slotting allowances arise because there are more products than retailers can profitably carry given their shelf space. In this paper, we show that the causality can also go the other way: the scarcity of shelf space may in part be due to the feasibility of slotting allowances. It follows that slotting allowances can be anticompetitive even if they have no effect on retail prices (Marx, L. M. and Shaffer, G. (2009) *Slotting allowances and scarce shelf space*. Available from: <http://competitionpolicy.ac.uk/documents/107435/107587/1.172462ccp10-14.pdf>)

2.9 Conclusion

It is recognised that since none of the studies reviewed were undertaken within a UK/NI context, the applicability of the learning to NI needs to be considered within Stages two and three of this investigation. This is particularly relevant when considering the socio-demographic factors that affect the NI retail environment. Additionally, limited evidence exists on how individual types of promotion may mediate increased food category consumption (Laroche, 2003 ^[27]). It is anticipated that Stages two and three of the investigation will identify and investigate with retailers the pragmatism of retail promotional strategies identified throughout this research. Such a collaborative approach with retailers is important “to facilitate scalability and sustainability” (Foster et al, 2014 ^[45], p.1367). However, the literature identifies propositions for further encouraging healthy retail food promotions effectively. Another notable deficit was the limited number of consumer-centric research studies highlighting the need for further investigative effort in this area. In identifying key recommendations for further research it will be important that the methodological approaches are Northern Ireland specific, consumer centric research and mixed methods comprising both qualitative and quantitative techniques.

The Research Team found the existing research to be heavily quantitative, with limited qualitative impacts. Therefore, the Research Team suggests that, because of recent methodological developments, a mixed methodology is most appropriate for this three-stage investigation.

This three-stage investigation represents a rare and valuable public/private partnership opportunity to work collaboratively with the retailers upon which consumers rely to provision their households to promote healthy eating.

Summary of main findings

The main findings of the REA have been summarised under main themes as reproduced in Table 5.

Table 5 Summary of main findings

Key insights
<ul style="list-style-type: none">• Consumers perceive deals framed as gains (for example 'buy two get one free' as better value than those framed as reducing losses (for example 'three for the price of two').• Using the word 'sale' beside a price (without actually varying the price) can increase demand by more than 50%.• Promotional cues (price discounts/savings coupons and vouchers) with expiration dates cause shoppers to add more items to their shopping baskets, including un-promoted food products (<i>shopping momentum</i> effect).• Consumers react differently to price discounts than to volume promotions.• There is a general preference for volume promotion for healthy foods and those products amenable to stockpiling, while price discount is preferred for less healthy foods.• There is a generally held negative view about price discounts due to consumer fatigue with this promotional strategy. However, price discounts do have a place in food retail promotions because they can remove financial barriers, which may prevent consumers from purchasing a certain product based on budgetary factors, and allow them to make a purchase based on quality and other services.• Consumers view bonus packs more positively than price discounts because they focus on getting something "free" for the same price. Consumers evaluate the bonus element independently of the price.• Consumers respond to food retail promotions by brand switching, product switching, category switching, and temporal switching (stockpiling).• Sales promotions have an impact on consumers' short-term shopping behaviour and do have the potential to influence consumer purchasing and encourage consumers to buy and eat more. Price discounts seem to have ambiguous effects; they do encourage the purchase of healthy products, but also lead to increased energy purchases.• Sales promotion, weight status, and inhibitory control appeared to have an effect on participants' purchases of snack food.• As consumers' attitudes and purchase intentions toward a particular brand increase, their attitudes and purchase intentions toward competing brands decrease.• Shoppers who sample a product in-store are significantly more likely than non-samplers to purchase the product thereby increasing category and store sales on the day of the promotion. A 60 per cent brand switching rate among samplers, i.e. the promoted brand was not the one they typically purchased in the category, was also evident.• Consumer willingness to purchase bundled food products is greater when the discount information for each food product is shown than when the price discount information is presented as a whole.

Chapter 3
Stage 2a:
In-store audit of food retail
promotions

3.0 Introduction

As part of the second stage of this investigation a retail food audit was conducted to assess promotional types, in-store promotional positions, promotional prices and the 'healthiness' of promotions across food retail chains in NI. Firstly, this chapter will discuss the procedure of analysis undertaken before and during the data collection process. Secondly, the results will be presented and discussed in relation to the central research question posed in Chapter one.

3.1 Development of the audit tool

A survey was designed to record and assess information on food promotions among food retail chains in NI. The design of the survey was informed by the findings reported in Stage 1 (REA). Data were collected using Hand Held Computer Aided Personal Interview Devices (HAPI) by fieldworkers from an independent marketing company [Millward Brown Ulster]. HAPI utilises 3G technology which enabled all data to be uploaded immediately onto a server for later analysis.

The survey was designed to collect information on: the retailer (name, store format); food promotions (promotional prominence, promotional type; promotional price and pre-promotional price); product information (brand name, pack size and any other relevant additional information); and the following nutrition information if available: (Front of Pack labelling (FOP), energy in kJ, energy in kcal, carbohydrate in grams, sugar in grams, fat in grams, saturated fat in grams, salt in grams, sodium in grams, protein in grams, and fibre in grams. See Appendix 2, Protocol 1 for the final survey tool.

3.2 Sample

Eight food retail chains currently operating in NI agreed to participate in the survey. One retailer declined the opportunity to participate in stages one and two of the study but reengaged in stage 3. Therefore, the final sample comprised a total (agreed in consultation with the funding body) of 48 stores (24 of which were supermarkets and 24 were convenience stores). Unlike other areas in the UK, a relatively high percentage of food shopping is conducted in symbol/convenience stores in NI. From this baseline, stores were selected proportionate to the number of stores within each retail chain in NI, the type of store format within each retail chain and their geographic location. As can be seen in Table 6 the total sample included hypermarkets, supermarkets, discounters, convenience stores and garage forecourts. Therefore, for comparative analysis, all retail stores were further classified into two categories: (1) supermarkets/discounters and (2) convenience stores to identify any statistical differences between categories.

Table 6 Sampling plan

Retail Format	Retailer Chain	Median	%	Sample size (% of sample)
Supermarkets/discounters (including hypermarkets)	Tesco	54 stores	43.2	10 stores (41.6%)
	Asda*	17 stores	13.6	3 stores (12.5%)
	M&S	18 stores	14.4	4 stores (16.6%)
	Lidl	36 stores	28.8	7 stores (29.2%)
Total		125 stores	100%	24 stores
Convenience stores (including garage forecourts)	Henderson's	300 stores	45.94	11 stores (45.8%)
	Musgrave*	256 stores	39.2	9 stores (37.5%)
	Nisa	64 stores	9.8	2 stores (8.3%)
	Cooperative	33 stores	5.05	2 stores (8.3%)
Total		653 stores	99.99%	24 stores

**Two Sainsbury's stores were included within the original sampling plan however they opted not to participate in Stage 2 of the study therefore one store was added to Supervalu and to Asda.*

3.3 Data collection

Data collection was carried out over two phase periods:

- Phase 1 - pre-Christmas, October/November 2014
- Phase 2 - post-Christmas, February 2015

Within Phase 1 and Phase 2, 3201 and 3580 products were assessed respectively from the following promotional sites: promotional buckets; promotional aisles; ends of aisles; promotional stands/standalone displays; promotional fridges; promotional freezers; and at the checkout stands. The frequency and percentage of products assessed in each store category are displayed in Table 7. No alcoholic drinks were included within this study.

Table 7: Frequency and percentage of products assessed in each store category

Store category	Number of items assessed	Percentage of total
Supermarket/discounters	4293	63%
Convenience stores	2488	37%
Total	6781	100%

As a wide range of promotional offers was identified across the retailers, to assist analysis all promotional products were further classified into the categories outlined below in Table 8.

Table 8 Definition of promotions

Type	Definition	Example
Bulk Discount	Product available as part of deal for buying more than one of the SAME product	e.g. Buy one get one free, buy one get one half price, buy two get a third one free, buy one get one half price
Price Reduction	The pre-promotional price is shown alongside the price reduction = £xx savings shown	e.g. Save 50% was £2 now £1
Standalone offer	No information on pre-promotional price is provided and no price saving is shown	e.g. Only £1, Only £3
Multibuys	The SAME product for a special price (but may have flavour variations)	e.g. Any 2 for £3, Any 3 for £5
Mix and Match	This is a choice combination of DIFFERENT products - for a set price	e.g. Any 3 fruit items for £3, Any 2 frozen items for £5, 3 for 2 - cheapest free
Certain % extra free	No price or cost saving is shown however the pack size is offering a certain % extra free	e.g. 33% extra free, 150ml extra free
Meal Deals WITH CHOICE	Product combinations FROM A NUMBER OF CHOICES which make a lunch/dinner at a specified price.	e.g. main, sides and dessert

3.4 Measurements

In order to later assess the promotions in terms of their 'healthiness' and 'promotional savings' a range of scoring methods was applied as follows:

3.4.1 Nutritional profiling

Front of pack (FOP) nutrient labelling system

To assess the promotions in terms of their 'healthiness' a Front of Pack (FOP) nutrient labelling system was used. This scoring system focuses on the 'risk' nutrients and energy density values displayed FOP which are directly associated with health. This system was chosen after evaluation of a number of scoring tools because: (i) it is a fit-for-purpose tool suitable for non-specialists to implement and may therefore be useful to retailers; (ii) it utilises the FOP information faced by consumers when making their food choice decision and; (iii) it allows nutrient level comparisons enabling recommendations for reformulation opportunities.

Each product item was assigned an **individual nutrient** (energy, sugar, fat, saturated fat and salt) was assigned a score from 1 to 3 [i.e. high (red) =1, moderate (amber) =2 and low (green) =3] according to the FSA front of pack (FOP) nutrient labelling methodology^[1]. The **individual nutrient score** (energy, sugar, fat, saturated fat and salt) was calculated to create an overall **FOP mean composite score** (i.e. 1 = red, 2 = amber or 3 = green) for each product item.

Energy values (kcal) were initially categorised based on the classifications by Bell et al. (1998)^[47] low, <3.5 kJ g⁻¹; moderate, 3.5–4.3 kJ g⁻¹; high 4.4–5.6 kJ g⁻¹; very high, >5.6 kJ g⁻¹ and then further adapted by collapsing the low, moderate and high groups into the following categories:

- **Per 100g:** High (red = 1) >560kJ; moderate (amber = 2) >440 to ≤ 560kJ; and low (green =3) ≤440 kJ
- **Per 100mls:** High (red = 1) >280kJ; moderate (amber = 2) >220 to ≤ 280kJ; and low (green= 3) ≤220 kJ

The **FOP mean composite score** per product score ranged from 5 to 15. These scores were then assigned to the appropriate FOP category [i.e. high (red) =1, moderate (amber) =2 and low (green) =3]. A tertile split was used to assign the cut of values for the **FOP mean composite score** as follows: Red = < 8; Amber = 9 to 12 and; Green = 13 – 15.

Nutritional Quality Index

A median split was applied to the total FOP scores (i.e. 5 - 15) obtained from the promotional products to categorise foods as being 'less healthy' (between 5 - 10) and 'healthy' (between 11 - 15).

Eatwell plate

Each promotional product in the dataset was assigned a category in the *eatwell plate* (Public Health England, 2014^[127]). Composite foods were assigned into which ever food group was most abundant in that particular food following the guidance document provided by Public Health England (2014^[127]). A sixth category was also created for those food items which could not be assigned an *eatwell plate* category e.g. tea, coffee, stock cubes, spices.

3.4.2 Promotional price

The overall promotional price of each product was calculated to obtain the promotional price per 100g/ml of promotional product {(promotional price of product/total promotional weight of product)*100}. The overall non-promotional price was calculated to obtain the overall non-promotional price per 100g/ml of promotional product {(non-promotional price of product/total promotional weight of product)*100}. Subsequently, it was possible to then obtain the percentage promotional saving per 100g/ml {(difference pre-post promotional price per 100g/ml / promotional price of product 100g/ml)*100⁴.

⁴ Please note these findings must be interpreted with caution given the supermarket retailers' lower baseline price.

3.5 Exploratory data analyses and data screening

All data were uploaded from HAPI into the Statistical Package for Social Sciences (SPSS, version 22 for Windows, Inc., IBM). Prior to any statistical analyses, an exploratory analysis was carried out to screen the data for detection of outliers/mistakes and to check that the variables did not violate any parametric assumptions. Missing values were replaced with -999 using the system missing function in SPSS. Nutritional information from food products was recorded per 100g/ml by the researchers during the survey collection. Exploratory analyses indicated that the promotional price and percentage saving variables were skewed, therefore, log 10 transformations were applied to normalise the data in order to meet the assumptions for parametric testing of continuous variables.

3.6 Data analysis

The analysis procedures are outlined as follows.

3.6.1 Descriptive statistics

The distribution (n; %), frequency (%) and/or mean \pm SD of the following variables were measured:

Promotion type; Prominence; Price per 100g/ml product; percentage promotional saving; raw macronutrient content (g) per 100g/ml product and Total FOP (1-3) per 100g/ml of each nutrient (N=5); Total score FOP (5-15) for each product per 100g/ml; FOP final Category (1-3) for each product per 100g/ml; Nutritional Quality (1 or 2) - '*less healthy*' and '*healthy*'; and the *eatwell plate* category (1-6).

3.6.2 Statistical associations between categorical variables

Chi-square tests for independence were used to explore potential associations between categorical variables (i.e. promotional type: study phase, retailer type, prominence). The chi-square test determines if there is a significant difference between expected and observed results. Phi and Cramer's V coefficients were also calculated and effect size was reported in accordance with Cohen's (1988^[128]) criteria. Post hoc tests were conducted to determine which cells were statistically significant.

3.6.3 Statistical differences between continuous and categorical variables

Independent t-tests were used to assess differences between continuous variables (i.e. promotional price and percentage saving) and categorical variables with only two groups (i.e. Nutrition Quality Index).

One way ANOVAs were carried out to assess differences between continuous variables (i.e. promotional price and percentage saving) and all of the categorical variables with more than two groups (i.e. *eatwell plate* category). Post hoc comparison tests were made using Bonferroni (adjusted for multiple comparisons) to assess for differences between the groups.

Values of $P < 0.05$ were considered statistically significant.

3.7 Results

Within this chapter results will be presented and discussed on the following promotional variables measured in-store during Phase 1 (P1), Phase 2 (P2), Total Study Period (combined phases) for All stores combined; supermarkets/discounters stores only; and convenience stores only:

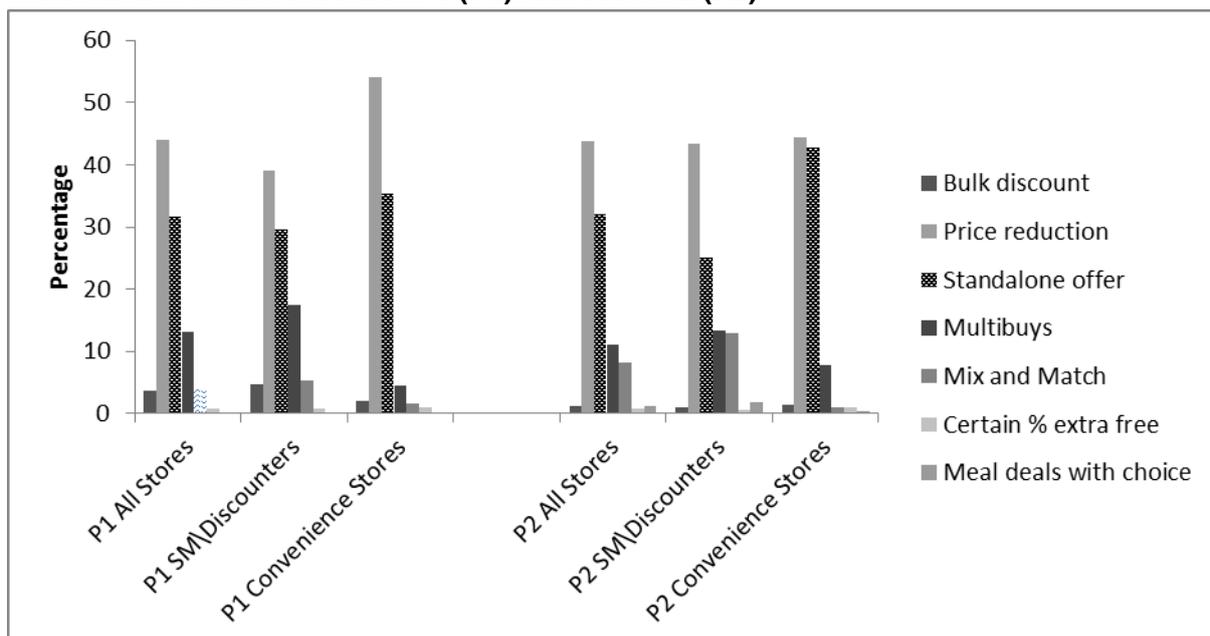
1. Types of promotional offers available in-store;
2. The promotional costs and percentage saving across promotional offers available in-store;
3. The 'prominence' of promotional offers in specific promotional sites in-store;
4. The nutritional content of promotional offers across retailers in-store;
5. The 'healthiness' of promotional offers in specific promotional sites in-store;
6. The 'healthiness' of promotional offers across retailers in-store;
7. The promotional price and percentage saving in relation to 'healthiness' in-store

3.7.1 Types of promotional offers available in-store.

The frequency and percentage of promotional offers assessed in-store for Phase 1, Phase 2 and for the total study period for all stores and across store type can be seen in Appendix 2 Table A. A series of chi-squared tests for independence was used to detect statistical significant associations in promotional type offers between the phases and between store type.

The main types of promotional offers within all stores combined for the total study period were 'price reductions' (n= 2979, 43.9%), 'standalone offers' (n = 2160, 31.9%) and 'multibuys' (n = 818, 12.1%). Collectively these amounted to 88% of all offers recorded. Notably, there were no 'meal deals with choice' offered in Phase 1 across retailers and very few offered in Phase 2 (n=47). Across store type there were significant differences between the frequency of promotional types ($X^2(7, n=6653) = 379.22, P < 0.001, \text{Cramer's } V = 0.239$). Notably, the supermarkets offered a greater number of 'multibuys' (15.7% vs 6.5%) and 'mix and match' (9.4% vs 1.3%) promotions compared to the convenience stores. However, the convenience stores offered a greater number of 'standalone' offers (40% vs 28%). Between phases there were some significant differences across store type for promotional types. However, on all occasions the effect size was modest (Figure 3).

Figure 3: Promotional types for all stores, supermarkets (SM)/discounters and convenience stores for Phase 1 (P1) and Phase 2 (P2)



Specific key findings for all stores; supermarkets/discounters and convenience stores are as follows:

All stores

For all stores combined there were slight differences in promotional types offered between phases although there was a significant decrease in the frequency of 'bulk discount' (P1, n=120 vs P2, n=43) and a significant increase in the frequency of 'mix & match' (P1, n=132

vs P2, n=295) and 'meal deals' (P1, n=0 vs P2, n=47) promotions in Phase 2 compared to Phase 1 of the survey (X^2 (7, n=6653) =142.899, $P<0.001$, Cramer's V= 0.147).

Supermarkets/discounters

The supermarkets'/discounters' frequency of 'bulk discounts' (P1, n=115 vs P2, n=23), 'standalone' (P1, n=630 vs P2, n=544) and 'multibuys' (P1, n=370 vs P2, n=288) promotions significantly decreased in Phase 2 ($P<0.001$). Meanwhile, 'mix and match' (P1, n=115 vs P2, n=280) and 'meal deals' (P1, n=0 vs P2, n=41) promotions significantly increased in Phase 2 compared to Phase 1 of the study (X^2 (7, n=4191) =180.37, $P<0.001$, Cramer's V = 0.207).

Convenience stores

Within the convenience stores sample, there were some notable significant differences between phases. The 'standalone offers' (P1, n=380 vs P2, n=606), and 'multibuys' (P1, n=49 vs P2, n=111) promotions significantly increased during Phase 2 compared to Phase 1 of the study (X^2 (7, n=2462) =40.01, $P<0.001$, Cramer's V= 0.127).

3.7.2 The promotional costs and percentage saving across promotional offers

The mean \pm standard deviation of the promotional price per 100g/ml and percentage saving for all promotional offers combined and for promotional offers individually for Phase 1, Phase 2, and for the total study period and for all stores and across store type can be seen in Appendix 2 – Tables B, C and D. Independent t-tests and one-way between group ANOVAs with Bonferroni post-hoc tests were used to test for statistical significant differences.

Overall, for the total study period across the retailer types, there were significant differences in the mean promotional prices offered (t (5863) = 8.7, $P <0.001$). Specifically, the convenience store retailers offered lower average promotion prices (£0.54) compared to supermarket/discounters (£0.66). Furthermore, the convenience store retailers also offered a greater percentage saving (33%) on promotions compared to supermarkets/discounters (28%) (t (4756) =8.8, $P < 0.001$).

Within Phase 1 the convenience store retailers offered lower average promotional prices (£0.52) than the supermarkets/discounters (£0.64) (t (2360) = 6.0, $P<0.001$) and a greater percentage saving (29.9% vs 26.1%) (t (1598) = 4.5, $P<0.001$).

Similarly within Phase 2 the convenience store retailers (£0.54) offered lower average promotional prices than the supermarkets/discounters (£0.67) (t (3372) = 6.4, $P<0.001$) and a greater percentage saving (37.4% vs 30.7%; t (1570) = 8.5, $P<0.001$).

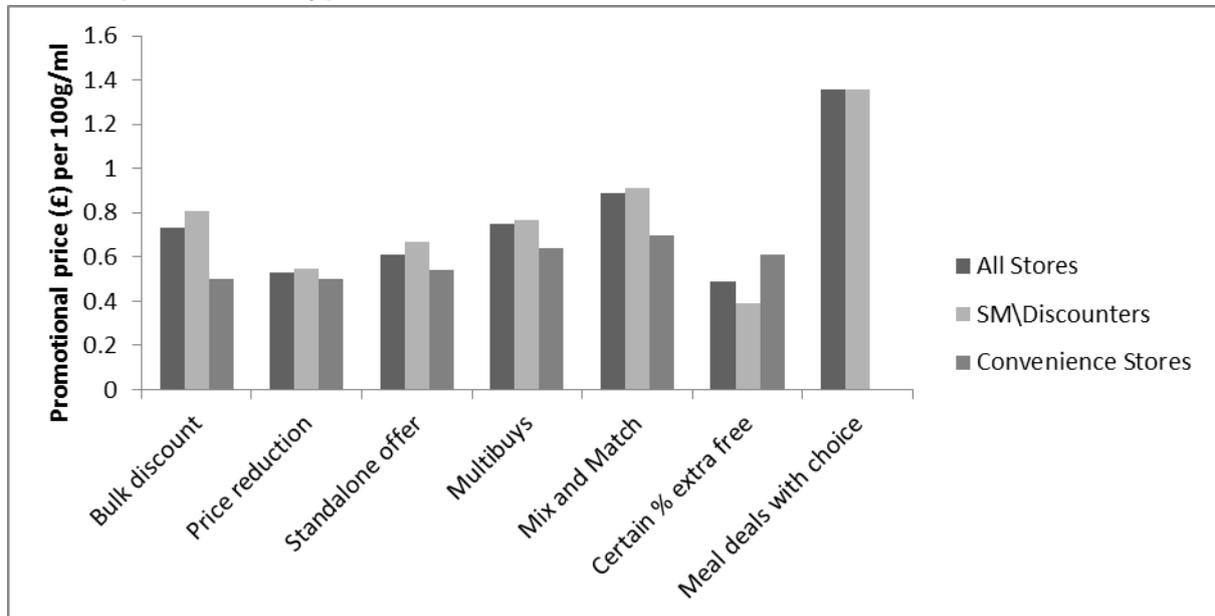
Within the promotional categories (bulk discount, price reduction etc.) there were significant differences in the promotional prices F (6, 6519) = 42.7, $P<0.001$, although, the effect size was small (partial eta square = 0.004). The convenience stores provided cheaper promotional prices on 'bulk discount', 'price reductions', 'standalone' 'multibuys' and 'mix and match' ($P < 0.001$) compared to the supermarkets/discounters. However, the supermarket/discounters provided better value on 'certain % extra free' compared to the convenience stores.

Specific key findings for all stores; supermarkets/discounters and convenience stores are as follows:

All stores

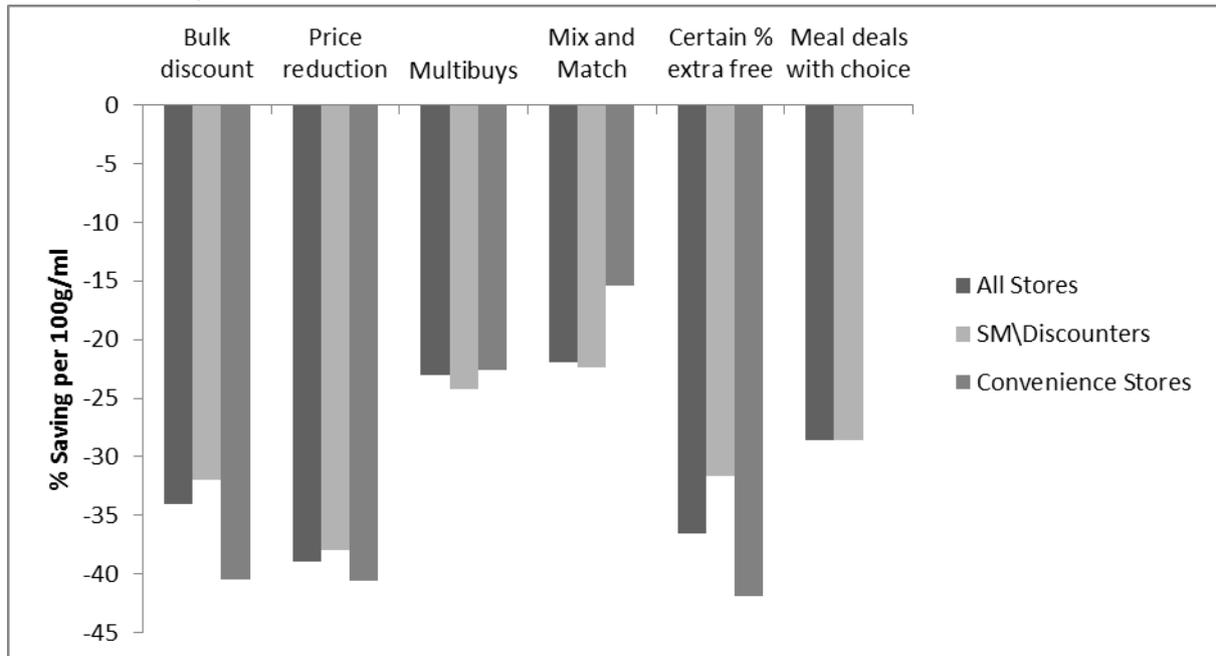
For the total sample of stores there were significant differences in promotional prices between the various promotional types, $F(6, 6519) = 42.7, P < 0.001$. More specifically, the costs of 'price reduction' promotions (£0.52) and 'certain % extra free' (£0.48) were lower compared to all the other promotional types ($P < 0.001$). Notably, 'meal deal' promotions were significantly more expensive than all the other promotions (£1.36, $P < 0.001$) (Figure 4).

Figure 4: Promotional price (£) of promotional product (per 100g/ml) across the various promotional types



There were also significant differences between the promotional types in relation to percentage saving for the total sample ($F(6, 4740) = 836.77, P < 0.001$). The greatest percentage saving was found for the 'price reductions' (39%), 'certain % extra free' (36.6%), 'bulk discount' (34.5%) and 'meal deals' (28.6%) compared to the other promotion types ($P < 0.001$) (Figure 5).

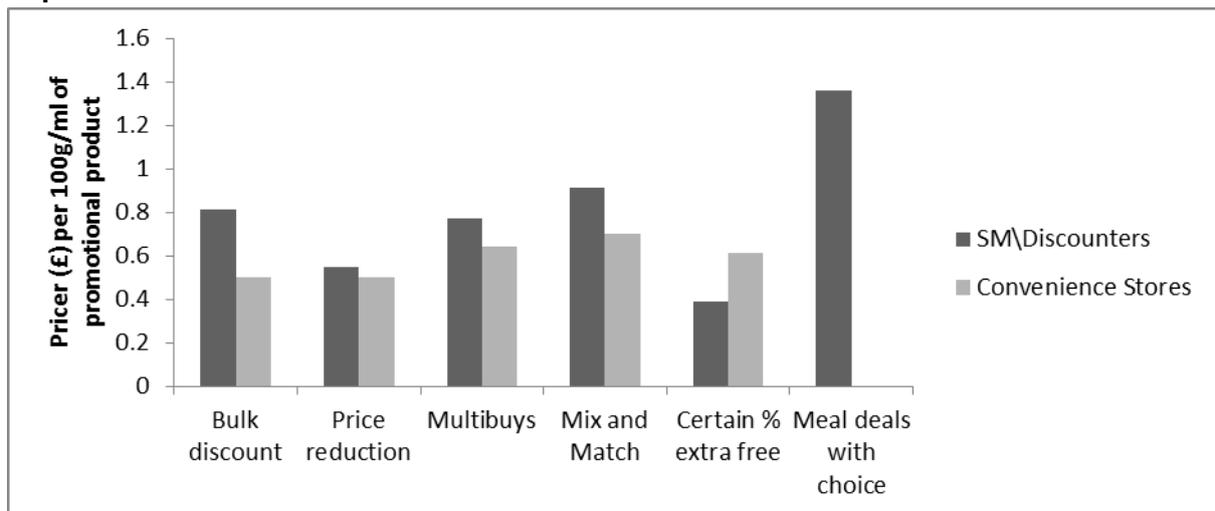
Figure 5: Percentage saving on promotional product (per 100g/ml) across the various promotional types



Supermarkets/discounters

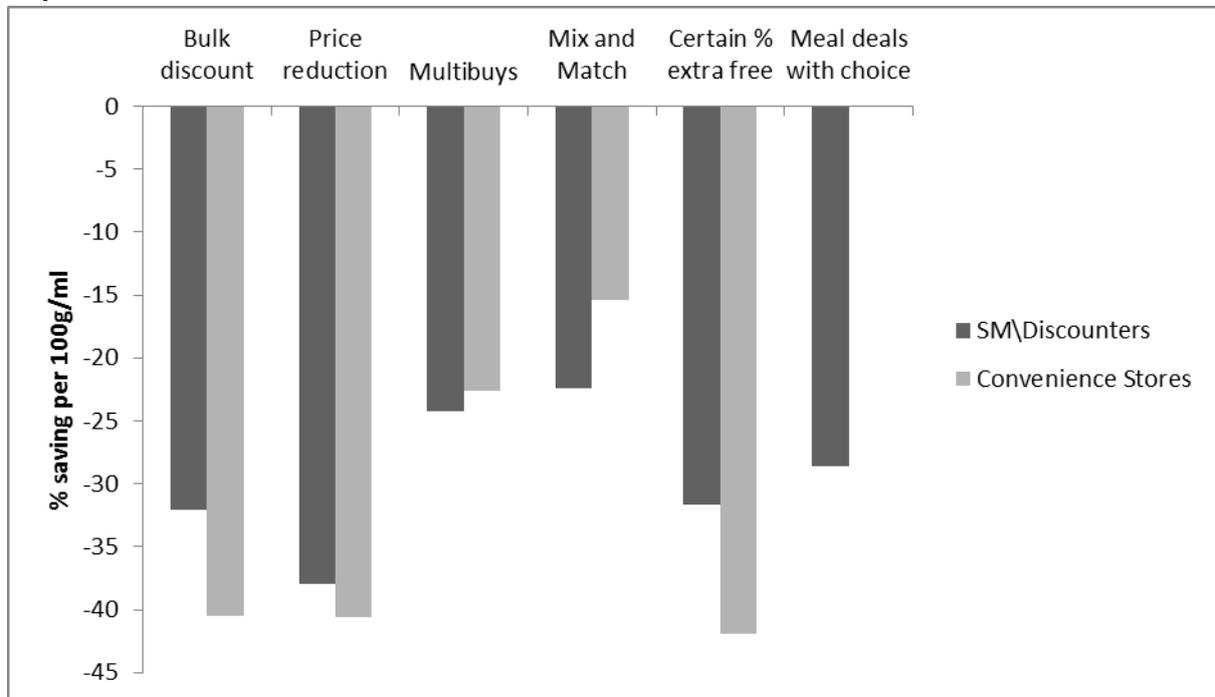
Within the supermarket/discounters category there were significant differences in promotional prices between the various promotional types, $F(6, 4092) = 31.0, P < 0.001$. The main difference observed was a significantly higher price for 'meal deal' promotions compared to all the other promotional types (£1.36, $P < 0.001$). In contrast 'price reduction' (£0.55) and 'certain % free' (£0.39) promotions cost the least compared to all the other promotional types (Figure 6).

Figure 6: Price (£) promotional product (per 100g/ml) between the supermarkets/discounters and convenience stores



As expected there were also significant differences between the promotional types in relation to percentage saving $F(6, 3178) = 415.59, P < 0.001$. The greatest percentage saving was found in 'price reduction' promotions compared to the other promotional types (38%, $P < 0.05$) (Figure 7).

Figure 7: Percentage saving on promotional product (per 100g/ml) between supermarkets/discounters and convenience stores



Convenience stores

Within the convenience stores category there were also significant differences between the promotional types in relation to promotional price ($F(5, 2426) = 3.7, P = 0.002$). The most notable significant difference observed was that 'price reduction' (£0.50) offered the lowest price compared to 'Mix and Match' (£0.69) ($P = 0.005$) (Figure 6).

There were also significant differences between the promotional types in relation to percentage saving in the convenience stores category, ($F(5, 1561) = 434.62, P < 0.001$). The main differences observed were for 'certain % extra free' (41.9%), price reduction' (40.6%) and 'bulk discount' promotions (40.5%), as they offered the greatest percentage saving compared to all the other promotions (Figure 7).

3.7.3 The 'prominence' of promotional items in specific promotional sites in-store

The frequency and percentage of promotional items in specific promotional sites (assessed in Phase 1, Phase 2 and for the total study period) for all stores and across store type are displayed in Appendix 2 – Table E and Figure 8.

A series of chi-squared tests for independence was used to detect statistical significant associations in the 'prominence' of promotional items in specific promotional sites in-store between Phases 1 and 2 for all stores and across retail store types.

Overall, for all stores combined across the total study period, the most significant site offering in-store promotions was the 'end of aisle' (n= 4294, 63%). Others areas that had a relatively high number of promotions included the 'promotional fridges/promotional section' (n = 882, 13%) and the 'promotional stand' (n = 548, 8.1%). The areas with the least amount of promotions were the 'checkouts' (n= 59, 0.9%), 'promotional buckets' (n= 149, 2.2%) and the 'fruit and vegetable promotional display' (n = 206, 3%).

Furthermore, in the total study period, the supermarkets/discounters offered significantly more items at the 'end of aisle' (n =2898, 67.5% vs n= 1396, 56.1%) and in the 'promotional fridges/promotional section' (n= 216, 5% vs n = 93, 3.7%) than the convenience stores, $t(6778) = -2.3, P<0.01$. However, this may be accounted for by the larger number of aisles in supermarkets/discounters and the number of shelves at each end.

Specific key findings for all stores; supermarkets/discounters and convenience stores across Phases 1 and 2 are as follows:

All stores

For all stores combined there were slight differences between phases although there was a significant increase in the frequency of promotions as 'part of a promotional aisle' (P1, n = 43, P2, n = 277) and in the 'promotional fridges/section' (P1, n = 265, P2, n = 617) in Phase 2 of the study ($X^2(8, n=6780) =345.37, P<0.001, \text{Cramer's } V= 0.231$).

Supermarkets/discounters

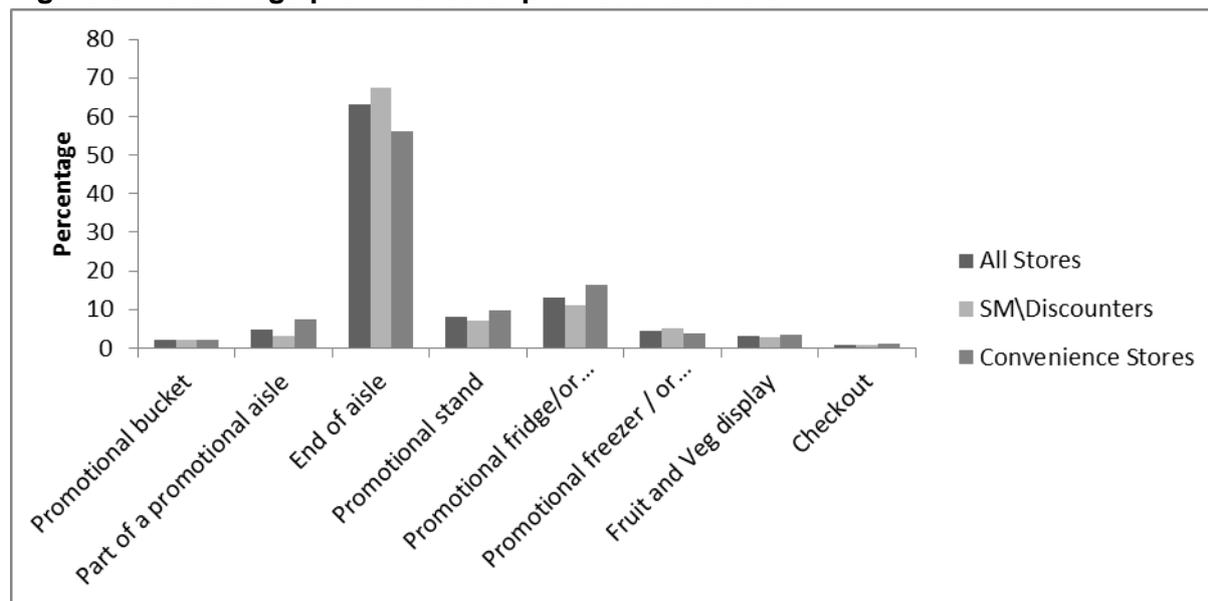
The supermarkets'/discounters' frequency of promotions as 'part of a promotional aisle' (P1, n=14, P2, n = 117) and in 'promotional fridges/section' (P1, n = 177, P2, n= 300) also significantly increased in Phase 2 of the study ($X^2(7, n= 4292) =144.30, P<0.001, \text{Cramer's } V = 0.21$). Notably there was a marked decrease in the number of items on promotion in the 'fruit and vegetable promotional display' in Phase 2 of the study (P1, n = 80, P2, n = 44).

Convenience stores

Within the convenience stores sample, similarly there was a significant increase in the frequency of promotions as 'part of a promotional aisle' (P1, n = 29, P2, n = 160) and in the 'promotional fridges' (P1, n= 88, P2, n =317) in Phase 2 ($X^2(7, n=2488) =256.37, P<0.001, \text{Cramer's } V = 0.32$). Interestingly, there was a marked increase in the number of items on promotion in the 'fruit and vegetable promotional display' in Phase 2 of the study (P1, n = 25, P2, n = 57).

Overall, it can be seen that there were some significant differences between Phase 1 and Phase 2 and across stores type for prominence of promotions in specific promotional sites. However, on all occasions the effect size was modest (Table E).

Figure 8: Percentage prominence of promotional offers



3.7.4 The nutritional content of promotional offers across retailers

The mean \pm standard deviation of the nutritional content of the promotional offers for Phase 1, Phase 2, and total study period and for all stores and across store type can be seen in Appendix 2 - Table F. The frequency and percentage of energy, sugar, fat, saturated fat and salt represented in terms of the FSA FOP categories: red, amber and green, and for FSA FOP categories collapsed into red, amber/green are also presented in Appendix 2 - Table F.

Overall, there was a significant difference in energy (kJ), fat (g) saturated fat (g), salt (g) and protein (g) /100g between the supermarkets/discounters and the convenience stores over the total study period. The supermarkets/discounters products were higher in energy, $t(6748) = 4.1, P < 0.001$, fat, $t(6733) = 3.9, P < 0.001$, salt $t(6684) = 2.4 P < 0.01$, and protein, $t(6704) = 11.0, P < 0.001$. In addition, similar results were seen between Phase 1 and 2 whereby once more energy (kJ), fat (g), salt (g) and protein (g) per 100g were significantly higher in the supermarkets/discounters for both phases.

Specific key findings for all stores; supermarkets/discounters and convenience stores across the total study period using FSA FOP labelling categories red, amber and green and FSA FOP labelling categories collapsed into red and amber/green are as follows (Figures 9 – 20).

Figure 9: Percentage of promotional products in the FOP red, amber and green for energy only



Figure 10: Percentage of promotional products in the FOP red and amber/green for energy only

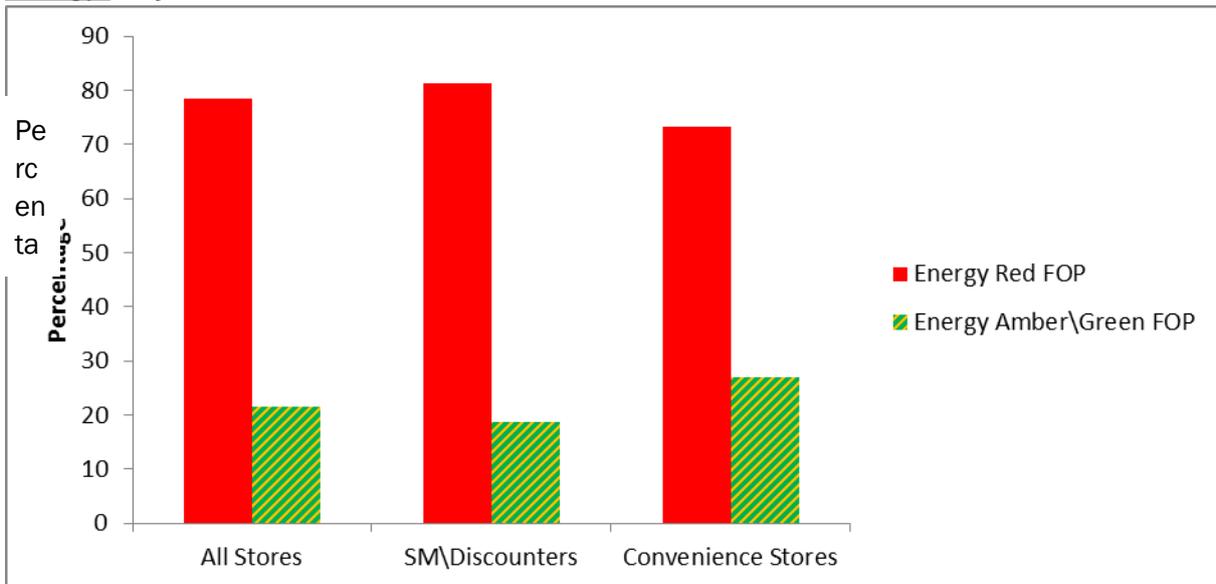


Figure 11: Percentage of promotional products in the FOP red, amber and green for sugar only



Figure 12: Percentage of promotional products in the FOP red and amber/green for sugar only

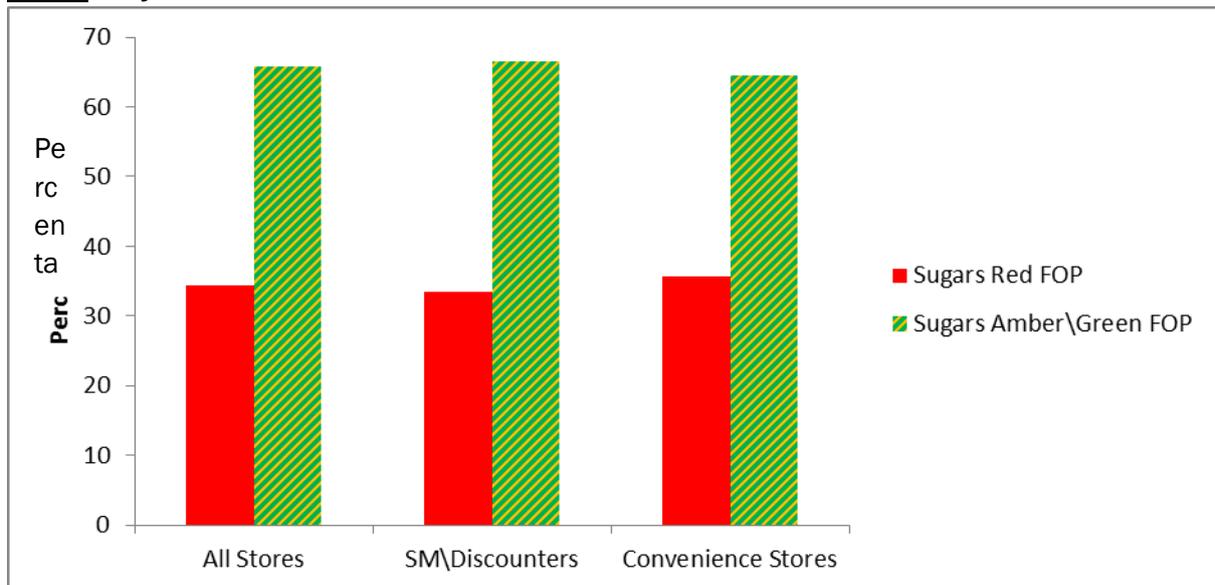


Figure 13: Percentage of promotional products in the FOP red, amber and green for fat only

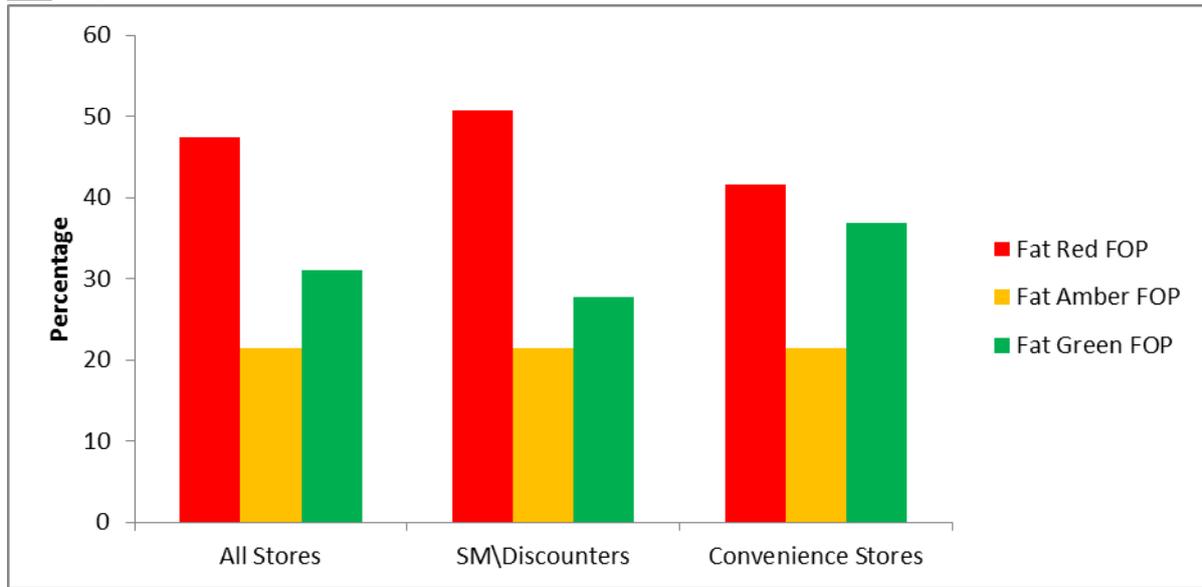


Figure 14: Percentage of promotional products in the FOP red and amber/green for fat only



Figure 15: Percentage of promotional products in the FOP red, amber and green for saturated fat only

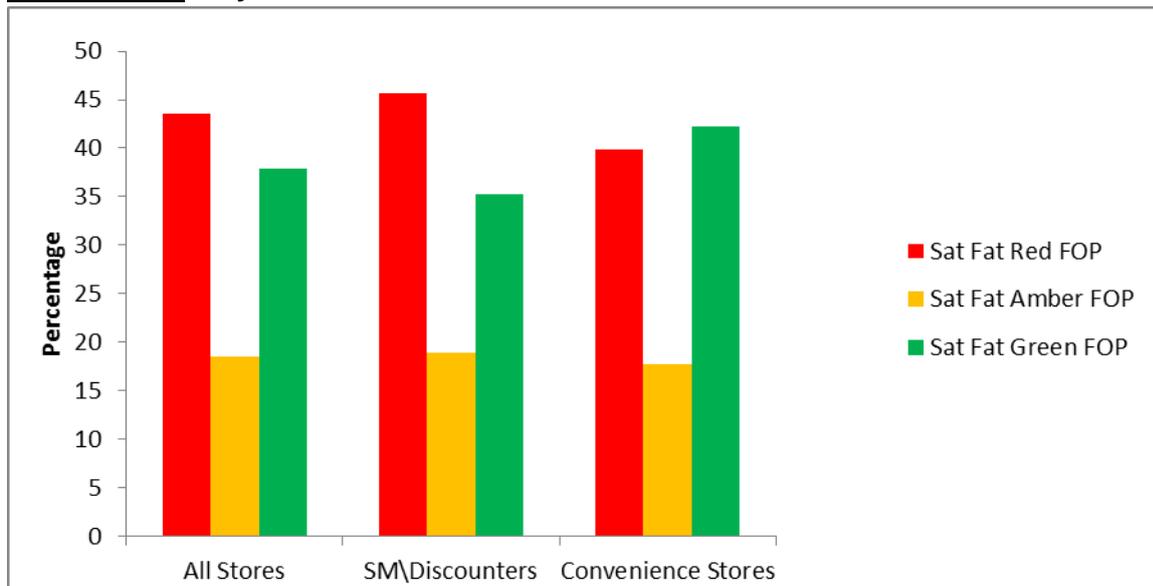


Figure 16: Percentage of promotional products in the FOP red and amber/green for saturated fat only

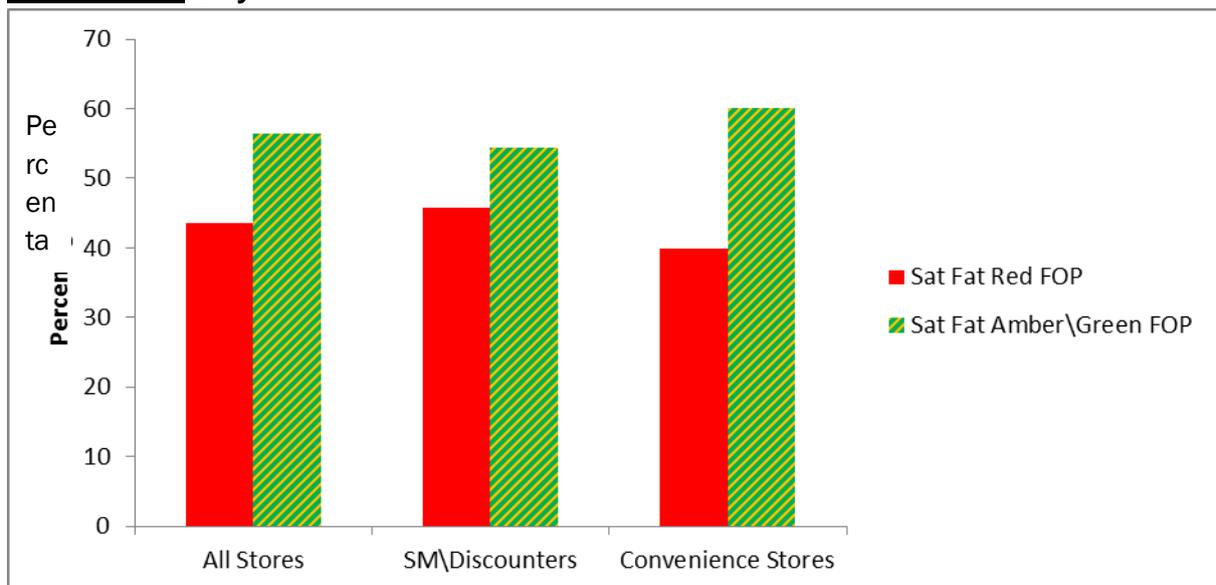


Figure 17: Percentage of promotional products in the FOP red, amber and green for salt only

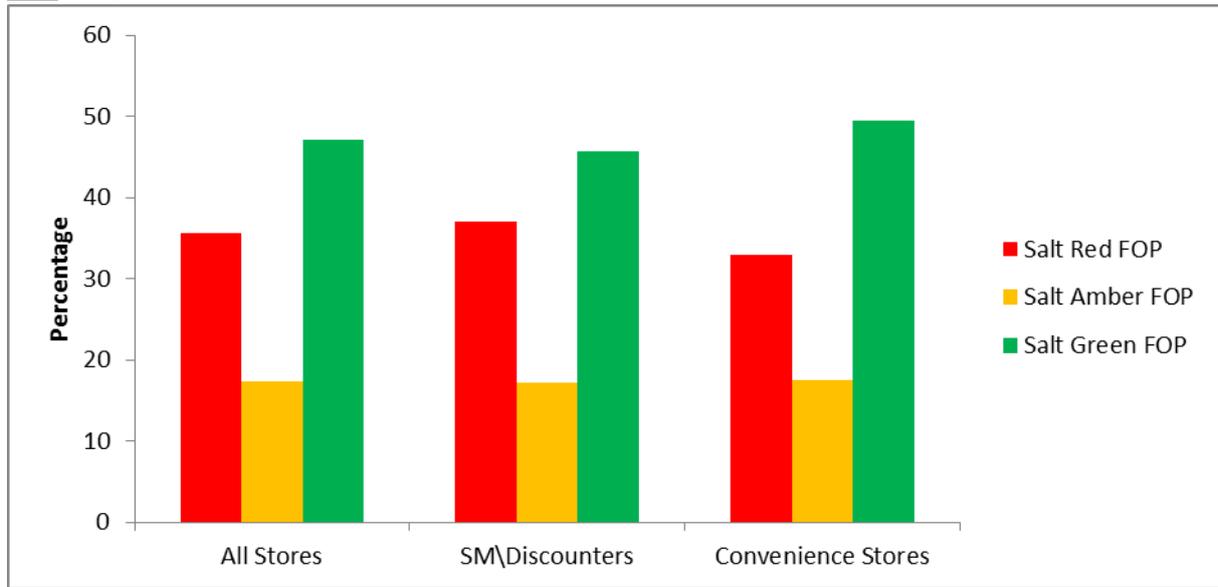


Figure 18: Percentage of promotional products in the FOP red and amber/green for salt only

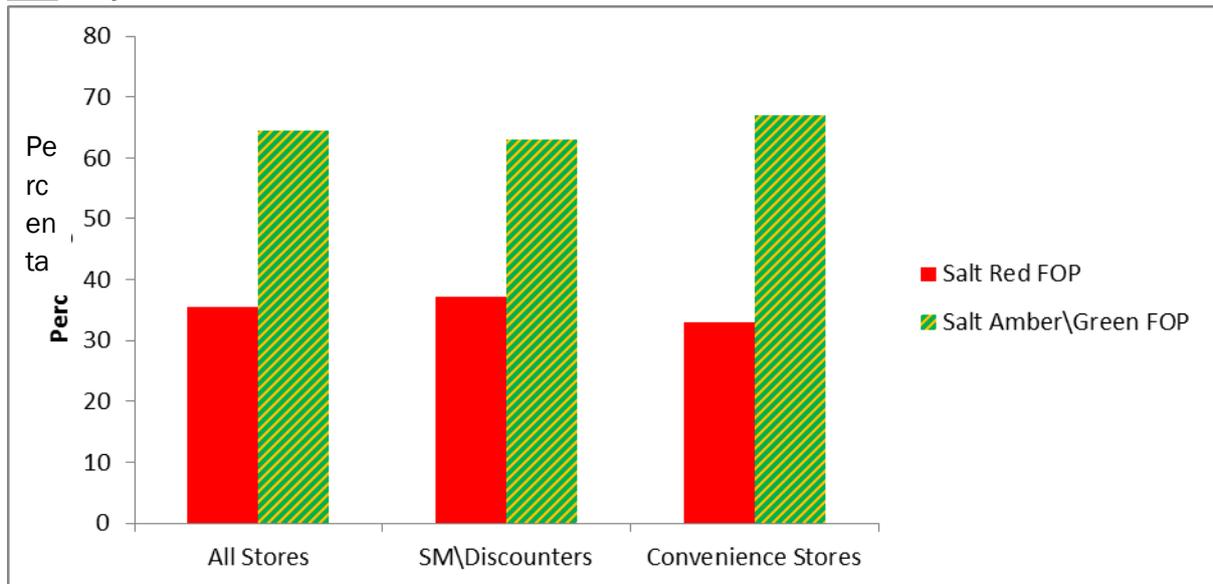


Figure 19: Percentage of promotional products in the FOP red, amber and green for the mean composite score of energy, sugar, fat, sat fat and salt

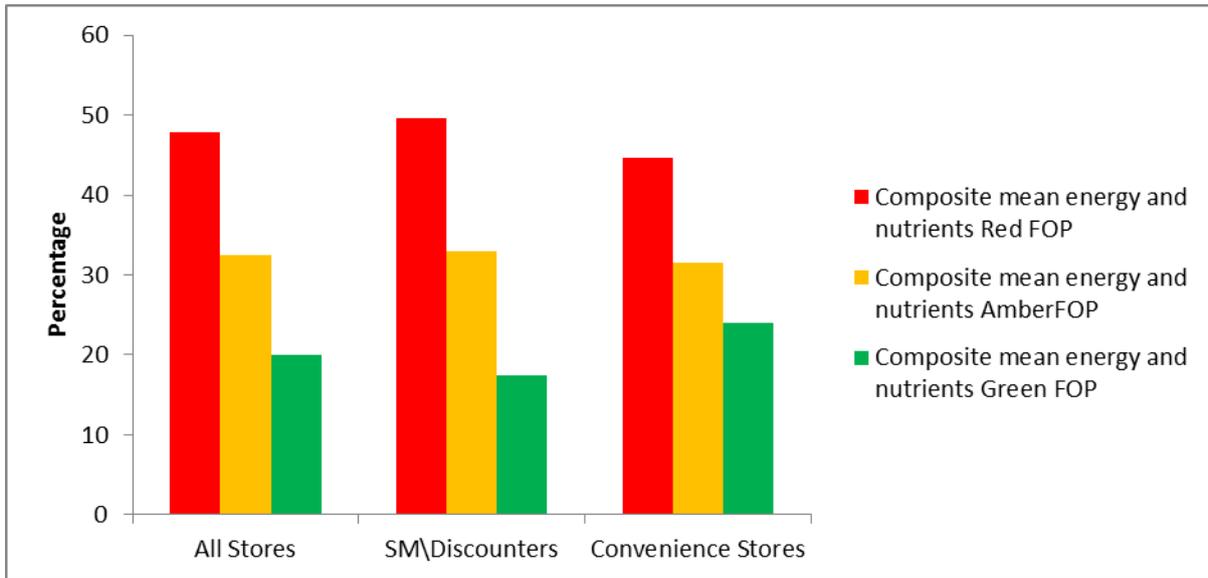
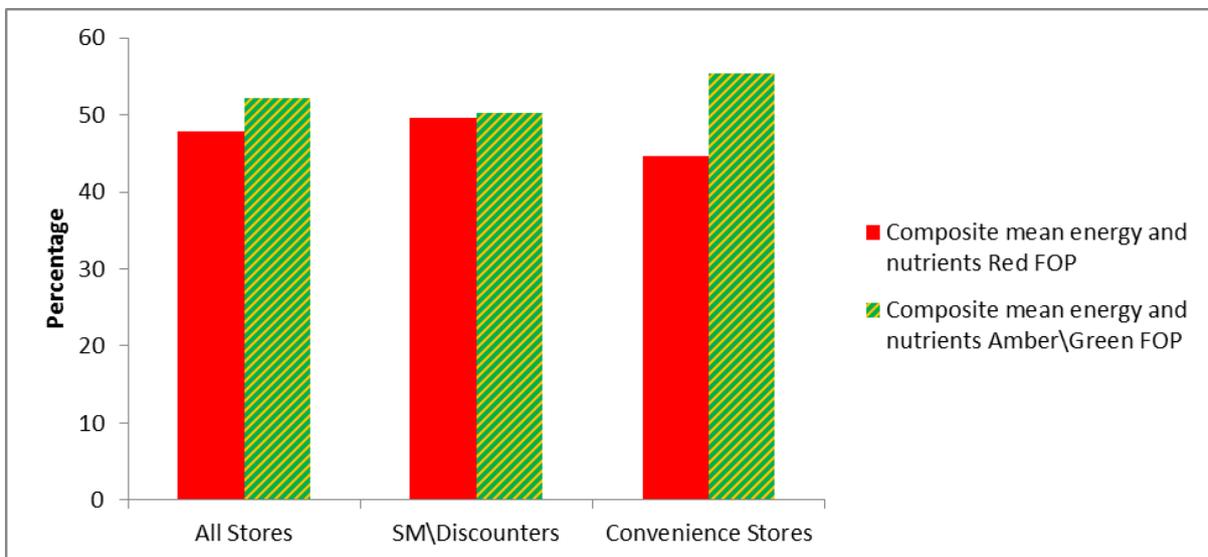


Figure 20: Percentage of promotional products in the FOP red and amber/green for the mean composite score of energy, sugar, fat, sat fat and salt



Specific key findings for all stores; supermarkets/discounters and convenience stores across Phases 1 and 2 using FSA FOP labelling categories red, amber and green and FSA FOP labelling categories collapsed into red and amber/green are as follows:

All stores using FSA FOP categories red, amber and green

There was a number of significant differences between phases for all stores combined. Notably, there was a higher percentage of products in the red category for the nutrients: sugar, fat and saturated fat in Phase 1 whereas Phase 2 had a higher percentage of products classified as amber or green – see Table 9.

Table 9: Chi-squared tests for all stores between Phase 1 and Phase 2 for FSA FOP categories red, amber and green

	% Within Phase 1	% Within Phase2	Chi-squared
Energy FOP	Higher % in green P1 = 19.2% P2 = 18.2%	Higher % in amber P1 = 2.3% P2=3.5%	X^2 (2, n=6781) =9.3, P=0.009, Cramer's V = 0.037.
Sugars FOP	Higher % in red P1 = 35.9% P2 = 32.8%	Higher % in green P1= 36.5% P2 = 39.8%	X^2 (2, n=6781) =9.6, P=0.008, Cramer's V = 0.038.
Fat FOP	Higher % in red P1= 51.2% P2 = 43.9%	Higher % in amber P1 = 19.4% P2 = 23.4% Higher % in green P1= 29.3% P2= 32.8%	X^2 (2, n=6781) =37.75, P<0.001, Cramer's V= 0.07.
Sat Fat FOP	Higher % in red P1 = 48.4% P2 = 39.3%	Higher % in amber P1 = 16.6% P2 = 20.3% Higher % in green P1= 35.0% P2= 40.5%	X^2 (2, n=6781) =58.11, P<0.001, Cramer's V = 0.093.
Salt FOP	No significant differences	No significant differences	X^2 (2, n=6781) = 5.9, P=0.05, Cramer's V = 0.03.

All stores using FSA FOP categories red and amber/green

As can be seen below in Table 10 after the amber and green categories were combined there were no significant differences in energy or salt between Phase 1 and 2. However, there were still significant differences for sugar, fat and saturated fat between phases as Phase 1 tended to offer more products in the red category compared to Phase 2 which tended to offer more products in the amber/green categories.

Table 10: Chi-squared tests for all stores between Phase 1 and Phase 2 for FSA FOP categories red and amber/green

	% Within Phase 1	% Within Phase2	Chi-squared
Energy FOP	No significant differences	No significant differences	X^2 (1, n=6781) =0.32, P>0.05, Cramer's V = 0.002.
Sugars FOP	Higher % in red P1 = 35.9% P2 = 32.8%	Higher % in amber/green P1= 64.1% P2 = 67.2%	X^2 (1, n=6781) =7.49, P<0.01, Cramer's V = 0.033.
Fat FOP	Higher % in red P1= 51.2% P2 = 43.9%	Higher % in amber/green P1 = 48.8% P2 = 56.1%	X^2 (1, n=6781) =36.63, P<0.001, Cramer's V= 0.074.
Sat Fat FOP	Higher % in red P1 = 48.4% P2 = 39.3%	Higher % in amber/green P1 = 51.6% P2 = 60.7%	X^2 (1, n=6781) =57.52, P<0.001, Cramer's V = 0.092.
Salt FOP	No significant differences	No significant differences	X^2 (1, n=6781) = 1.2, P>0.05, Cramer's V = 0.013.

Supermarkets/discounters using FSA FOP red, amber and green Categories:

Within the supermarket/discounters there was a number of significant differences between phases. In Phase 1 a higher percentage of products were classified in the energy green category, although the nutrients fat and saturated fat had a higher percentage in the red category. Phase 2 offered more products in the amber or green categories - see Table 11.

Table 11: Chi-squared tests for supermarkets/discounters between Phase 1 and Phase 2 for FSA FOP categories red, amber and green

	% Within Phase 1	% Within Phase2	Chi-squared
Energy FOP	Higher % in green P1 = 17.2% P2 = 15.0%	Higher % in amber P1 = 1.7% P2= 3.3%	X^2 (2, n=4293) =13.86, P<0.001, Cramer's V = 0.057.
Sugars FOP	No significant differences	No significant differences	X^2 (2, n=4293) =95.3, P>0.05, Cramer's V = 0.035.
Fat FOP	Higher % in red P1= 55.0% P2 = 46.4%	Higher % in amber P1 = 19.1% P2 = 23.9% Higher % in green P1= 25.9% P2= 29.7%	X^2 (2, n=4293) =32.11, P<0.001, Cramer's V = 0.086.
Sat Fat FOP	Higher % in red P1 = 50.9% P2 = 40.7%	Higher % in amber P1 = 17.2% P2 = 20.6% Higher % in green P1= 31.9% P2= 38.7%	X^2 (2, n=4293) =44.65, P<0.001, Cramer's V = 0.102
Salt FOP	Higher % in amber P1= 18.6% P2 = 15.8%	Higher % in red P1 = 35.9% P2 = 38.2%	X^2 (2, n=4293) = 6.8, P<0.05, Cramer's V = 0.04.

Supermarkets/discounters using FSA FOP red and amber/green categories

Using the combined categories of red and amber/green there were no significant differences in energy or salt between phases. Again within Phase 1 a higher percentage of products were classified as red for sugar, fat and saturated fat and a higher percentage of products were classified as amber/green in Phase 2 - see Table 12.

Table 12: Chi-squared tests for supermarkets/discounters between Phase 1 and Phase 2 for FSA FOP categories red and amber/green

	% Within Phase 1	% Within Phase2	Chi-squared
Energy FOP	No significant differences	No significant differences	X^2 (1, n=4293) =0.241, P>0.05, Cramer's V = 0.007.
Sugars FOP	Higher % in red P1 = 35.2% P2 = 31.8%	Higher % in amber/green P1 = 64.8% P2 = 68.2%	X^2 (1, n=4293) =5.38, P=0.02, Cramer's V = 0.035.
Fat FOP	Higher % in red P1= 55.0% P2 = 46.4%	Higher % in amber/green P1 = 45.0% P2 = 53.6%	X^2 (1, n=4293) =31.12, P<0.001, Cramer's V = 0.085.
Sat Fat FOP	Higher % in red P1 = 50.9% P2 = 40.7%	Higher % in amber/green P1 = 49.1% P2 = 59.3%	X^2 (1, n=4293) =44.61, P<0.001, Cramer's V = 0.102
Salt FOP	No significant differences	No significant differences	X^2 (1, n=4293) = 2.5, P>0.05, Cramer's V = 0.024.

Convenience stores using FSA FOP red, amber and green categories:

Within the convenience stores there were fewer significant differences between phases. Notably, the percentage of products in each of the FOP categories did not change between phases for energy, fat or salt – see Table 13.

Table 13: Chi-squared tests for convenience stores between Phase 1 and Phase 2 for FSA FOP categories red, amber and green

	% Within Phase 1	% Within Phase2	Chi-squared
Energy FOP	No significant differences	No significant differences	X^2 (2, n=2488) =0.232, P>0.05, Cramer's V = 0.01.
Sugars FOP	Higher % in red P1 = 35.9% P2 = 32.8%	Higher % in green P1= 36.5% P2 = 39.8%	X^2 (2, n=2488) =9.4, P<0.01, Cramer's V = 0.062.
Fat FOP	No significant differences	No significant differences	X^2 (2, n=2488) =4.2, P>0.05 Cramer's V = 0.41.
Sat Fat FOP	Higher % in red P1 = 43.6% P2 = 37.1%	Higher % in amber P1 = 15.3% P2 = 19.8% Higher % in green P1= 41.1 P2= 43.1	X^2 (2, n=2488) =13.87, P<0.05, Cramer's V = 0.07.
Salt FOP	No significant differences	No significant differences	X^2 (2, n=2488) = 0.615, P>0.05, Cramer's V = 0.06.

Convenience stores using FSA FOP red and amber/green categories:

After combining the amber and green categories there were even fewer significant differences between phases. Notably, the percentage of products in each of the FOP categories did not change between phases for energy, sugars, fat or salt – see Table 14.

Table 14: Chi-squared tests for convenience stores between Phase 1 and Phase 2 for FSA FOP categories red and amber/green

	% Within Phase 1	% Within Phase2	Chi-squared
Energy FOP	No significant differences	No significant differences	X^2 (1, n=2488) =0.241, P>0.05, Cramer's V = 0.02.
Sugars FOP	No significant differences	No significant differences	X^2 (1, n=2488) =2.77, P>0.05, Cramer's V = 0.033.
Fat FOP	No significant differences	No significant differences	X^2 (1, n=2488) =3.7, P>0.05 Cramer's V = 0.39.
Sat Fat FOP	Higher % in red P1 = 43.6% P2 = 37.1%	Higher % in amber\green P1 = 56.4% P2 = 62.9%	X^2 (1, n=2488) =10.71, P<0.001, Cramer's V = 0.066.
Salt FOP	No significant differences	No significant differences	X^2 (1, n=2488) = 0.004, P>0.05, Cramer's V = 0.001.

3.7.5 The 'healthiness' of promotional products across retailers

Using a range of nutritional scoring methods (FSA FOP score; FSA FOP category; Nutritional Quality Index and the *eatwell plate*), the promotional products were categorised to measure their 'healthiness' (See Appendix 2 – Table G). Results are discussed for each scoring method for: all stores; supermarkets/discounters; and convenience stores over Phase 1, Phase 2 and the total study period.

FSA FOP Score

Overall the mean FSA FOP score for all stores over the total study period was M = 9.3, SD = 3.0. There was a significant difference between the supermarkets/discounters (M= 9.1, SD = 2.8) and the convenience stores (M= 9.6, SD = 3.1) in the total FSA FOP score, (t (6779) = -0.64, P<0.001) and in the mean FSA FOP score (M= 1.8, SD = 0.6, vs M = 1.9, SD=0.6; t (6779) = -6.4, P<0.001) for the total study period. Furthermore, between phases a significant difference between the supermarkets/discounters and convenience stores was noted for the FSA FOP score: Phase 1 (M= 9.0, SD = 2.9, vs M = 9.5, SD= 3.1; t (2009) = -4.4, P<0.001) and Phase 2 (M= 9.3, SD = 2.8, vs M = 9.7, SD= 3.1; t (2790) = -4.2, P<0.001).

Similarly for the mean FSA FOP score significant differences were noted in both phases between the supermarkets/discounters and convenience stores: Phase 1 (M= 1.8, SD = 0.5, vs M = 1.9, SD= 0.6; t (2009) = -4.3, P<0.001) and Phase 2 (M= 1.8, SD = 0.5, vs M = 1.9,

SD= 0.6; $t(2790) = -4.2$, $P < 0.001$. Overall, using the FSA FOP labelling score, the convenience stores offered a significantly higher FOP score for both Phase 1 and 2 meaning an overall healthier promotional offer.

FSA FOP Mean Composite Score

The FOP labelling (categories: red, amber and green) identified a similar number of products categorised as 'red' (47.5%) as categorised as 'amber' or 'green' (52.5%). Similar findings were obtained for individual nutrients scored (sugar, fat, saturated fat and salt). For all stores combined using the FSA FOP categories of red, amber and green a significant difference was noted between study Phase 1 and 2 ($X^2(2, n = 6781) = 74$, $P < 0.001$, Cramer's $V = 0.105$). The percentage of promotions that were categorised in the red category were higher in Phase 1 (52%) compared to Phase 2 (43%). However, promotions categorised in the amber category were much higher in Phase 2 (37%) compared to Phase 1 (27.5%). Promotional items that fell into the green category were similar for Phase 1 (20%) and Phase 2 (19.7%). Interestingly, when the amber and green categories were combined, a significantly higher number of products were categorised as amber/green in Phase 2 (56.6%) compared to the red category ($X^2(1, n = 6781) = 53.82$, $P < 0.001$, Cramer's $V = 0.089$).

For the total study period, a significant difference was found between the retailer type and the 'healthiness' of promotional products ($X^2(2, n = 6781) = 49.67$, $P < 0.001$, Cramer's $V = 0.08$). Within the convenience stores a smaller percentage of their promotions fell into the red category (44.1%) compared to the supermarkets'/discounters' promotions (49.6%). Furthermore, there were significantly more promotions in the green category for the convenience stores (24.4%) compared to the supermarkets/discounters (17.4%). The percentage of products categorised as amber were similar for both the supermarkets/discounters (33.3%) and the convenience stores (31.5%).

Nutritional Quality Index

Using the Nutritional Quality Index categories of '*less healthy*' and '*healthy*', for all stores combined there was a significantly higher percentage of products classified as '*less healthy*' (66.4%) across both Phases ($X^2(1, n = 6781) = 9.8$, $P = 0.02$, $\phi = 0.04$). Furthermore, across the retailer store type there were significantly more promotions classified as '*less healthy*' in the supermarket/discounters (69.1%) than the convenience stores (61.7%) ($X^2(1, n = 6781) = 38.8$, $P = 0.02$, $\phi = 0.07$).

Eatwell plate

Overall, there were significantly more products in the 'foods high in fat and sugar' category ($n = 2873$, 42.4%) for the total study period. In addition, there was an association between the retailer type and the 'healthiness' of promotions over the total study period $X^2(5, n = 6771) = 129.8$, $P < 0.001$, Cramer's $V = 0.138$. The convenience stores promoted a higher percentage of products from the 'foods high in fat and sugar' compared to the supermarkets/discounters (46.9% vs 39.8%). However, the supermarkets/discounters offered significantly more items from the 'meat, fish, eggs, beans, non-meat sources' category (25% vs 14.1%) (Figures 21 - 23).

Figure 21: Percentage of products within each of the *eatwell plate* categories for all stores

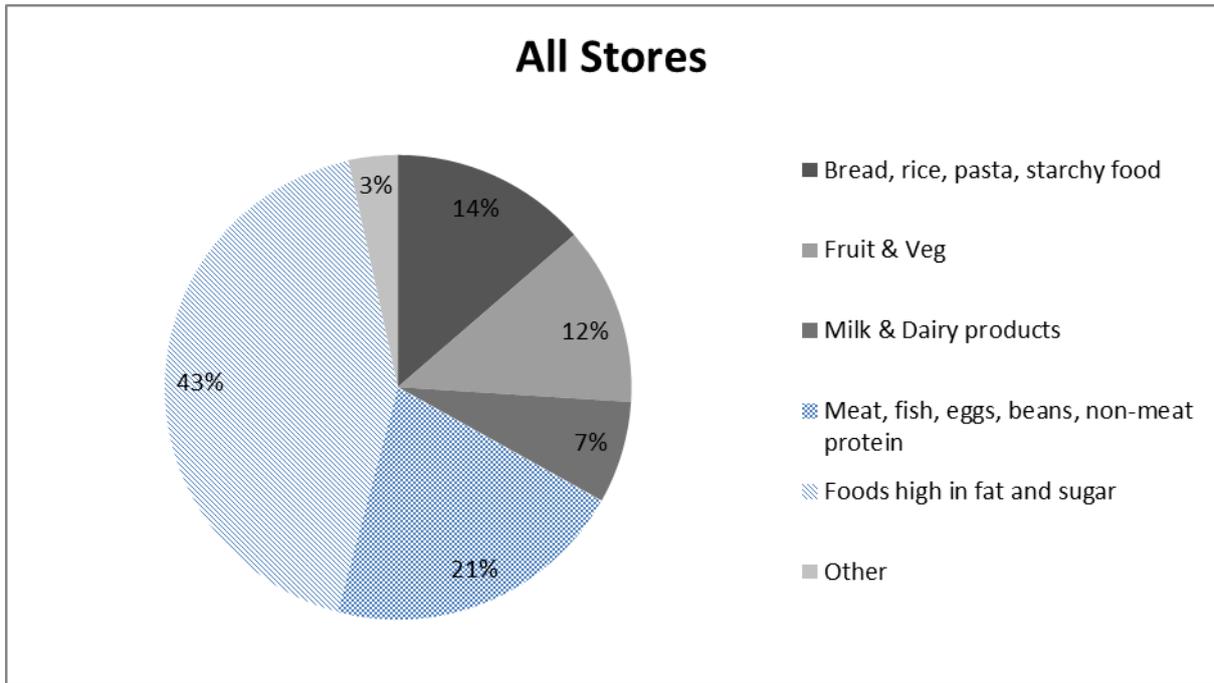


Figure 22: Percentage of products within each of the *eatwell plate* categories for supermarkets/discounters

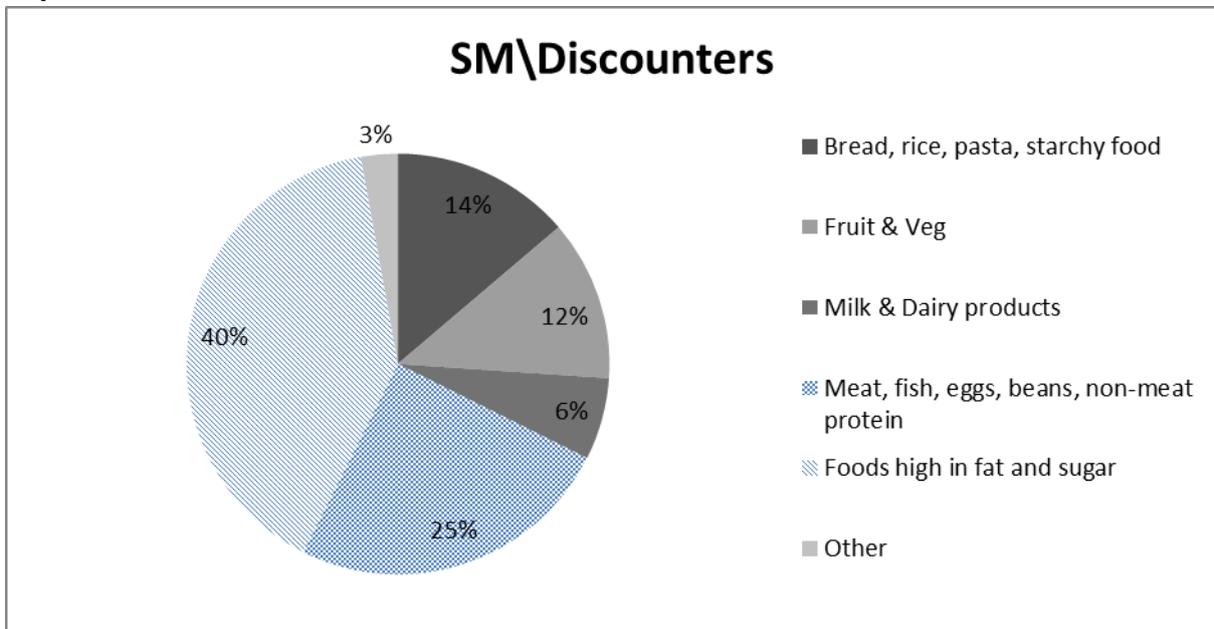
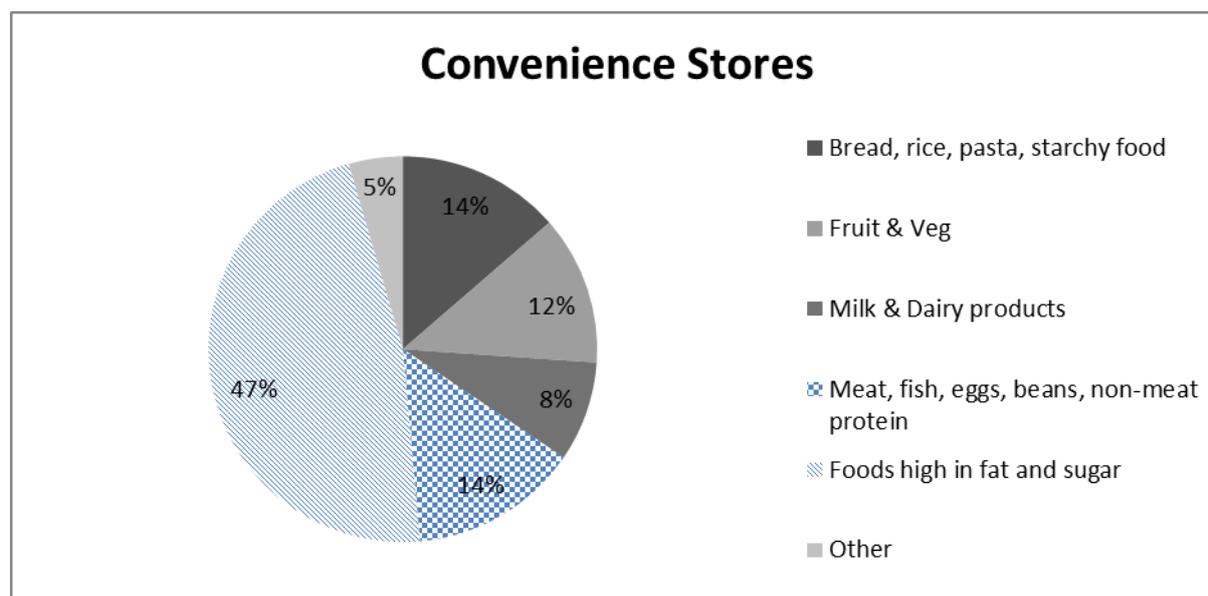


Figure 23: Percentage of products within each of the *eatwell plate* categories for convenience stores



There was also an association between the study phase and the ‘healthiness’ of promotions within all stores (X^2 (5, $n = 6771$) = 92, $P < 0.001$, Cramer’s $V=0.117$). The percentage of foods from the ‘bread, rice, pasta, starchy food’ (11%), ‘meat, fish, eggs, beans, non-meat sources’ (19%) and ‘foods high in fat and sugar’ categories (37%) were all lower in Phase 1 compared to Phase 2.

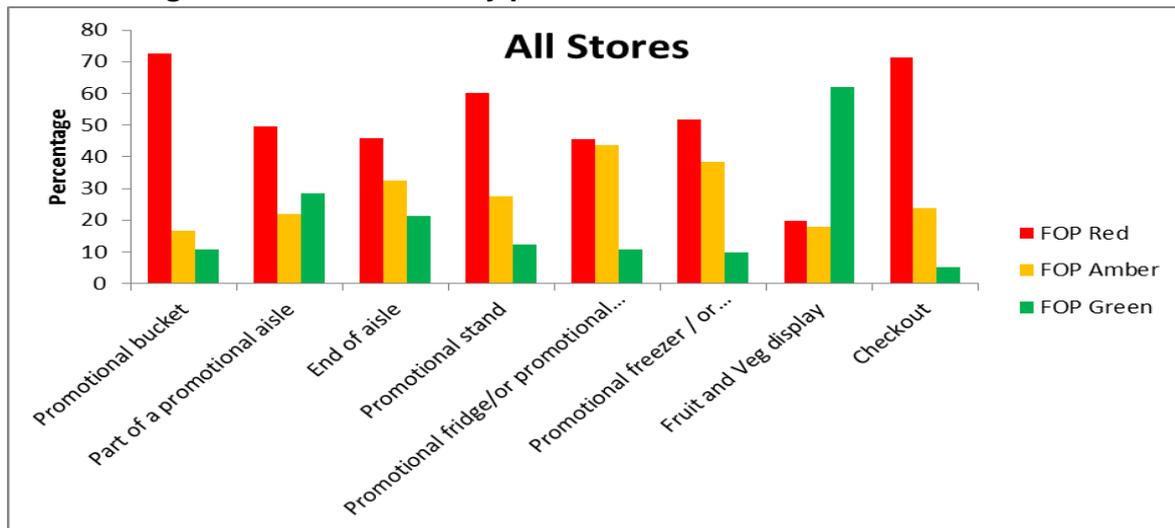
The phase effect was also noted for the categories of ‘bread, rice, pasta, starchy food’ and ‘meat, fish, eggs, beans, non-meat sources’ within the supermarket/discounter group (X^2 (5, $n = 4285$) = 48.3, $P < 0.001$, Cramer’s $V = 0.1$) and within the convenience stores (X^2 (5, $n = 2486$) = 57.69, $P < 0.001$, Cramer’s $V=0.15$).

3.7.6 The ‘healthiness’ of promotional items in specific promotional sites in-store

In order to determine the ‘healthiness’ (using the FOP nutritional labelling categories of red, amber and green) of the promotional items in-store, a series of chi-squared tests was used to detect statistical significant associations between where promotional items were positioned in store and whether they were categorised as red, amber or green for the total study period for all stores and across retail store types (see Appendix 2 - Table H).

As previously stated above, the following promotional sites offered the highest number of promotions for all stores and for both study phases: ‘end of aisle’; ‘promotional stand’ and ‘promotional fridges/promotional section’. Notably, within these promotional positions, a significant number of the promotional products were classified as red using the FOP nutritional labelling: (‘end of aisle’ (46% $n= 1975$); ‘promotional fridge’ (45.4%, $n = 400$); ‘promotional stand’ (60% $n= 329$). Furthermore, with the exception of the ‘fruit and veg promotional display’ the frequency of all promotions classified as green was lower than the red or amber categories. For example, only 30 items on promotion in the ‘promotional freezer/promotion section’ were classified as green (Figure 24).

Figure 24: Prominence and ‘healthiness’ using FSA FOP labelling categories red, amber and green for the total study period for all stores



Specific key statistical findings for all stores; supermarkets/discounters and convenience stores are as follows:

All stores categories

A higher percentage of food promotions positioned at the ‘promotional buckets’ (72%), ‘promotional stands’ (60%) and ‘checkouts’ (71%) were all associated with foods allocated into the red category. As expected, a significantly higher percentage of promotional products situated at the ‘fruit and veg’ promotional displays (62%) were associated with foods allocated into the green category of the FOP nutritional labelling, $X^2 (16, n=6780) = 449.50, P<0.001, \text{Cramer's } V= 0.25$ (Figure 24). However, by combining the amber and green categories a higher percentage of food promotions positioned at the ‘end of aisle’ (54%), ‘promotional fridges’ (54.6%) and ‘fruit and vegetable displays’ (80.1%) were all associated with foods allocated into the amber/green category, $X^2 (8, n=6780) = 163.58, P<0.001, \text{Cramer's } V= 0.155$ (Figure 25).

Figure 25: Prominence and ‘healthiness’ using FSA FOP labelling categories red and amber/green for the total study period for all stores



Supermarkets/discounters

Within the supermarkets/discounters, a higher percentage of food promotions located at 'promotional buckets' (77%) and promotional stands' (61%) were associated with foods allocated into the red category of the FOP nutritional labelling. As expected, a higher percentage of promotional products situated at the 'fruit and veg 'promotional display' (53%) were associated with foods allocated into the green category of the FOP nutritional labelling, $X^2(16, n=4292) = 216.3, P < 0.001, \text{Cramer's } V = 0.22$ (Figure 26). After combining the amber and green categories there were still notable differences ($X^2(8, n=4292) = 77.7, P < 0.001, \text{Cramer's } V = 0.135$) between the promotional sites and 'healthiness' of the promotions with 'promotional buckets' 'promotional stands' and the 'checkouts' still offering more red categories (Figure 27).

Figure 26: Prominence and 'healthiness' using FSA FOP labelling categories red, amber and green for the total study period for supermarkets/discounters only

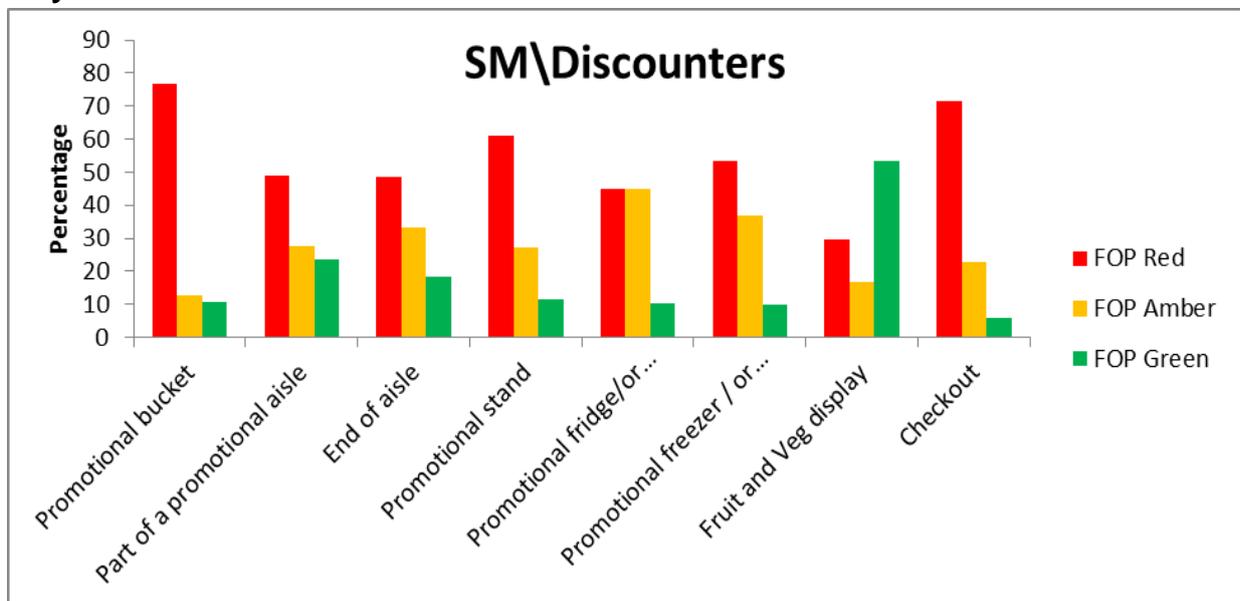


Figure 27: Prominence and ‘healthiness’ using FSA FOP labelling categories red and amber/green for the total study period for supermarkets/discounters only



Convenience stores

Within the convenience stores, a higher percentage of food promotions located at ‘promotional buckets’ (65%), ‘part of a promotional aisle’ (50.3%), ‘promotional stands’(59%) and ‘checkouts’ (71%) were all associated with foods allocated into the red category of the FOP nutritional labelling. Again, a higher percentage of promotional products situated at the ‘fruit and veg’ promotional displays (76%) were associated with foods allocated into the green category of the FOP nutritional labelling ($X^2(16, n = 2488) = 254.6, P < 0.001, \text{Cramer's } V = 0.3$) (Figure 28). Interestingly, by combining the amber and green categories there were notable differences. Although there were still more red categories in the ‘promotional buckets’, ‘part of a promotional aisle’, ‘promotional stands’ and ‘checkouts’ there were more amber/green products situated at the ‘end of aisle’ (59.3%) and in the ‘promotional fridge’ (54.1%), $X^2(8, n = 2488) = 108.08, P < 0.001, \text{Cramer's } V = 0.208$ (Figure 29).

Figure 28: Prominence and 'healthiness' using FSA FOP labelling categories red, amber and green for the total study period for convenience stores only



Figure 29: Prominence and 'healthiness' using FSA FOP labelling categories red and amber/green for the total study period for convenience stores only



3.7.7 The promotional price and percentage saving in relation to 'healthiness'

Using the range of nutritional scoring methods already mentioned (FSA FOP score; FSA FOP category; Nutritional Quality Index and the *eatwell plate*), the 'healthiness' of the promotional products was measured against their promotional price and the percentage saving.

FSA FOP nutritional labelling:

Using a one-way ANOVA with post-hoc tests, and independent t- tests, the variables 'promotional price' and 'percentage saving' were measured against the FSA FOP nutritional categories (red, amber and green) and the collapsed categories (red, amber/green) to determine if there were any significant differences between categories and price or percentage savings. Overall, products in the red category were more expensive than products in the amber or green categories and the supermarkets/discounters prices were higher in all three categories compared to the convenience stores.

Specific key statistical findings for all stores; supermarkets/discounters and convenience stores are as follows:

All stores

For all stores combined there were significant differences in the promotional prices across the FOP nutrient labelling categories red, amber and green, $F(2, 6563) = 182.9, P < 0.001$ and for the FOP nutrient labelling categories red, amber/green, $t(6562) = 18.5, P < 0.001$. Promotional products categorised in the red category (£0.74) were more expensive than those located in the amber category (£0.52) ($P < 0.001$) and in the green category (£0.43) ($P < 0.001$). Similarly, promotional products were still more expensive in the red category (£0.74) than those located in the combined amber/green categories (£0.49) ($P < 0.001$). No significant differences were found between the FSA FOP nutritional labelling categories in relation to percentage saving, $F(2, 4757) = 0.349, P > 0.05$.

Supermarkets/discounters

Similarly, this same trend was observed within supermarkets/discounters for the red, amber and green categories ($F(2, 4121) = 84.07, P < 0.001$) and for the red, amber/green categories ($t(4119) = 12.38, P < 0.001$). Again, promotional products categorised in the red category (£0.77) were more expensive than those located in the amber (£0.58) ($P < 0.001$) green (£0.47) ($P < 0.001$) and the amber/green category (£0.54) ($P < 0.001$). No significant differences were found between the FSA FOP nutritional labelling categories in relation to percentage saving ($F(2, 3190) = 0.664, P > 0.05$).

Convenience stores

Again, a similar pattern was observed within the convenience stores for the red, amber and green categories ($F(2, 2442) = 106.63, P < 0.001$) and for the red, amber/green categories, $t(2441) = 14.48, P < 0.001$. Once more, promotional products categorised in the red category (£0.69) were more expensive than those located in the amber (£0.43) ($P < 0.001$), green category (£0.38) ($P < 0.001$) and in the amber/green category (£0.41) ($P < 0.001$). No

significant differences were found between the FSA FOP nutritional labelling categories in relation to percentage saving ($F(2, 1566) = 2.04, P > 0.05$).

Nutritional Quality Index

All stores

For all stores combined promotions in the 'less healthy' category were more expensive (£0.69) than foods in the 'healthy' category (£0.45) $t(6562) = 15.86, P < 0.001$. No differences were found between the categories in relation to percentage saving $t(4756) = -0.599, P > 0.05$.

Supermarkets/discounters

Within the supermarkets/discounters promotions falling into the 'less healthy' category were more expensive than the 'healthy' category (£0.72 vs £0.51) $t(4119) = 10.16, P < 0.001$. However, there was no significant difference in percentage savings, $t(3189) = -0.668, P > 0.05$.

Convenience stores

Similar results were noted for the convenience stores as 'less healthy' products were more expensive (£0.63 vs £0.37; $t(2441) = 12.52, P < 0.001$). Again, there was no significant difference in percentage savings ($t(1565) = -1.3, P > 0.05$).

Eatwell plate

All Stores

There were significant differences between the *eatwell plate* categories and the promotional prices ($F(5, 6558) = 106.84, P < 0.001$). Promotional products located in the 'meat, fish, eggs, beans, non-meat proteins' (£0.75) category were more expensive than the other *eatwell plate* categories ($P < 0.001$). Promotions located in the 'foods high in fat and sugar' (£0.66) categories were more expensive than the other categories ($P < 0.001$), they were, however, less expensive than 'meat, fish, eggs, beans non-meat sources' (£0.75) ($P < 0.001$). Foods located in the 'fruit and veg' (£0.36) category were significantly less expensive compared to the other categories ($P < 0.001$). However, this category did not significantly differ in price with foods located in the 'bread, pasta, rice and starchy food' category (£0.39) ($P > 0.05$).

Significant differences were also found in the percentage saving across the *eatwell plate* categories, $F(5, 4756) = 47.49, P < 0.001$. The highest percentage saving on promotions was found in the 'foods high in fat and sugar' (31%), 'milk and dairy' (31%) and the 'meat, fish, eggs, beans, non-meat proteins' (30%) ($P < 0.001$). Promotions in the 'fruit and veg' (16%) and the 'bread, rice, pasta, starchy foods' (20%) categories offered the least percentage saving compared to all the other categories ($P < 0.001$).

Supermarkets/discounters

Within the supermarket/discounters category there were also significant differences between the *eatwell plate* categories and the promotional prices, $F(5, 4116) = 72.57, P < 0.001$. Promotional products located in the 'meat, fish, eggs, beans, non-meat protein' (£0.79) category were more expensive than the other *eatwell plate* categories ($P < 0.001$) and promotions located in the 'foods high in fat and sugar' (£0.73) category were more expensive than the other categories ($P < 0.001$). Foods located in the 'fruit and veg' (£0.39) category were the least expensive compared to the other categories ($P < 0.001$). However, this category did not differ with foods located in the 'bread, rice, pasta, starchy foods' (£0.40) category ($P = 0.09$).

Significant differences were also found in the percentage saving across the *eatwell plate* categories, $F(5, 3189) = 31.31, P < 0.001$. The highest percentage saving on promotions was found in the 'foods high in fat and sugar' (31%), 'milk and dairy' (31%) and 'meat, fish, eggs, beans, non-meat proteins' (29%) ($P < 0.001$). Percentage savings in the 'fruit and veg' (13%) and the 'bread, rice, pasta, starchy foods' (19%) categories offered the least percentage saving compared to all the other categories ($P < 0.001$).

Convenience stores

A similar trend was observed in the convenience stores category as there were also significant differences between the *eatwell plate* categories and the percentage saving, $F(5, 2441) = 36.17, P < 0.001$. Promotional products located in the 'meat, fish, eggs, beans, non-meat protein' (£0.64) category were more expensive than the other *eatwell plate* categories ($P < 0.001$) and promotions located in the 'high fat/sugar' (£0.58) category were more expensive than the other categories ($P < 0.001$). Foods located in the 'fruit and veg' (£0.30) category were the least expensive compared to the other categories ($P < 0.001$). However, this category did not differ in price with foods located in the 'bread, rice, pasta, starchy foods' (£0.40) category ($P = 0.55$).

Significant differences were also found in percentage saving across the *eatwell plate* categories, $F(5, 1565) = 17.07, P < 0.001$. The highest percentage savings on promotions were found in the 'meat, fish, eggs, beans, non-meat proteins' (33%), 'foods high in fat and sugar' (30%), and 'milk and dairy' (30%) categories ($P < 0.001$). Percentage savings in the 'fruit and veg' (19%) and the 'bread, rice, pasta, starchy foods' (20%) categories offered the least percentage saving compared to all the other categories ($P < 0.001$).

3.8 Conclusion

Although there were notable differences between the retailer types and between phases on the promotional types, prominence of promotion types, FOP score, promotional prices, percentage saving and 'healthiness' of promotional products the following key points were noted across the total study period for all retailers combined:

- The main types of promotional offers across all stores were: 'price reductions'; 'standalone offers'; and 'multibuys' accounting for 88% of all promotions.

- The promotional price and percentage saving across promotional offers varied. The promotional prices of 'price reduction' and 'certain % extra free' were lower than all other offers. In addition, there were notable differences on percentage savings across promotions with 'price reduction', 'certain % extra free' and 'meal deals' offered the greatest percentage saving across all retailers.
- Differences in the prominence of promotional offers at the various promotional sites were noted. The greatest number of promotional offers were found at the 'end of aisles' and on 'promotional stands'. The 'checkouts' and the 'fruit and vegetable promotional displays' offered the least amount of promotional offers.
- In recognition of the fact that retailers and consumers already widely understand and use FOP labels, the primary analysis of the healthiness of food retail promotions relied on this scoring mechanism. Using the FSA FOP composite score (for energy, sugar, fat, sat fat and salt) labelling categories (red, amber and green) a similar number of products were categorised as 'red' (47.5%) as categorised as 'amber' or 'green' (52.5%). Similar findings were obtained for individual nutrients scored (sugar, fat, saturated fat and salt). Additionally the mean FOP score was 9.3 (SD 3.0), which fell into the amber category.
- Further analysis using other nutritional indicators present further and deeper insight into the nutritional status of food retail promotions.
 - The Nutritional Quality Index highlighted that two thirds of all promoted products were 'less healthy'.
 - Using the *eatwell plate* food categories, just less than half (43%) of promoted products were classified as 'foods high in fat and sugar' and 12% were fruit and vegetables.
- Results identified an association between the prominent positioning of promotional offers and their 'healthiness'. Most promotional products situated at 'promotional buckets', promotional stands' and 'checkouts' were classified as red using FSA FOP categories. As expected, promotional products situated at the 'fruit and veg promotional stand' were classified as green.
- Significant differences were also noted on the price of promotional products in relation to their 'healthiness'. Firstly, using both the FSA FOP categories and Nutritional Quality Index score, promotional products categorised as 'red' or 'less healthy' were more expensive than those classified as 'amber', 'green' or 'healthier'. Secondly, both 'healthy' and 'less healthy' products showed similar percentage savings. Finally, the *eatwell plate* identified products in the 'meat, fish, eggs, beans and non-meat proteins' and products in the 'foods high in fat and sugar' as the most expensive. However, these categories, coupled with the 'milk and dairy' group, also offered the greatest percentage saving.
- Comparisons between the pre- (Phase 1) and post-Christmas (Phase 2) phases showed that there was a greater proportion of 'bulk discounts' in Phase 1 and a greater proportion of 'mix & match promotions' in Phase 2. In regards the

'healthiness' of the promotions there was a higher percentage of products classified as 'amber' or 'green' in Phase 2 compared to Phase1.

- Convenience stores were more likely to offer 'standalone' promotions, while supermarket/discounters were more likely to offer 'multibuys' and 'mix & match' promotions. Aligned to the central research question, convenience stores obtained a higher (healthier) FSA FOP score ($M = 9.6$, $SD = 3.1$) compared to supermarket/discounters ($M = 9.2$, $SD = 2.9$), and promoted more foods classified as 'green' (24% vs 17%), but were more likely to promote foods from the 'foods high in fat and sugar' category (47% vs 40% for convenience stores and supermarkets/discounters respectively).

Summary statement

The in-store audit is conclusive in its finding that a balance (47.5% (red) vs 52.5% (amber/green) in favour of health exists among food retail promotions in NI. In the main, results showed similarities between and across phases one and two. In addition, price-based promotions as opposed to volume-based promotions were utilised more often across the retailers. Finally, relationships between the healthiness of a food retail promotion and its prominence was identified.

Chapter 4
Stage 2b:
Online audit of food retail
promotions

4.0 Introduction

As part of the second stage of this investigation an online audit was conducted to assess the promotional types, promotional prices and the 'healthiness' of promotions across the three main supermarket retailers in NI and using a convenience store as a comparator. In line with Chapter 3, this chapter will firstly discuss the analysis procedure undertaken within the data collection process. Secondly, the results will be presented, interpreted and discussed in relation to the central research question posed in chapter one.

4.1 Development of the audit tool

An adapted audit tool, outlined in Appendix 3, was used to measure the nutritional composition per 100g/ml of food retail promotions within the online setting. This section of the audit tool consisted of information on the retailer (name), food retail promotion (promotional type; promotional price; and pre-promotional price); product information (brand name, pack size and any additional information); and nutrition information energy (kJ, Kcal), carbohydrate (g), sugar (g), fat (g), saturated fat (g), salt (g), protein (g), and fibre (g).

4.2 Sample

A total of four retailers was included within the sample; the three supermarkets with the greatest market share in Northern Ireland/UK (Tesco, ASDA and Sainsbury's) ^[74] and one anonymous convenience store as a comparator.

4.3 Data collection

Data were collected every three weeks (Wednesday) from the 'top offer' section of each retailer website over a one-year period (9th April 2014 – 1st April 2015; 18 data collection time points). Information on a total of 2658 products was collected: 790 (29.7%) were non-food items, of which 202 (7.6%) were alcoholic beverages. All non-food items were discarded for the remainder of the analysis. To investigate seasonal variation, data collection points were coded into seasons as follows: March – May (Spring); June – August (Summer); September – November (Autumn); December – February (Winter). Subsequently, these were collapsed into two phases: Spring/Summer (phase 1) and Autumn/Winter (phase 2); for consistency with the in-store food promotion sample. The characteristics of the data collected are outlined in Table 15.

Table 15 Data characteristics

	Total	Asda	Sainsbury's	Tesco	Convenience store
Total food / beverage products	1868 (100%)	571 (31%)	246 (13%)	337 (18%)	714 (38%)
Total food products	1601 (86%)	499 (87%)	197 (80%)	286 (85%)	619 (87%)
Total beverage products	267 (14%)	72 (13%)	49 (20%)	51 (15%)	95 (13%)
Total promotions / week mean (\pm SD)	104 (\pm 19.8)	32 (\pm 10)	20 (\pm 10.5)	14 (\pm 4.7)	40 (\pm 10.2)

As a wide range of promotional offers was identified across the retailers, to assist analysis all promotional products were further classified into the categories outlined below in Table 16.

Table 16 Definition of promotions

Type	Definition	Example
Bulk Discount	Product available as part of deal for buying more than one of the SAME product	e.g. Buy one get one free, buy one get one half price, buy two get a third one free, buy one get one half price
Price Reduction	The pre-promotional price is shown longside the price reduction = £xx savings shown	e.g. Save 50% was £2 now £1
Standalone offer	No information on pre-promotional price is provided and no price saving is shown	e.g. Only £1, Only £3
Multibuys	The SAME product for a special price (but may have flavour variations)	e.g. Any 2 for £3, Any 3 for £5
Mix and Match	This is a choice combination of DIFFERENT products - for a set price	e.g. Any 3 fruit items for £3, Any 2 frozen items for £5, 3 for 2 - cheapest free
Certain % extra free	No price of cost saving is shown however the pack size is offering a certain % extra free	e.g. 33% extra free, 150ml extra free
Meal Deals WITH CHOICE	Product combinations FROM A NUMBER OF CHOICES which make a lunch/dinner at a specified price.	e.g. main, sides and dessert

4.4 Measurements

In order to later assess the promotions in terms of their healthiness and promotional savings a range of scoring methods was applied as follows:

Nutritional profiling

Front of pack (FOP) nutrient labelling system

To assess the promotions in terms of their 'healthiness' a Front of Pack (FOP) nutrient labelling system was used. This scoring system focuses on the 'risk' nutrients and energy density values displayed FOP which are directly associated with health. This system was chosen after evaluation of a number of scoring tools because: (i) it is a fit-for-purpose tool suitable for non-specialists to implement and may therefore be useful to retailers; (ii) it utilises the FOP information faced by consumers when making their food choice decision and; (iii) it allows nutrient level comparisons enabling recommendations for reformulation opportunities.

Each product item was assigned an **individual nutrient** (energy, sugar, fat, saturated fat and salt) was assigned a score from 1 to 3 [i.e. high (red) =1, moderate (amber) =2 and low (green) =3] according to the FSA front of pack (FOP) nutrient labelling methodology^[1]. The **individual nutrient score** (energy, sugar, fat, saturated fat and salt) was calculated to

create an overall **FOP mean composite score** (i.e. 1 = red, 2 = amber or 3 = green) for each product item.

Energy values (kcal) were initially categorised based on the classifications by Bell et al. (1998) ^[47] low, <3.5 kJ g⁻¹; moderate, 3.5–4.3 kJ g⁻¹; high 4.4–5.6 kJ g⁻¹; very high, >5.6 kJ g⁻¹ and then further adapted by collapsing the low, moderate and high groups into the following categories:

- **Per 100g:** High (red = 1) >560kJ; moderate (amber = 2) >440 to ≤ 560kJ; and low (green =3) ≤440 kJ
- **Per 100mls:** High (red = 1) >280kJ; moderate (amber = 2) >220 to ≤ 280kJ; and low (green= 3) ≤220 kJ

The **FOP mean composite score** per product score ranged from 5 to 15. These scores were then assigned to the appropriate FOP category [i.e. high (red) =1, moderate (amber) =2 and low (green) =3]. A tertile split was used to assign the cut of values for the **FOP mean composite score** as follows: Red = < 8; Amber = 9 to 12 and; Green = 13 – 15.

Nutritional Quality Index

A median split was applied to the total FOP scores (i.e. 5 - 15) obtained from the promotional products to categorise foods according to being 'less healthy' (between 5 - 10) and 'healthy' (between 11 - 15).

Eatwell plate

Each promotional product in the dataset was assigned a category in the *eatwell plate*. Composite foods were assigned into which ever food group was most abundant in that particular food following the guidance document provided by Public Health England ^[127].

Promotional price

The overall promotional price of each product was calculated to obtain the promotional price per 100g/ml of promotional product {(promotional price of product/total promotional weight of product)*100}. The overall non-promotional price was calculated to obtain the overall non-promotional price per 100g/ml of promotional product {(non-promotional price of product/total promotional weight of product)*100}. Subsequently, it was possible to then obtain the percentage promotional saving per 100g/ml {(difference pre-post promotional price per 100g/ml / promotional price of product 100g/ml)*100}.

4.5 Exploratory data analyses and data screening

All data were inputted into the software package SPSS version 22 for Windows (Inc., IBM). Prior to any statistical analyses, an exploratory analysis was carried out to screen the data for detection of outliers/mistakes and to check that that the variables did not violate any parametric assumptions. Missing values were replaced with -999 using the system missing function in SPSS. Nutritional information from food products was recorded per 100g/ml by the researchers during the survey collection. Exploratory analyses indicated that the promotional price and percentage saving variables were skewed, therefore, log 10 and

SQRT transformations were applied to normalise the data in order to meet the assumptions for parametric testing of continuous variables. Analyses indicating a probability of $P < 0.05$ were considered significant.

4.6 Data analysis

The analysis procedures are outlined as follows:

4.6.1 Descriptive statistics

The frequency (n), distribution (%) and/or the mean \pm SD of the following variables were measured:

Promotion type; price per 100g/ml of promotional product; percentage promotional saving; raw macronutrient content (g) per 100g/ml product; FOP (1-3) for each nutrient content. Total overall FOP score (1 - 15) for all nutrients combined for each product (n= 5 nutrients); mean FOP (1 - 3) per 100g/ml of each product; Final FOP Category (1-3) for each product per 100g/ml; Nutritional Quality (1 = 'less healthy' and 2= 'healthy') and the *eatwell plate* category (1 - 6).

4.6.2 Statistical associations between categorical variables

Chi-square tests for independence were used to explore potential relationships between categorical variables (i.e. promotional type: study phase, retailer type). The chi-square test determines if there is a significant difference between expected and observed results. Phi and Cramer's V coefficients were also calculated and effect size was reported in accordance with Cohen's (1988) ^[128] criteria. Post hoc tests were conducted to determine which cells were statistically significant.

4.6.3 Statistical differences between continuous and categorical variables

Independent t-tests were used to assess differences between continuous variables (i.e. promotional price and percentage saving) and categorical variables with only two groups (i.e. Nutrition Quality Index).

One way ANOVAs were carried out to assess differences between continuous variables (i.e. promotional price and percentage saving) and all of the categorical variables with more than two groups (i.e. FOP nutritional labelling and *eatwell plate* categories). Post hoc comparisons tests were made using Bonferonni (adjusted for multiple comparisons) to identify which groups differed significantly.

Values of $P < 0.05$ were considered statistically significant.

4.7 Results

Within this chapter results will be presented and discussed on the following promotional variables measured online during Phase 1 (P1), Phase 2 (P2) and the Total Study Period

(Combined Phases) for all stores combined; supermarket stores only; and convenience stores only:

1. Types of promotional offers available online;
2. The promotional costs and percentage saving across promotional offers available online;
3. The nutritional content of promotional offers across retailers online;
4. The 'healthiness' of promotional offers across retailers online; and
5. The promotional price and percentage saving in relation to 'healthiness' online.

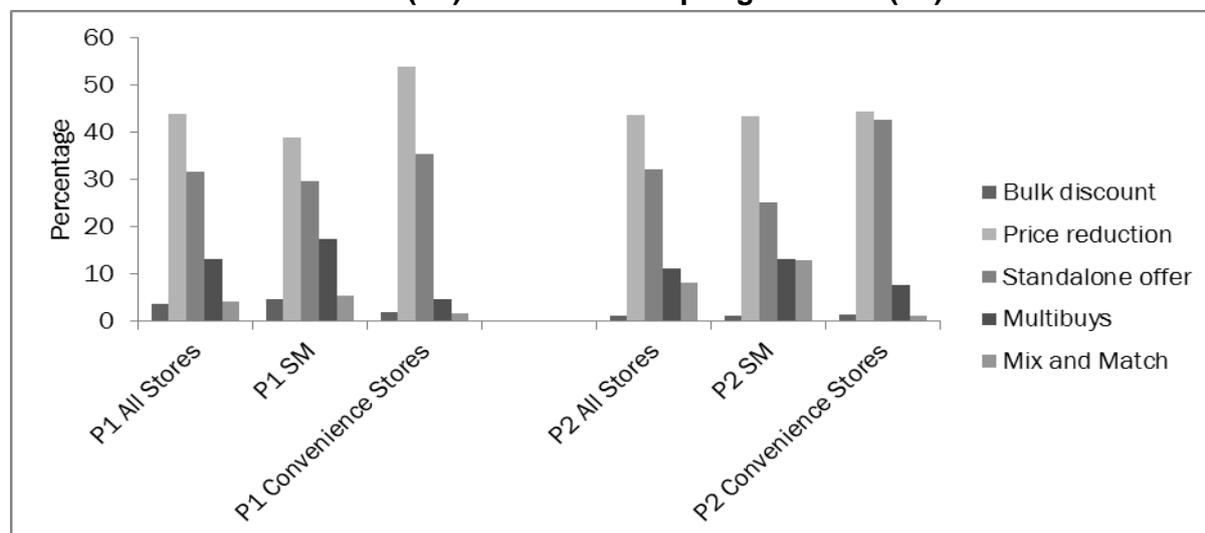
4.7.1 Types of promotional offers available online

The frequency and percentage of promotional offers assessed online for Phase 1, Phase 2 and for the total study period for all stores and across store type can be seen in Appendix 3 Table A. A series of chi-squared tests for independence was used to detect statistical significant associations in promotional type offers between the phases and between store types.

The main type of promotional offers available online for the total study period were 'price reductions' (n = 1136, 61%) and 'multibuys' (n = 607, 33%). Combined these amounted to 94% of all offers recorded. There were fewer 'bulk discounts' (n=46, 2.5%), 'mix and match' (n= 44, 2.4%) and 'standalone' (n=27, 1.5%) promotions and there were no 'certain percentage free' or 'meal deals with choice' promotions offered. Between phases there were little differences across store type for promotional types offered (Figure 30).

There was a significant difference in the frequency of promotional types between the supermarkets and the convenience stores, $\chi^2(4, n=1860) = 181.86, P < 0.001, \text{Cramer's } V = 0.313$. The convenience stores offered a higher percentage of 'price reduction' (79% vs 50%) and a lower percentage of 'multibuy' (16% vs 43%) promotions compared to the supermarkets over the total study period.

Figure 30 Promotional types for all stores, supermarkets (SM) and convenience stores for Phase 1: Winter/Autumn (P1) and Phase 2: Spring/Summer (P2)



Specific key findings for all stores, supermarkets and convenience stores are as follows:

All stores:

For all stores combined there were almost no differences in promotional types offered between phases χ^2 (4, n=1860) = 3.77, $P > 0.05$, Cramer's V = 0.045 (Figure 30).

Supermarkets:

The frequency of promotional types did not significantly change between Phase 1 and Phase 2. In Phase 1 there was a slight increase in the frequency of 'price reductions' (P1, n = 312, 53% vs P2, n = 259, 45%), and a decrease in 'multibuys' (P1, n=230, 39% vs P2, n=264, 46%) however all other promotions were similar in both phases, χ^2 (4, n = 1147) = 7.5, $P = 0.11$, Cramer's V = 0.08 (Figure 30).

Convenience Stores:

There was a small increase in the number of 'price reduction' promotions (P1 = 258, 77% vs P2 = 307, 81%) in Phase 2. However, overall the frequency of promotional types within the convenience stores did not differ between Phase 1 and 2 of the study χ^2 (4, n=713) = 6.7, $P = 0.15$, Cramer's V = 0.09 (Figure 30).

4.7.2 The promotional costs and percentage saving across promotional offers available online

The mean \pm standard deviation of the promotional price and percentage promotional saving per 100g/ml for all promotional offers combined and for promotional offers individually for Phase 1, Phase 2 and the total study period, and for all stores and across store type can be seen in Appendix 3 - Tables B - D. Independent t-tests and one-way between group ANOVAs with Bonferroni post-hoc tests were used to test for statistical significant differences.

Specific key findings for all stores; supermarkets and convenience stores are as follows:

All stores

Over the total study period the mean promotional price was £0.59 and there was no significant difference between the supermarkets (£0.60) and the convenience stores (£0.58) in mean promotional prices, t (1858) = 0.59, $P = 0.56$. However, the convenience stores offered a significantly greater percentage saving (35% vs 29%) on promotions compared to the supermarkets t (1228) = -8.3, $P < 0.001$ (Figure 31).

Within Phase 1 of the study, the supermarket retailers (£0.57) offered marginally lower average promotional prices than the convenience stores (£0.58), however, this was not significant t (911) = -0.4, $P = 0.53$. Meanwhile, the convenience stores, offered a greater percentage saving (34% vs 30%) compared to the supermarkets t (517) = -3.6, $P < 0.001$.

Within Phase 2 of the study, the convenience stores (£0.52) offered lower average promotional prices than the supermarkets (£0.55), however, this was not significant $t(945) = 1.0, P=0.29$. Additionally, the convenience stores offered a significantly greater percentage saving (36% vs 28%) in promotions compared to the supermarkets, $t(706) = -8.2, P<0.001$.

Within the promotional categories (bulk discount, price reduction etc.) there were significant differences in the promotional prices $F(4, 1847) = 4.8, P<0.001$, although, the effect size was small (partial eta squared = 0.01). 'Mix and match' (£0.43) promotions provided cheaper promotional prices compared to 'standalone' (£0.95) promotions. ($P< 0.001$). Furthermore, there were significant differences in the percentage saving between the promotional categories $F(4, 1790) = 143.5, P<0.001$. 'Bulk discount' promotions offered the greatest percentage saving (41%) followed by 'price reductions' (36%) and 'mix and match' (25%) (Figures 31 and 32).

Figure 31 Promotional price (£) of promotional product (per 100g/ml) across the various promotional types

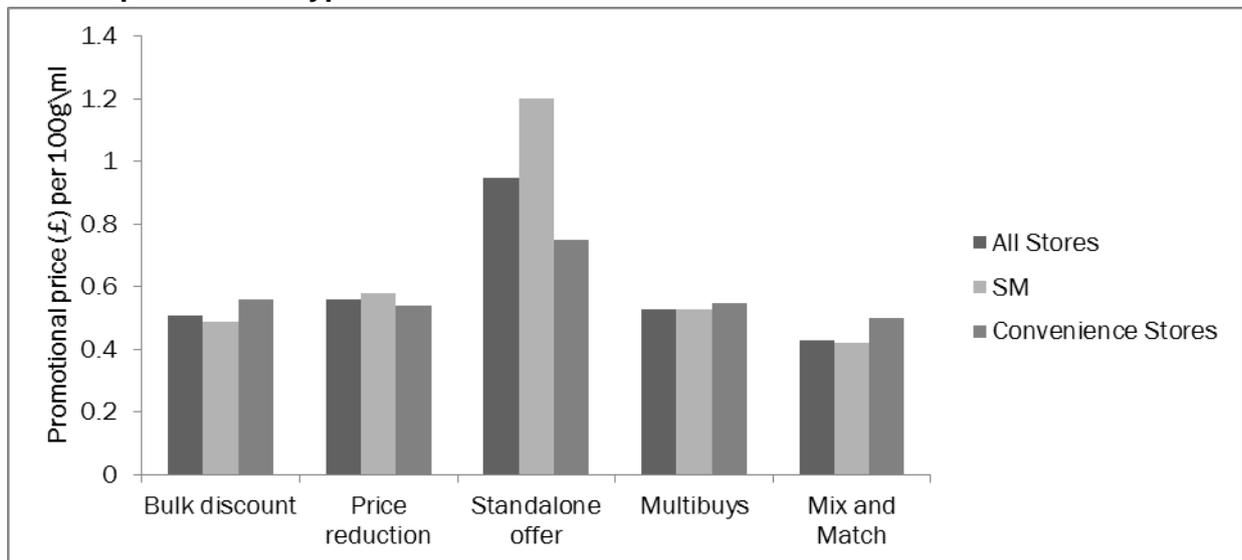
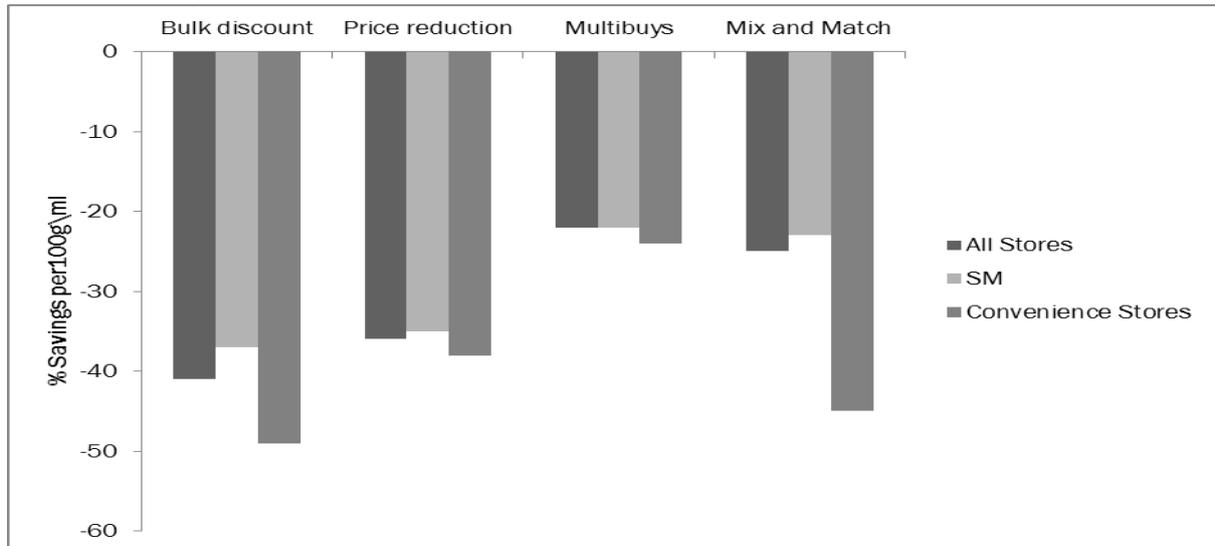


Figure 32 Percentage saving on promotional product (per 100g/ml) across the various promotional types



Supermarkets:

There was no significant differences in mean promotional prices, $t(1149) = 0.67, P = 0.50$ and percentage saving $t(1135) = 1.74, P = 0.08$ between Phases 1 and 2 within the supermarket retailer sample.

However, there were notable significant differences between the various promotional types, $F(4, 1143) = 5.7, P < 0.001$. The main difference observed was a significantly higher price for 'standalone' promotions compared to all the other promotional types (£1.20, $P < 0.001$). The lowest prices offered were for mix and match' (£0.42) and 'bulk discounts' (£0.49). As expected there were also significant differences between the promotional types in relation to percentage savings, $F(4, 1134) = 86.58, P < 0.001$. The greatest percentage savings were seen in 'bulk discounts' (37%) and 'price reductions' (35%) (Figures 33 and 34).

Figure 33 Price (£) promotional product (per 100g/ml) between the supermarkets and convenience stores

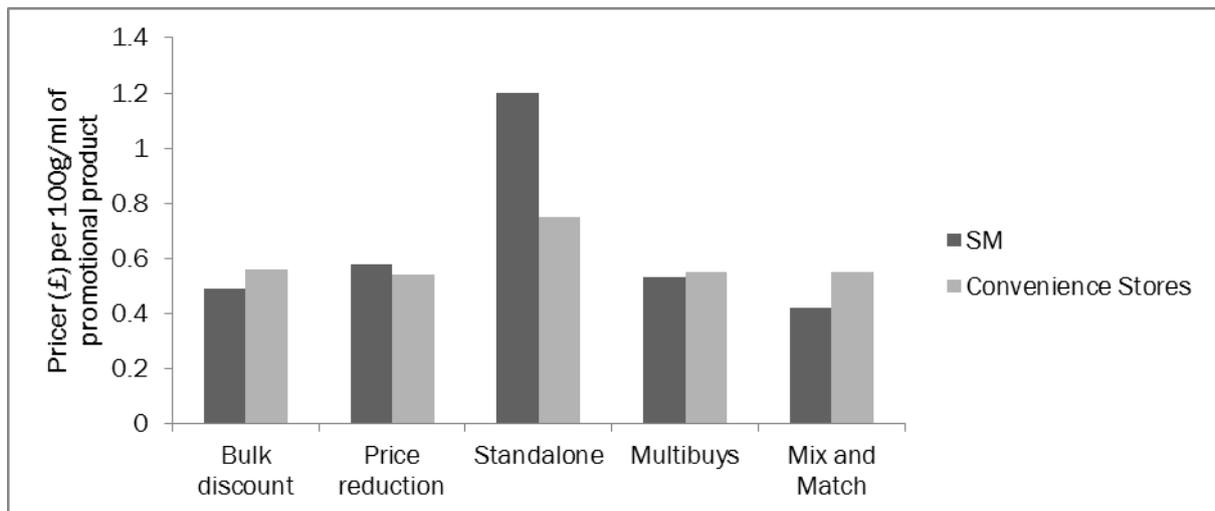
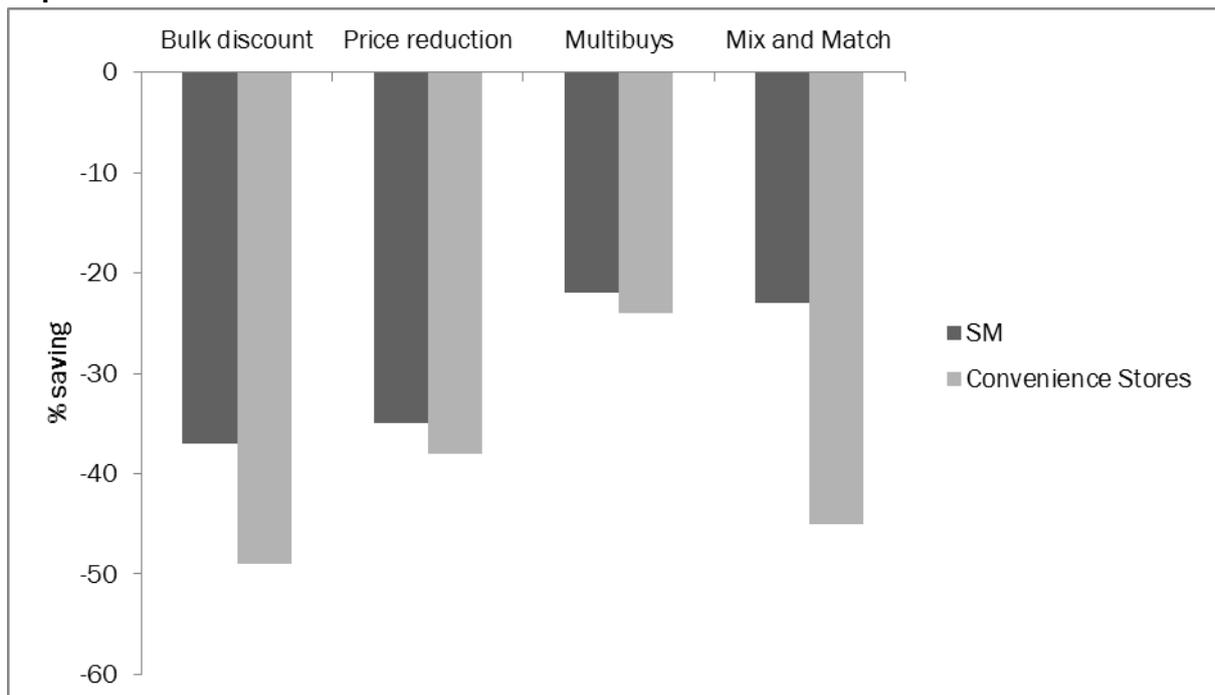


Figure 34 Percentage saving on promotional product (per 100g/ml) between supermarkets and convenience stores



Convenience stores:

There was no significant differences in promotional cost $t(707) = 1.2, P = 0.22$ and percentage saving $t(659) = -1.8, P = 0.06$ between Phases 1 and 2 within the convenience stores sample.

In addition, there were no significant differences between the various promotional types, $F(4, 707) = 0.625, P = 0.645$. A slight difference observed was a higher price for 'standalone'

promotions compared to all the other promotional types (£0.75). All other prices were similar ranging from £0.50 to £0.56. However, significant differences between the promotional types in relation to % savings were observed, $F(4, 659) = 43.7, P < 0.001$. The greatest percentage savings were seen in 'bulk discounts' (49%) and 'mix and match' (45%) promotions.

4.7.3 The nutritional content of promotional offers across retailers online

The mean \pm standard deviation of the nutritional content of the promotional offers for Phase 1, Phase 2, and total study period and for all stores and across store type can be seen in Appendix 3 - Table E. The frequency and percentage of energy, sugar, fat, saturated fat and salt represented in terms of the FSA FOP categories (red, amber and green vs red, amber/green) are also presented in Appendix 3 - Table E.

Overall, there was a significant difference in carbohydrates (g), sugar (g), protein (g) salt (g) and fibre (g) between the supermarkets and the convenience stores over the total study period. The supermarket promotions were lower in carbohydrates (23g vs 25g) $t(1470) = -2.1, P = 0.035$, sugar (9.9g vs 12.8g), $t(1289) = -3.6, P < 0.001$, salt (0.7g vs 0.8g), $t(1002) = -2.99, P = 0.003$, and higher in protein (8.4g vs 6.1g) $t(1773) = 6.4, P < 0.001$ and fibre (1.7g vs 1.4g) $t(1535) = 2.02, P = 0.043$ compared to the convenience stores.

In Phase 1, only protein was significantly higher in the supermarkets compared to the convenience stores (8.0g vs 6g) $t(804) = 3.17, P = 0.002$. However, in Phase 2 the supermarkets were significantly lower in carbohydrate (21g vs 26g) $t(733) = -2.9, P = 0.003$, sugar (8.3g vs 13g) $t(608) = -4.0, P < 0.001$, salt (0.66g vs 0.9g) $t(503) = -2.8, P = 0.005$ and higher in protein (8.9g vs 6.0g) $t(938) = 5.99, P < 0.001$ compared to the convenience stores.

Specific key findings for all stores; supermarkets and convenience stores across Phases 1 and 2 using FSA FOP labelling categories (red, amber and green) and FSA FOP labelling categories collapsed into red and amber/green are as follows: (Figures 35 - 46).

Figure 35 Percentage of promotional products in the FOP red, amber and green for energy only

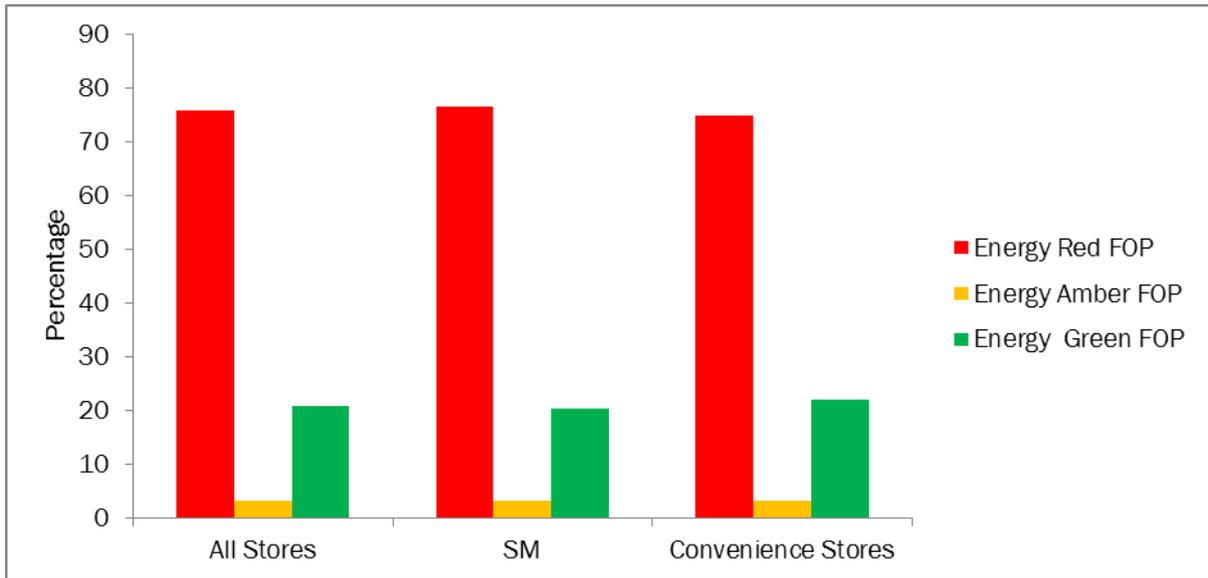


Figure 36 Percentage of promotional products in the FOP red and amber/green for energy only

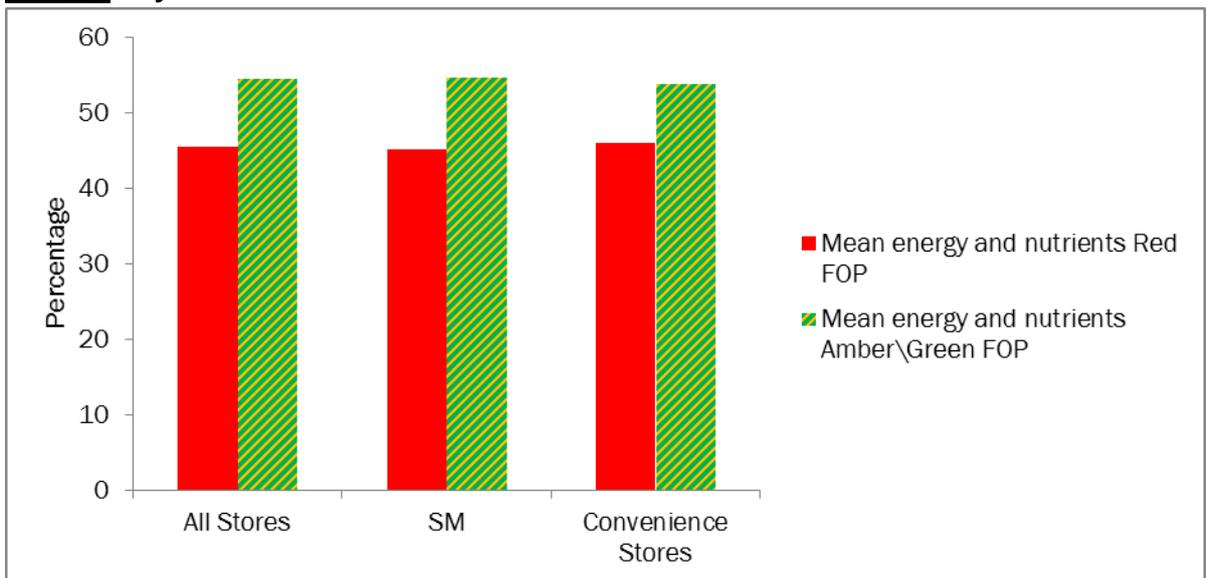


Figure 37 Percentage of promotional products in the FOP red, amber and green for sugar only

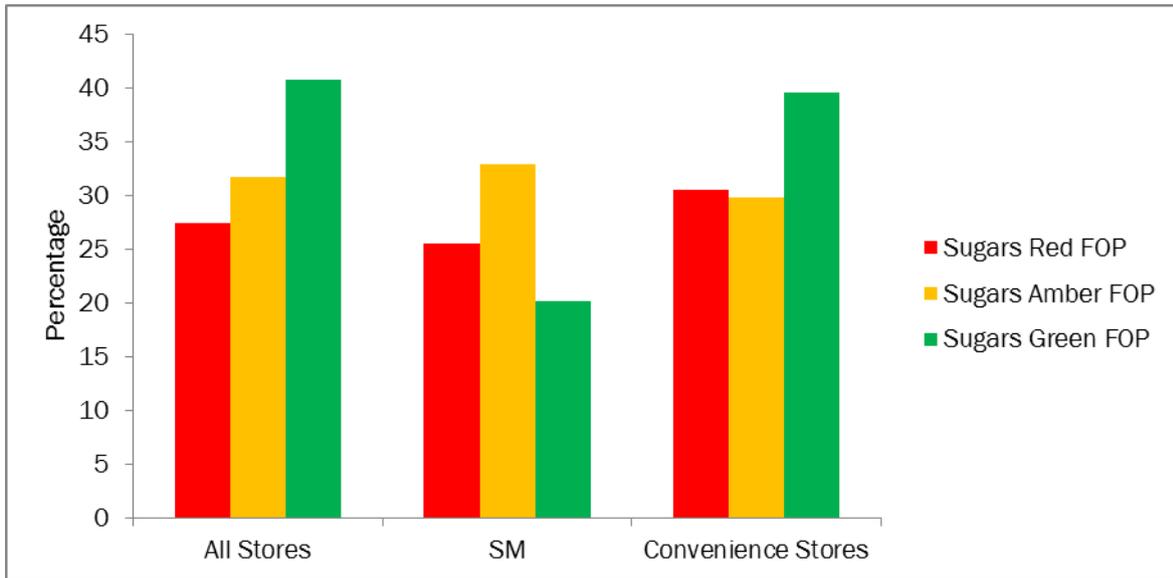


Figure 38 Percentage of promotional products in the FOP red and amber/green for sugar only

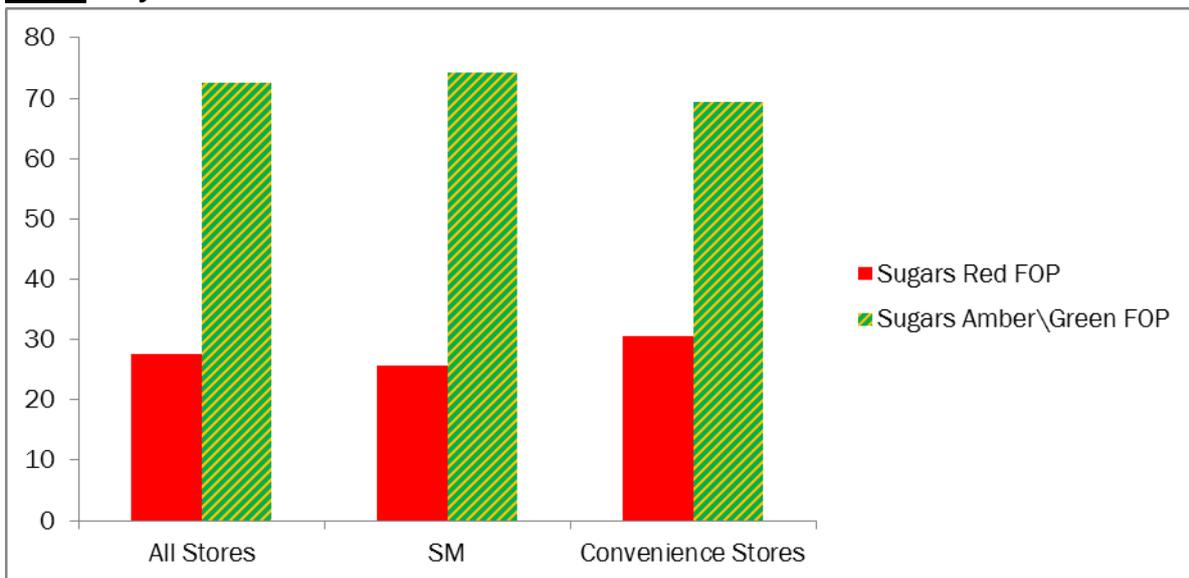


Figure 39 Percentage of promotional products in the FOP red, amber and green for fat only

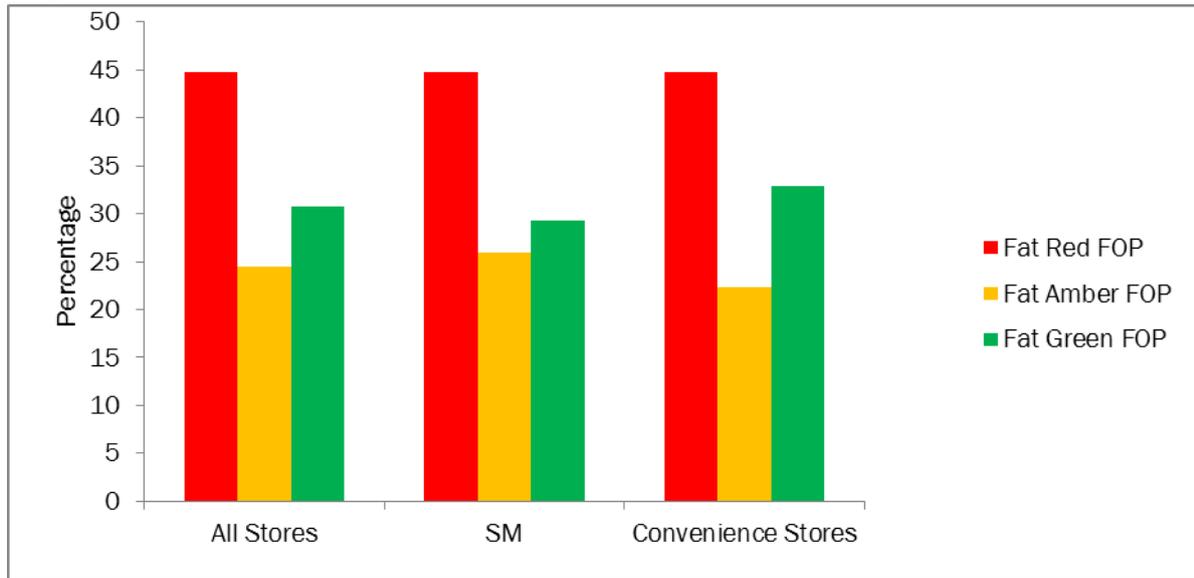


Figure 40 Percentage of promotional products in the FOP red and amber/green for fat only

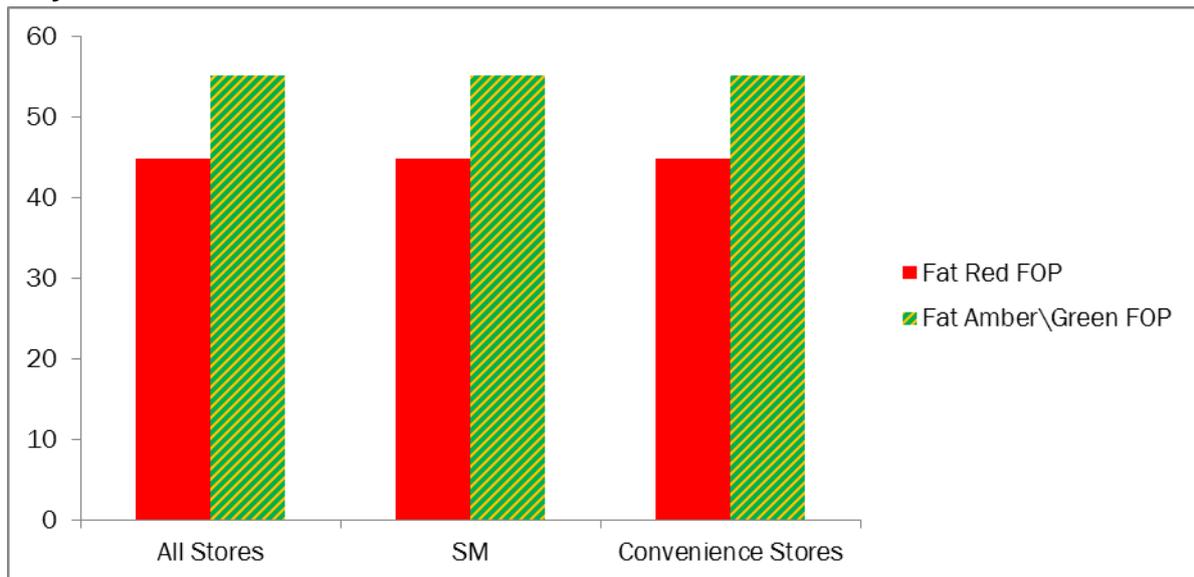


Figure 41 Percentage of promotional products in the FOP red, amber and green for saturated fat only

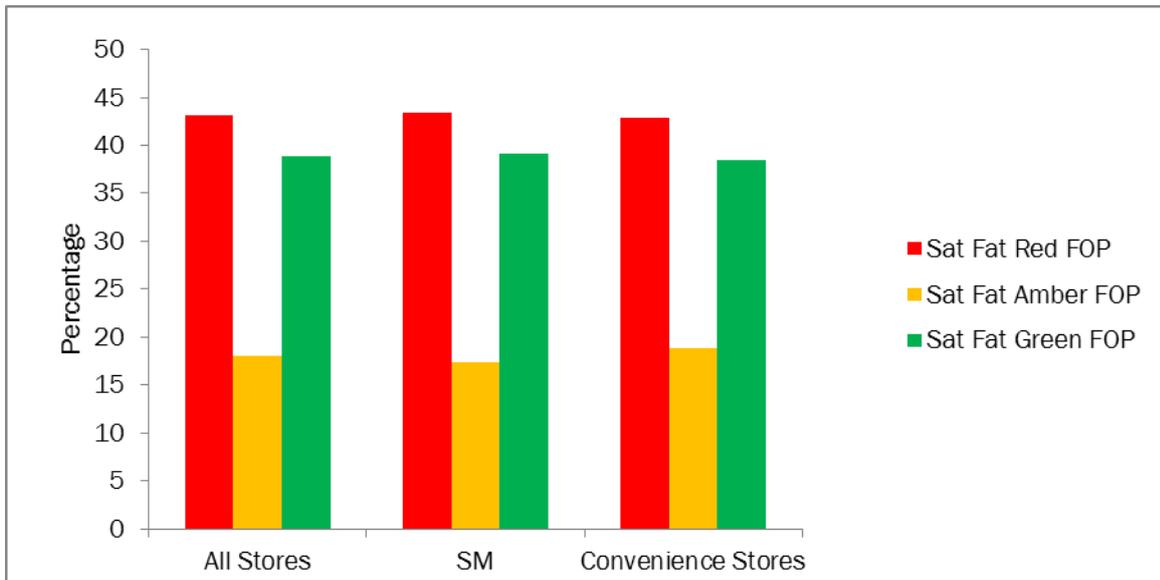


Figure 42 Percentage of promotional products in the FOP red and amber/green for saturated fat only

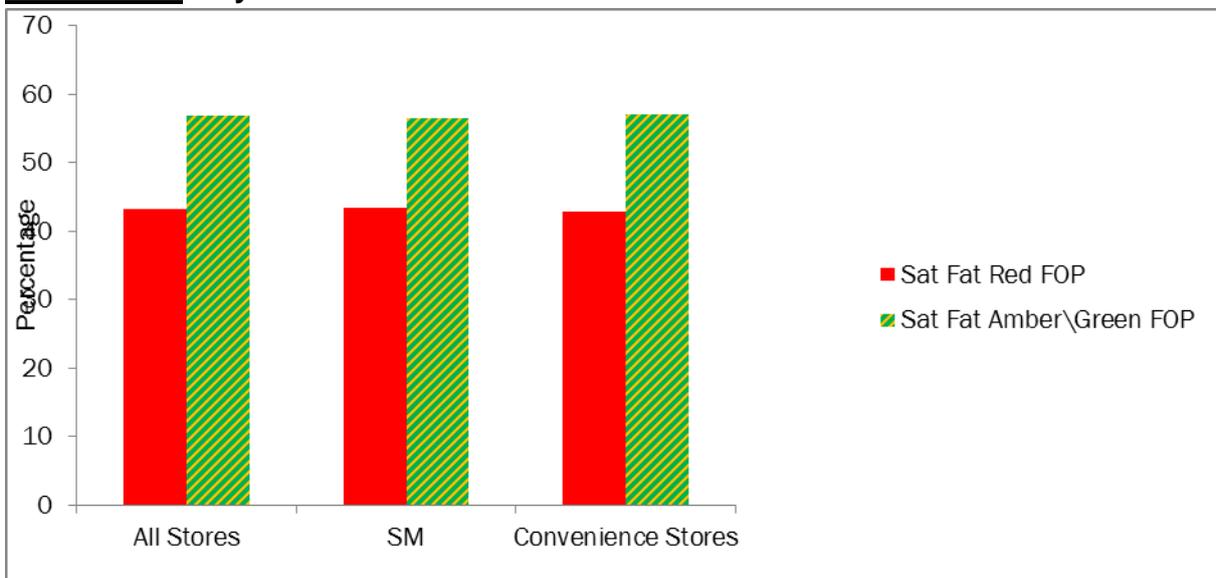


Figure 43 Percentage of promotional products in the FOP red, amber and green for salt only

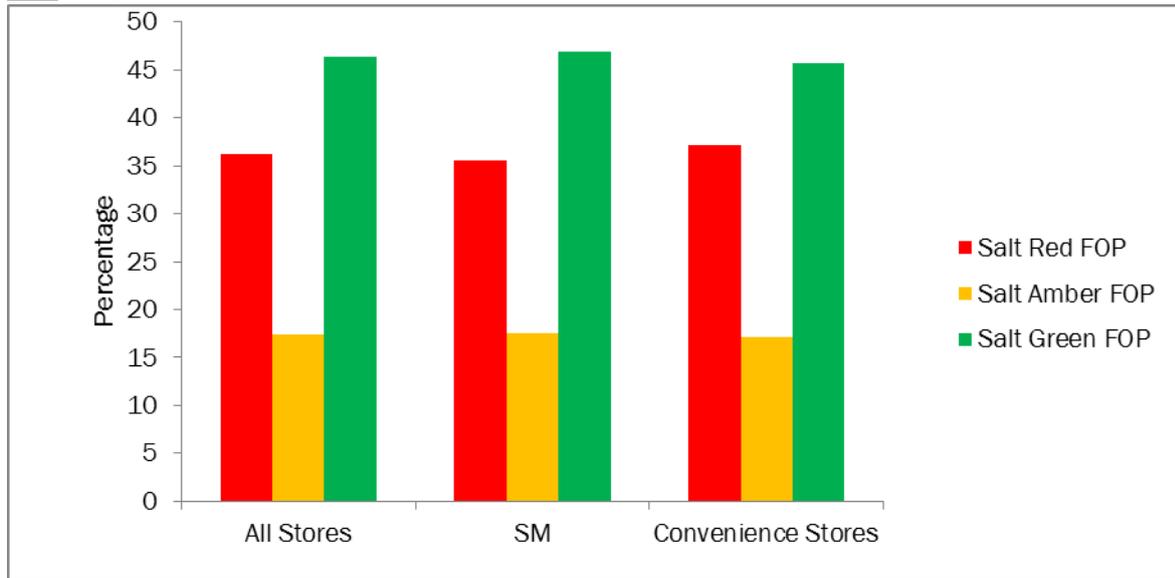


Figure 44 Percentage of promotional products in the FOP red and amber/green for salt only

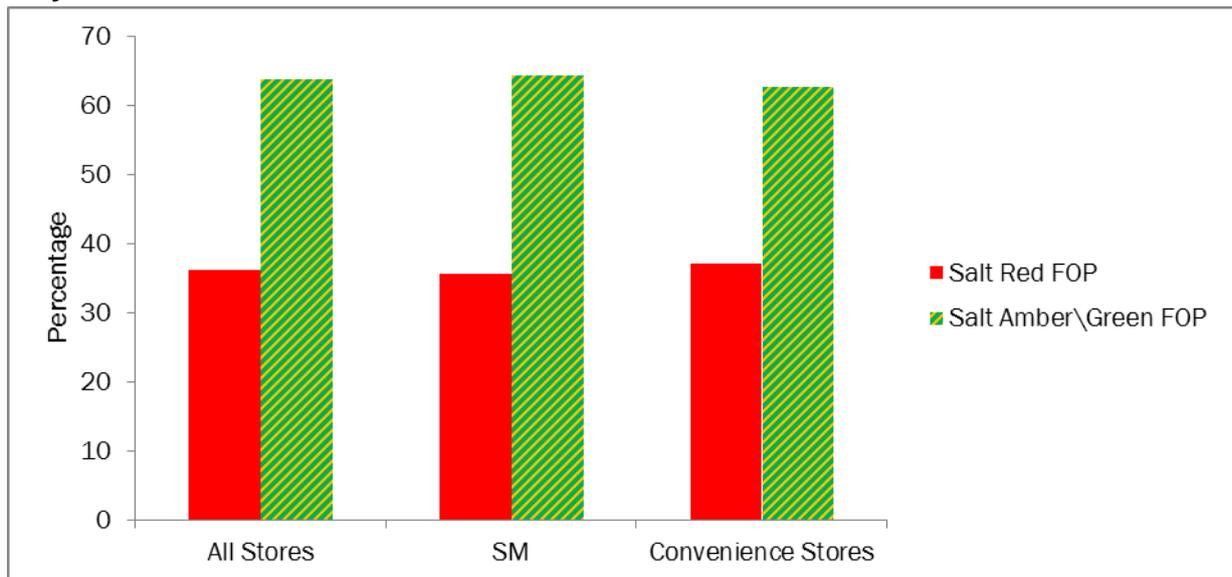


Figure 45 Percentage of promotional products in the FOP red, amber, green for the mean of energy, sugar, fat, sat fat and salt

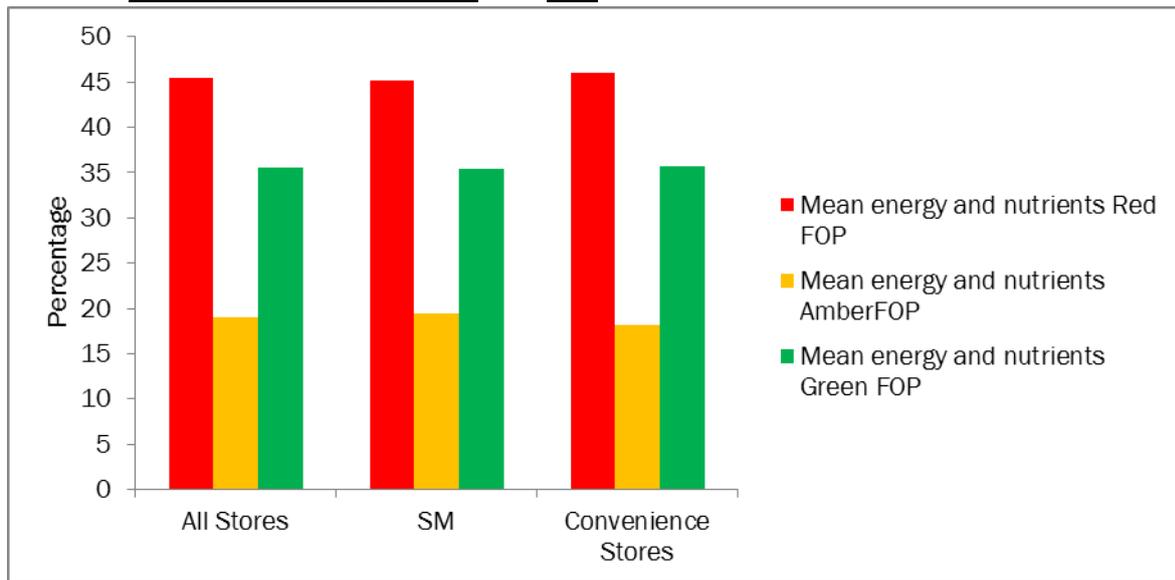
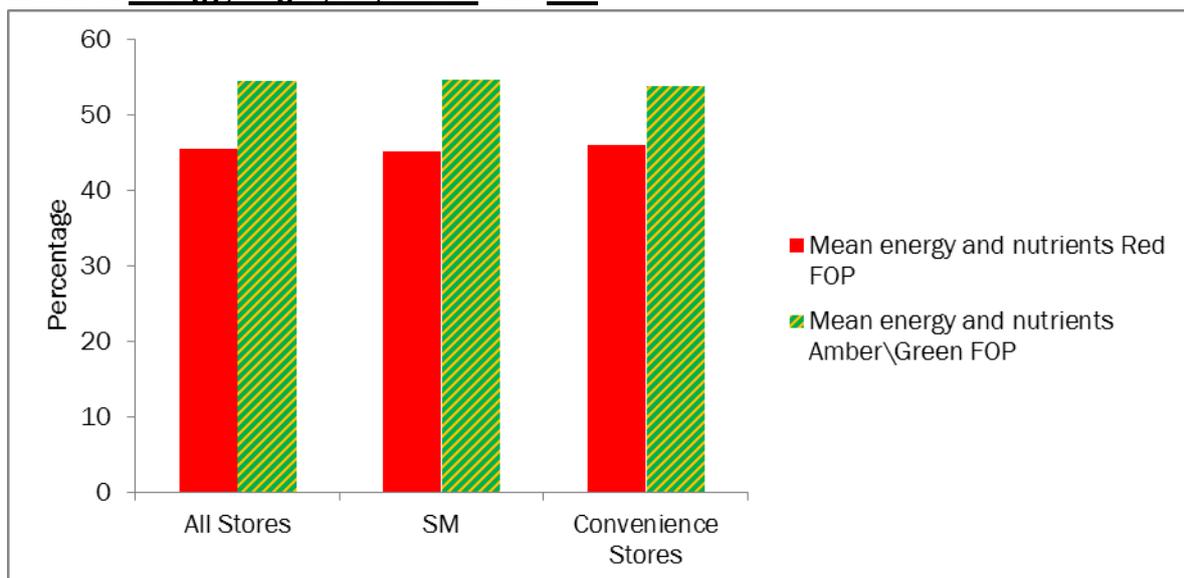


Figure 46 Percentage of promotional products in the FOP red and amber/green for the mean of energy, sugar, fat, sat fat and salt



All stores using FSA FOP categories red, amber and green

There were little differences in the percentage of products classified as red, amber or green between phases for all stores combined. Only sugar and salt were higher in Phase 1 compared to Phase 2 – see Table 17.

Table 17: Chi-squared tests for all stores between Phase 1 and Phase 2 for FSA FOP categories red, amber and green

	% Within Phase 1	% Within Phase2	Chi-squared
Energy FOP	No significant differences	No significant differences	χ^2 (2, n=1867) =0.42, P=0.81, Cramer's V = 0.02.
Sugars FOP	Higher % in red P1= 30.4% P2 = 24.7%	Higher % in amber P1 = 29.9% P2 = 33.5% Higher % in green P1= 39.7% P2= 41.8%	χ^2 (2, n=1865) =7.7, P= 0.021, Cramer's V= 0.06.
Fat FOP	No significant differences	No significant differences	χ^2 (2, n=1867) =0.05, P= 0.97, Cramer's V= 0.005.
Sat Fat FOP	Higher % in red P1 = 45.4% P2 = 41.1%	Higher % in amber P1 = 15.9% P2 = 20% Higher % in green P1= 39% P2= 38.7%	χ^2 (2, n=1866) =6.3 P<0.05, Cramer's V = 0.06.
Salt FOP	No significant differences	No significant differences	χ^2 (2, n=1815) = 5.7, P>0.05, Cramer's V = 0.07.

All stores using FSA FOP categories red and amber/green

As can be seen below after the amber and green categories were combined, significant differences between phases were only observed for sugar and salt – see Table 18.

Table 18 Chi-squared test for all stores between Phase 1 and Phase 2, for FSA FOP categories red and amber/green

	% Within Phase 1	% Within Phase2	Chi-squared
Energy FOP	No significant differences	No significant differences	χ^2 (1, n=1867) =0.42, P=0.517, Cramer's V = - 0.015.
Sugars FOP	Higher % in red P1= 30.4% P2 = 24.7%	Higher % in amber/green P1 = 69.6%% P2 = 75.5%%	χ^2 (1, n=1867) =7.39, P= 0.007, Cramer's V = 0.06.
Fat FOP	No significant differences	No significant differences	χ^2 (1, n=1867) =0.05, P= 0.816, Cramer's V = 0.005.
Sat Fat FOP	No significant differences	No significant differences	χ^2 (1, n=1866) =3.5 P=0.06, Cramer's V = 0.04.
Salt FOP	Higher % in red P1 = 33.5% P2 = 38.8%	Higher % in amber/green P1 = 66.5% P2 = 61.2%	χ^2 (1, n=1815) = 5.7, P= 0.018, Cramer's V = - 0.055.

Supermarkets using FSA FOP red, amber and green categories:

Within the supermarket there was only one notable difference between phases for the nutrient sugar as there was a higher percentage categorised in the red category in Phase 1 compared to Phase 2. All other nutrients were similar for both phases - see Table 19.

Table 19: Chi-squared tests for supermarkets only between Phase 1 and Phase 2 for FSA FOP categories red, amber and green.

	% Within Phase 1	% Within Phase2	Chi-squared
Energy FOP	No significant differences	No significant differences	χ^2 (2, n=1153) =0.61, P=0.74, Cramer's V = 0.02.
Sugars FOP	Higher % in red P1= 29.2% P2 = 22%	Higher % in amber P1 = 34.3% P2 = 31.6% Higher % in green P1= 43.7% P2= 39.3%	χ^2 (2, n=1151) =7.7, P<0.05, Cramer's V = 0.08.
Fat FOP	No significant differences	No significant differences	χ^2 (2, n=1153) =0.02, P=0.99, Cramer's V = 0.004.
Sat Fat FOP	No significant differences	No significant differences	χ^2 (2, n=1152) =1.42, P=0.49, Cramer's V = 0.04
Salt FOP	No significant differences	No significant differences	χ^2 (2, n=1125) = 2.6, P=0.27, Cramer's V = 0.05.

Supermarkets using FSA FOP red and amber/green categories

Almost identical results were noted after the amber and green categories were combined. Apart from sugar there were no significant differences between phases - see Table 20.

Table 20: Chi-squared tests for supermarkets only between Phase 1 and Phase 2 for FSA FOP categories red and amber/green

	% Within Phase 1	% Within Phase2	Chi-squared
Energy FOP	No significant differences	No significant differences	χ^2 (1, n=1153) =0.58, P=0.446, Cramer's V = 0.02.
Sugars FOP	Higher % in red P1= 29.2% P2 = 22%	Higher % in amber/green P1 = 70.8% P2 = 78.8%	χ^2 (1, n=1151) =7.7, P=0.005, Cramer's V = 0.08.
Fat FOP	No significant differences	No significant differences	χ^2 (1, n=1153) =0.02, P=0.91, Cramer's V = -0.003.
Sat Fat FOP	No significant differences	No significant differences	χ^2 (1, n=1152) =0.89, P=0.34, Cramer's V = 0.04
Salt FOP	No significant differences	No significant differences	χ^2 (1, n=1125) = 2.4, P=0.117, Cramer's V = 0.05.

Convenience stores using FSA FOP red, amber and green categories

Similarly within the convenience stores there were no significant differences between phases with the exception of saturated fat. Notably, the percentage of products in each of the FOP categories did not change between phases for energy, sugar, fat or salt – see Table 21.

Table 21 Chi-squared tests for convenience stores between Phase 1 and Phase 2 for FSA FOP categories red, amber and green

	% Within Phase 1	% Within Phase2	Chi-squared
Energy FOP	No significant differences	No significant differences	χ^2 (2, n=714) =0.08, P=0.96, Cramer's V = 0.01.
Sugars FOP	No significant differences	No significant differences	χ^2 (2, n=714) =2.47, P=0.29, Cramer's V = 0.06.
Fat FOP	No significant differences	No significant differences	χ^2 (2, n=714) =0.27, P=0.87 Cramer's V = 0.02.
Sat Fat FOP	Higher % in red P1 = 46.4% P2 = 39.7%	Higher % in amber P1 = 15.2% P2 = 22% Same % in green P1= 38.4 P2= 38.4	χ^2 (2, n=714) =6.24, P<0.05, Cramer's V = 0.09.
Salt FOP	No significant differences	No significant differences	χ^2 (2, n=714) = 4.5, P= 0.11, Cramer's V = 0.08.

Convenience stores using FSA FOP red and amber/green categories

Almost identical results were noted after the amber and green categories were combined as there were no significant differences between phases for all nutrients -see Table 22.

Table 22 Chi-squared tests for convenience stores between Phase 1 and Phase 2 for FSA FOP categories red and amber/green.

	% Within Phase 1	% Within Phase2	Chi-squared
Energy FOP	No significant differences	No significant differences	χ^2 (1, n=714) =0.018, P=0.89, Cramer's V = 0.005.
Sugars FOP	No significant differences	No significant differences	χ^2 (1, n=714) =1.09, P=0.29, Cramer's V = 0.04.
Fat FOP	No significant differences	No significant differences	χ^2 (1, n=714) =0.27, P=0.61 Cramer's V = 0.02.
Sat Fat FOP	No significant differences	No significant differences	χ^2 (1, n=714) =3.3, P=0.07, Cramer's V = 0.07.
Salt FOP	No significant differences	No significant differences	χ^2 (1, n=690) = 3.1, P= 0.7, Cramer's V = 0.07.

4.7.4 The 'healthiness' of promotional products across retailers

Using a range of nutritional scoring methods (FSA FOP score; FSA FOP categories; Nutritional Quality Index and the *eatwell plate*), the promotional products were categorised to measure their 'healthiness'. See Appendix 3 Table F. Results are discussed for each scoring method for: all stores; supermarkets and convenience stores over Phase 1, Phase 2 and the total study period.

FSA FOP Score

For all stores combined the total FSA FOP score was M= 9.4, SD = 3.0 and the mean FSA FOP score was M=1.9 SD =0.6. Across retail type there were no significant differences between the supermarkets (M= 9.4, SD = 3.0) and the convenience stores (M= 9.4, SD = 3.1), in the total FSA FOP score, (t (1467) = 0.29, P=0.77) and in the mean FSA FOP score (M= 1.9, SD = 0.6, vs M = 1.9, SD=0.6, t (1464) = 0.17, P=0.86) for the total study period. Furthermore, within Phase 1 there were no significant differences between the supermarkets (M= 9.4, SD = 3.0) and the convenience stores (M= 9.4, SD = 3.1) for the FSA FOP score t (917) = 0.09, P=0.93) and for the mean FSA FOP score in the supermarkets (M= 1.9, SD=0.6) and convenience stores (M= 1.9, SD =0.6) (t (917) = 0.12, P=0.99). Similarly within Phase 2 there were no significant differences between the supermarkets (M= 9.4, SD = 2.9)

and the convenience stores (M=9.4, SD = 3.1) for the FSA FOP score $t(774) = 0.33$, $P = 0.74$ and for the mean FSA FOP score in the supermarkets (M= 1.9, SD = 0.5) and convenience stores (M=1.9, SD = 0.6) $t(767) = 0.24$, $P = 0.81$).

Overall, using the total and mean FSA FOP labelling scores, the supermarkets and convenience stores did not differ in the healthiness of food promotions offered, nor was there any difference in healthiness of promotions between Phase 1 and Phase 2.

FSA FOP Category:

For all stores combined using the FSA FOP categories 47% of products were categorised red, 26% amber and 27% green. There was no significant differences between study Phase 1 and 2, $\chi^2(2, n = 1862) = 4.8$, $P=0.09$, Cramer's $V = 0.05$. The percentage of promotions that were categorised in the red (P1=50% vs P2 =45.4%), amber (P1 =24% vs P2 =27.3%) and green (P1= 26% vs P2 =27.3%) were consistently similar for Phase 1 and 2 of the study.

For the total study period, a significant difference was found between the retailer type and the 'healthiness' of promotional products $\chi^2(2, n = 1862) = 11.48$, $P=0.003$, Cramer's $V=0.79$. The percentage of products that fell into the red (46% vs 50.5%), amber (28.4% vs 21.3%) and green (25.5% vs 28.2%) were significantly different between the supermarkets and convenience stores respectively.

Nutritional Quality Index

Using the Nutritional Quality Index categories of '*less healthy*' and '*healthy*', for all stores combined there was no significant difference in the percentage of products classified as '*less healthy*' (P1=66% vs P2=65%) or '*healthy*' (P1 =34% vs P2 =35%) across both phases, $\chi^2(1, n = 1843) = 0.004$, $P=0.94$, $\Phi = 0.004$. Consistently, across the retailer store type there were no significant differences in the percentage of promotions classified as '*less healthy*' (66% vs 64%) or '*healthy*' (34% vs 36%) in the supermarkets and convenience stores respectively $\chi^2(1, n = 1843) = 0.48$, $P=0.48$, $\Phi = 0.02$.

Eatwell plate

Overall, there were significantly more products in the 'foods high in fat and sugar' category (n= 560, 30%) for the total study period. In addition, there was an association between the retailer type and the 'healthiness' of promotions over the total study period $\chi^2(5, n = 1859) = 37.5$, $P < 0.001$, Cramer's $V = 0.14$. The supermarkets promoted a higher percentage of products from the 'fruit and veg' (21% vs 15%), 'meat, fish, eggs and beans' (21% vs 14%) and a lower percentage of products from the 'high fat high sugar' (27% vs 35%) category compared to the conveniences stores (Figures 47 - 49).

For all stores combined there was also an association between the study phase and the 'healthiness' of promotions within all stores, $\chi^2(5, n = 1859) = 12.3$, $P=0.03$, Cramer's $V=0.08$. The percentage of foods from the 'meat, fish, eggs, beans, non-meat sources' (16 % vs 21%) were lower in Phase 1 compared to Phase 2.

Figure 47 Percentage of products within each of the *eatwell plate* categories for all stores

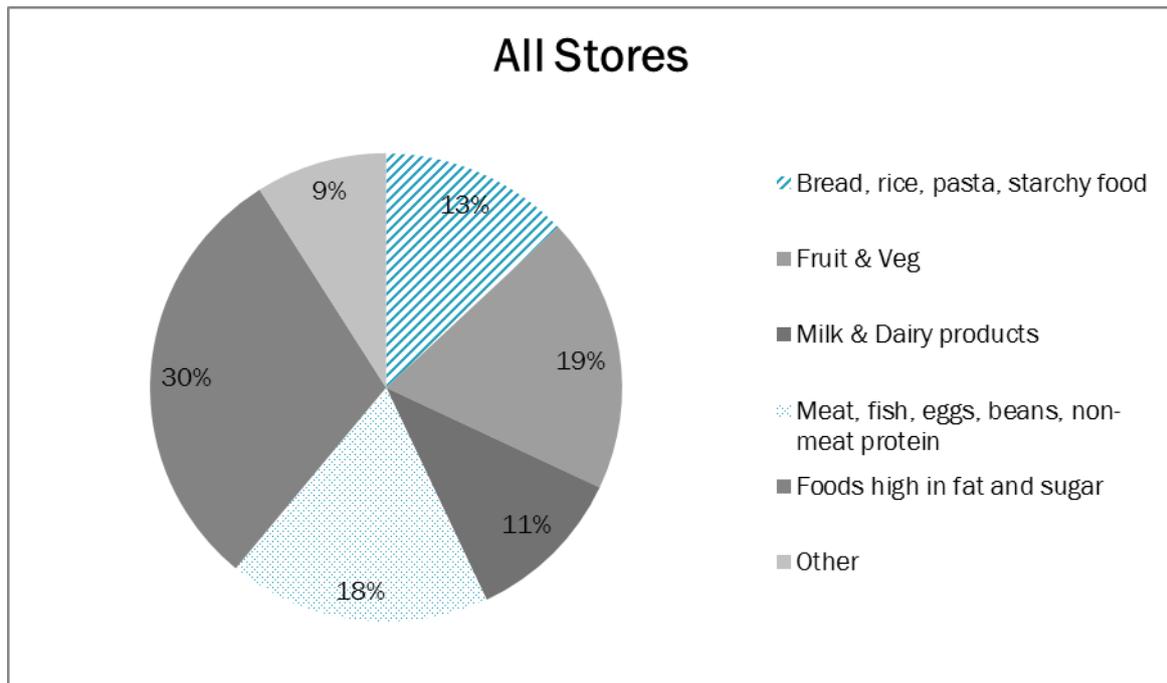


Figure 48 Percentage of products within each of the *eatwell plate* categories for supermarkets

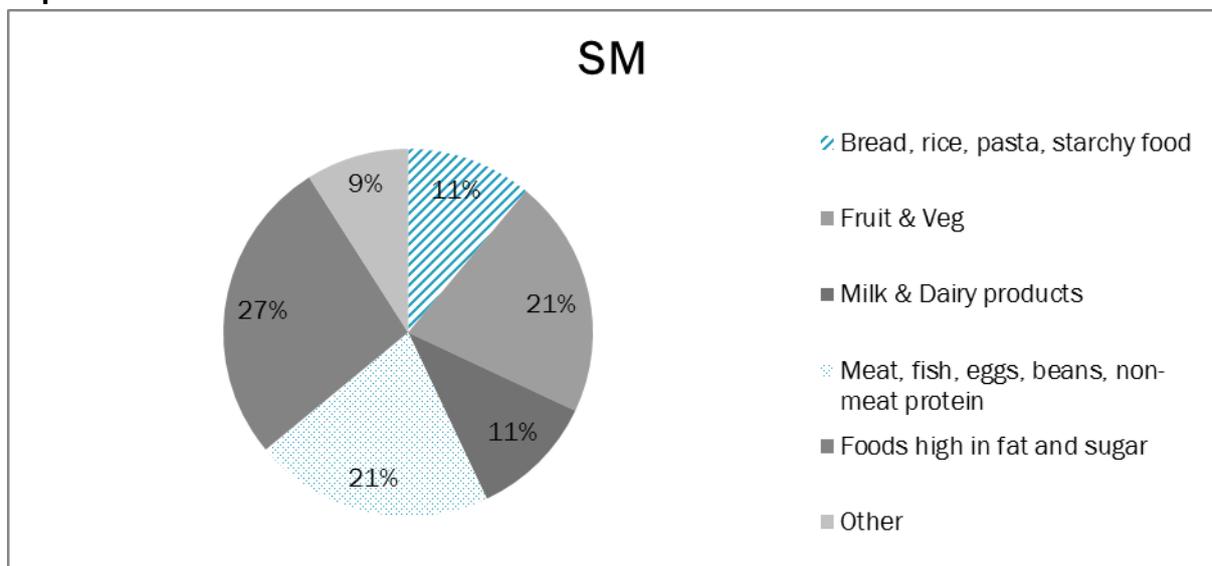
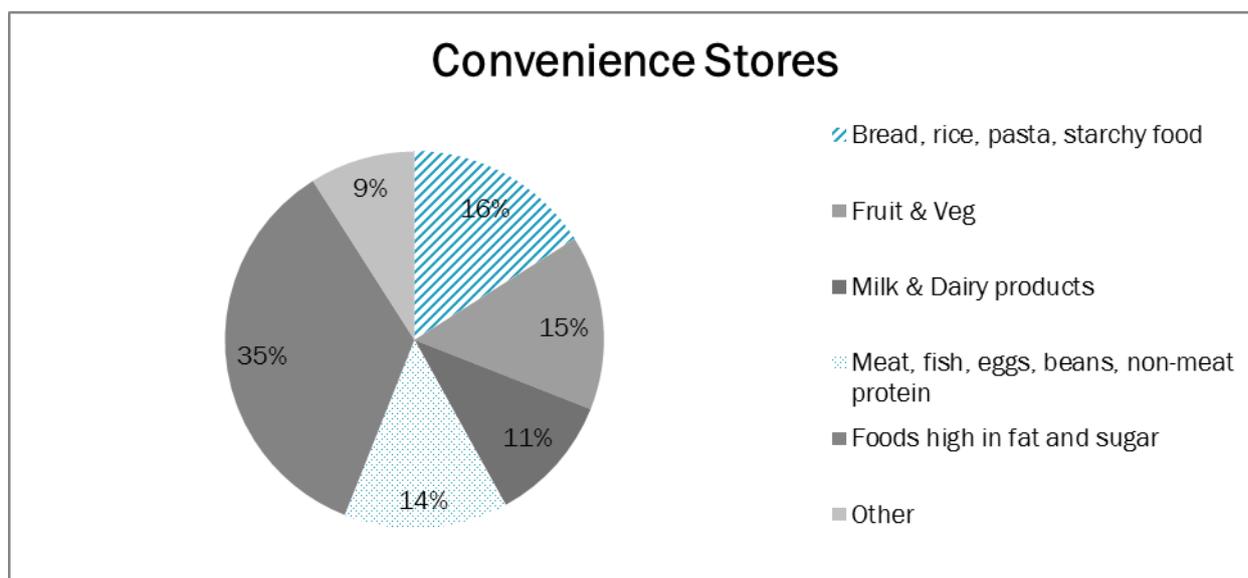


Figure 49 Percentage of products within each of the *eatwell plate* categories for convenience stores



4.7.5 The promotional price and percentage saving in relation to 'healthiness' online

Using the range of nutritional scoring methods already mentioned (FSA FOP score; FSA FOP category; Nutritional Quality Index and the *eatwell plate*), the 'healthiness' of the promotional products was measured against their promotional price and the percentage saving.

FSA FOP nutritional labelling

Using a one-way ANOVA with post-hoc tests, the variables 'promotional price' and 'percentage saving' were measured against the FSA FOP nutritional categories (red, amber and green) to determine if there were any significant differences between categories and price or percentage savings. Overall, products in the red category were more expensive than products in the amber or green categories and the supermarket prices were higher in all three categories compared to the convenience stores.

Specific key statistical findings for all stores; supermarkets and convenience stores are as follows:

All stores

For all stores combined there were significant differences in the promotional prices across the FOP nutrient labelling categories, $F(2, 1851) = 52.85, P < 0.001$. Promotional products categorised in the red category (£0.63) were more expensive than those located in the amber (£0.55) and green categories (£0.36) ($P < 0.001$). No significant differences were found between the FSA FOP nutritional labelling categories in relation to percentage saving, red (31%), amber (30%) and green (30%) $F(2, 1795) = 1.2, P = 0.028$.

Supermarkets

Similarly, this same trend was observed within supermarkets $F(2, 1147) = 32.6, P < 0.001$. Again, promotional products categorised in the green category (£0.34) were less expensive than those located in the red (£0.64) ($P < 0.001$) and the amber categories (£0.61) ($P < 0.001$). A significant difference was also found between the FSA FOP nutritional labelling categories in relation to percentage saving for the red (30%), amber (27%) and green categories (28%), $F(2, 1138) = 3.8, P = 0.023$.

Convenience stores

Again, a similar pattern was observed within the convenience stores $F(2, 701) = 29.39, P < 0.001$. Once more, promotional products categorised in the red category (£0.69) were more expensive than those located in the amber (£0.43) ($P < 0.001$) and the green categories (£0.38) ($P < 0.001$). No significant differences were found between the FSA FOP nutritional labelling categories in relation to percentage saving for the red (34%), amber (37%) or green (34%) categories, $F(2, 654) = 2.5, P = 0.82$.

Nutritional Quality Index (NQI)

All stores

For all stores combined promotions in the 'less healthy' category were more expensive (£0.63) than foods in the 'healthy' category (£0.39) $t(1834) = 9.6, P < 0.001$. No differences were found between the categories in relation to percentage saving for the 'less healthy' (31%) and the 'healthy' (30%) categories, $t(1779) = 1.04, P = 0.29$.

Supermarkets

Similarly within the supermarkets group promotions falling into the 'less healthy' category were more expensive than the 'healthy' category (£0.63 vs £0.40) $t(1134) = 7.0, P < 0.001$. However, there was no significant difference in percentage saving for the 'less healthy' (29%) and 'healthy' (28%) categories, $t(864) = -0.84, P > 0.05$.

Convenience stores

Again promotions in the convenience stores were more expensive in the 'less healthy' category (£0.64) compared to the 'healthy' category (£0.38) $t(698) = 6.68, P < 0.001$. Again, there was no significant difference in percentage savings for the 'less healthy' (35%) and 'healthy' (34%) categories, $t(652) = 1.11, P = 0.27$.

Eatwell plate

All stores

There were significant differences between the *eatwell plate* categories and the promotional prices, $F(5, 1845) = 33.2, P < 0.001$. Promotional products located in the 'meat, fish, eggs, beans, non-meat proteins' (£0.79) and in the 'high in fat and sugar' (£0.60) categories were more expensive than the other *eatwell plate* categories ($P < 0.001$). Foods located in the 'bread, pasta, rice and starchy food' (£0.33) and 'fruit and veg' (£0.39) categories were significantly less expensive compared to the other categories ($P < 0.001$).

Significant differences were also found in percentage saving across the *eatwell plate* categories, $F(5, 1788) = 19.25, P < 0.001$. The highest percentage saving on promotions were found in the 'milk and dairy foods' (36%) and 'high in fat and sugar' (34%) categories ($P < 0.001$).

Supermarkets

Within the supermarket category there were also significant differences between the *eatwell plate* categories and the promotional prices, $F(5, 1138) = 27.55, P < 0.001$. Promotional products located in the 'meat, fish, eggs, beans, non-meat protein' (£0.84) category were more expensive than the other *eatwell plate* categories ($P < 0.001$). The second most expensive foods were those in the 'high fat/sugar' category 'high fat/sugar' category (£0.56), ($P < 0.001$). However, this category did not significantly differ with foods located in the 'milk and dairy category' (£0.52) ($P > 0.05$). Foods located in the 'fruit and veg' (£0.40) category were the least expensive compared to the other categories ($P < 0.01$).

Significant differences were also found in percentage saving across the *eatwell plate* categories, $F(5, 1129) = 15.6, P < 0.001$. The highest percentage saving on promotions was found in 'milk and dairy foods' (36%) compared to all the other categories, except for 'high fat and high sugar' foods (30%) ($P < 0.001$). Percentage savings in the 'meat, fish, eggs, beans, non-meat protein' (24%) categories offered the least percentage saving compared to all the other categories ($P < 0.001$).

Convenience stores

A similar trend was observed in the convenience stores as there were also significant differences between the *eatwell plate* categories and the promotional prices, $F(5, 701) = 8.9, P < 0.001$. Promotional products located in the 'meat, fish, eggs, beans, non-meat protein' (£0.69) category were more expensive than the other *eatwell plate* categories ($P < 0.001$) except for food promotions located in the 'high fat and high sugar' category (£0.66) ($P < 0.001$). Foods located in the 'fruit and veg' (£0.38) category were the least expensive compared to the other categories ($P < 0.001$). However, this category did not differ with foods located in the 'bread, rice, pasta, starchy foods' (£0.39) and 'milk and dairy products' category (£0.44) ($P > 0.05$).

Significant differences were also found in percentage saving across the *eatwell plate* categories, $F(5, 653) = 9.5, P < 0.001$. The highest percentage savings on promotions were found in the categories 'high in fat and sugar' (40%), 'fruit and veg' (37%) and 'milk and dairy' (36%) ($P < 0.001$). The percentage savings in the 'bread, rice and pasta' (27%) was the lowest of all categories ($P < 0.001$).

4.8 Comparison between in-store and online

Having presented and discussed the results for both the in-store and online audits, interesting comparisons are possible. Overall results show similar findings within both retail environments. Despite differing durations for the in-store and online audits seasonality did not account for any significant differences.

Healthiness

Overall the mean FSA FOP score was similar in-store (M9.3 (SD3.0) and online (M9.4 (SD 3.0)), both falling into the 'amber' category. In addition using the FSA FOP categories a consistent positive balance both in-store and online was observed with 47% of all food retail promotions over the study period categorised as red. However proportional differences were noted between amber and green categories both in-store and online. In-store 33% of food retail promotions were categorised as amber and 20% as green while online 26% of food retail promotions were categorised as amber and 27% as green.

With regards to store type, findings showed that a greater proportion of 'red' categorised products were found in-store among supermarkets when compared to convenience stores (50% vs 44%) while the opposite is true for online promotions (46% vs 51%). Among the food retail promotions categorised as amber results the in-store audit found both supermarkets and convenience stores displaying similar results (33% vs 32%). However when online, supermarkets offered a greater proportion of amber promotions (28%) than convenience stores (21%). Results showed that more items online than in-store were categorised as green (27%vs 20%). Results relating to store types, showed convenience stores both in-store (24%) and online (28%) offered significantly more promotions in the green category than their supermarket counterparts in-store (17%) and online (26%).

Using the NQI score results showed consistency between in-store and online whereby the majority of items were deemed 'less healthy' (66% vs 65%). Minimal differences were identified between store type and channel (in-store vs online).

In relation to the *eatwell plate* there were small differences in the distribution of promotions across categories. Some interesting results showed that more fruit and vegetables promotions were available online than in-store (19% vs 12%) while fewer foods high in fat and sugar were available online (30% vs 42%).

Promotion type

Regarding promotional type, retailers were most reliant on price reductions and multibuys in both the in-store and online environment.

Promotion cost and percentage saving

Finally, with respect to price, results showed similar promotional costs both in-store (61p per 100g/ml) and online (59p per 100g/ml). However the in-store audit revealed that convenience store retailers offered significantly lower average promotion prices (£0.54) compared to supermarket/discounters (£0.66). No significant differences were evident between the supermarkets (£0.60) and the convenience stores (£0.58) in mean promotional prices when reviewing online promotional prices. Convenience store retailers offered a greater percentage saving in-store and online, but these savings were slightly greater online (In-store 33% vs 28% savings; Online 35% vs 29% for supermarkets and convenience stores respectively). No differences were noted, within both retail environments, in the % savings between 'healthier' and 'less healthy' products.

4.9 Conclusion

Although there were notable differences between the supermarkets and convenience stores on the promotional types, percentage saving, nutritional content, and 'healthiness' of promotional products the following key points were noted across the total study period for all retailers combined:

- The main types of promotional offers across all stores were: 'price reductions' (61%); and 'multi-buys' (33%) accounting for 94% of all promotions. Notably there was no 'certain % free' or 'meal deals' over the total study period for all retailers.
- The promotional price and percentage saving across promotional offers varied. The promotional prices of 'mix and match' and 'bulk discount' were lower than all other offers. In addition, there were significant differences on percentage savings across promotions with 'bulk discounts' offering the greatest percentage saving and 'multibuys' offering the least percentage saving across all retailers.
- In recognition of the fact that retailers and consumers already widely understand and use FOP labels, the primary analysis of food retail promotions relied on this scoring mechanism. The FOP labelling (categories: red, amber and green) identified a similar number of products categorised as 'red' (47%) as categorised as 'amber' or 'green' (53%). Similar findings were obtained for individual nutrients scored (sugar, fat, saturated fat and salt). Additionally the mean FOP score was 9.4 (SD 3.0), which fell into the amber category.
- Further analysis using other nutritional indicators present further and deeper insight into the nutritional status of food retail promotions.
 - The Nutritional Quality Index also highlighted that 65% of all promoted products were 'less healthy'.
 - Using the *eatwell plate* food categories, just less than one-third (30%) of promoted products were classified as 'foods high in fat and sugar'.
- Significant differences were also noted on the price of promotional products in relation to their 'healthiness'. Firstly, using both the FSA FOP categories and Nutritional Quality Index score, promotional products categorised as 'red' or 'less healthy' were more expensive than those classified as 'amber', 'green' or 'healthier'. Secondly, no differences were observed between the percentage promotional saving for 'less healthy' and 'healthier' products. Finally, the *eatwell plate* identified products in the 'meat, fish, eggs, beans and non-meat proteins' and products in the 'foods high in fat and sugar' as the most expensive and promotions in the "bread, rice, pasta, starchy foods' and 'fruit and veg' categories as the least expensive. The greatest percentage saving on promotions were found in the 'milk and dairy foods' and 'high in fat and sugar' categories.
- Convenience stores were more likely to offer 'price reduction' promotions, while supermarkets were more likely to offer 'multibuys' promotions online. Aligned to the central research question, convenience stores and supermarket promotions online obtained very similar (FSA FOP scores M= 9.4, SD = 3.0 vs M=9.4, SD= 3.1) percentage of products in each of the FSA FOP categories (e.g. energy red 77% vs 75%, energy

amber 3% vs 3% and energy green 20% vs 22%), and Nutritional Quality Index scores ('less healthy' 66% vs 64% and 'healthy' 34% vs 36%). In addition, distribution of promotions across the *eatwell plate* categories was similar with the exception that supermarkets promoted slightly more 'fruit and veg' and less 'foods high in fat and sugar'.

Summary statement

The online audit is conclusive in its finding that when applying the FSA FOP categories nearly half (47%) of all online food retail promotions were categorised as red while the remaining 53% were categorised as amber/green. In addition, both price-based (e.g. price reductions) and volume-based promotions (e.g. multibuys) were popular across the retailers. Finally, when comparing Stage 2a and 2b results revealed close similarities in relation to 'healthiness' using the FSA FOP categories across phases and store type reporting a <5% percentage point difference except when comparing those items categorised as 'green'. More promotional offers categorised as green were found online than compared to in-store. Results revealed some differences in promotional type and percentage saving when comparing online to in-store and it was reassuring to note that 'healthier' products were promoted to the same extent as 'less healthy products' in terms of percentage savings.

Chapter 5
Stage 3:
**Interviews and case studies on food
retail promotions**

5.0 Introduction

As part of this stage of the investigation a qualitative exploration involving semi-structured interviews and case studies with key individuals and stakeholders was conducted to investigate the use of food retail promotions. Interviews were conducted to explore policies impacting on the health of shoppers, the decisions surrounding promotional activity and the perceptions of the healthiness of food retail promotions across retailers in NI. This chapter will firstly discuss the analysis procedure undertaken within the data collection process. Secondly, the results will be presented under four core themes: policy levers, promotional activity, the perceived effectiveness of promotional offers and perceptions on performance.

5.1 Data collection

Data were collected using either face-to-face interviews or telephone interviews at the convenience of the participant. Interviews were conducted by two members of the research team.

5.2 Sample

A convenience sample consisting of a total of 32 participants contained three sets of participants: (a) membership organisations/stakeholders; (b) retailers and; (c) store managers. A total of 7 membership organisations were asked to participate in the study of which five responded. A total of nine food retailers were asked to participate in this stage of the research of which eight responded. All 48 store managers/owners used within the Stage 2 store audit were contacted and invited to take part in a telephone interview. A total of 21 responded and were included in the sample. The purpose of each dataset, participants involved and the sample size is provided in Table 23.

Table 23 Participant sample

Sample	Purpose	Representatives	Sample size & Approach
Membership organisations	To explore perceptions of retailers' commitment to the health of the nation and the influence of promotions on dietary behaviour.	Northern Ireland Independent Retailers Association, Northern Ireland Retail Consortium, Northern Ireland Food and Drink Association, Institute of Public Health and Department of Health Social Services and Public Safety	5 Face-to-face interviews
Retailers	To explore the decision-making factors surrounding the food retail promotions.	[<i>Retailer-nominated representatives from consumer insight teams, nutritionists and corporate affairs</i>] Tesco, Asda, M&S, The Cooperative, Hendersons, Lidl and Sainsburys	7 Face-to-face interviews
Store Managers	To discuss the practical implications of food retail promotions at store level.	[<i>Store manager selected from the original audit sample</i>] Asda, M&S, The Cooperative, Hendersons, Lidl, Nisa, Musgrave	20 Telephone interview

5.3 Development of a topic guide

Results from Stages 1 and 2 informed the development of the interview protocols. The topic guide(s) were designed to explore policy implications, promotional activity and perspectives on the balance of food retail promotions among retailers in NI. The interview protocols explored the following topics: current policies impacting on food retail promotions; strategic decisions surrounding food retail promotions; and feedback of the results from Stage 2. See Appendix 4 for final topic guide(s).

5.4 Interview procedures

All participants were ensured of the anonymity of the data prior to the commencement of the interview. Prior to the interviews for each retailer at corporate level a snapshot report displaying the overall results of Stage 2 and their individual performance was emailed to the participant [however *individual retailer performance is not reported in this document to the funders due to client confidentiality*]. During the interviews with membership organisations only the top-line results of overall retailer performance was revealed and discussed. During the store manager interviews no results from Stage 2 of the study were discussed.

If verbal consent was provided the interviews at retailer corporate level and membership organisation level were audio-recorded. For interviews conducted with store managers only field notes were taken. The interviewer gave instruction on the format of the interview (e.g. general discussion before proceeding to the retailer report). At the close of each interview participants were thanked and informed that they could ask the research team any questions or raise any concerns surrounding the research. Finally, participants were provided with information regarding the dissemination of this report.

5.5 Data analysis

Each interview lasted between 15 – 85 minutes. Interviews at corporate level and membership organisation level were digitally recorded and professionally transcribed. All transcripts were uploaded into the qualitative analysis software, NVivo (v10). Each transcript was read and re-read several times before beginning analysis and the transcripts were coded and grouped together to create themes. The themes collated from the interviews aimed to understand the current policies and initiatives impacting on the healthiness of food retail promotions and the decision-making factors influencing this activity.

In addition, case studies were used to identify the experiential difference between each type of promotional activity to elicit key insights on their effectiveness in stimulating consumer purchase behaviour. Data were coded under each type of promotion (e.g. price reduction) and insights into their effectiveness or otherwise informed the development of the case studies. Finally, the data were analysed to map the conceptualisation of recommendations for retailers and policy-makers.

5.6 Reporting participant quotes

Within this chapter any direct quotes from participants are displayed, using the following system:

- Brackets with dots (...) are used when speech has been omitted
- Any supermarket retail chains mentioned have been removed and replaced by retailer type followed by a participant number (e.g. #1) which is denoted as follows:
 - Supermarket retailer = SMKT
 - Convenience retailer = CON
- All quotes are followed by a reference (e.g. MO). This denotes the type of interview from which the quote is drawn.
 - MO = Membership Organisation
 - CL = Corporate Level

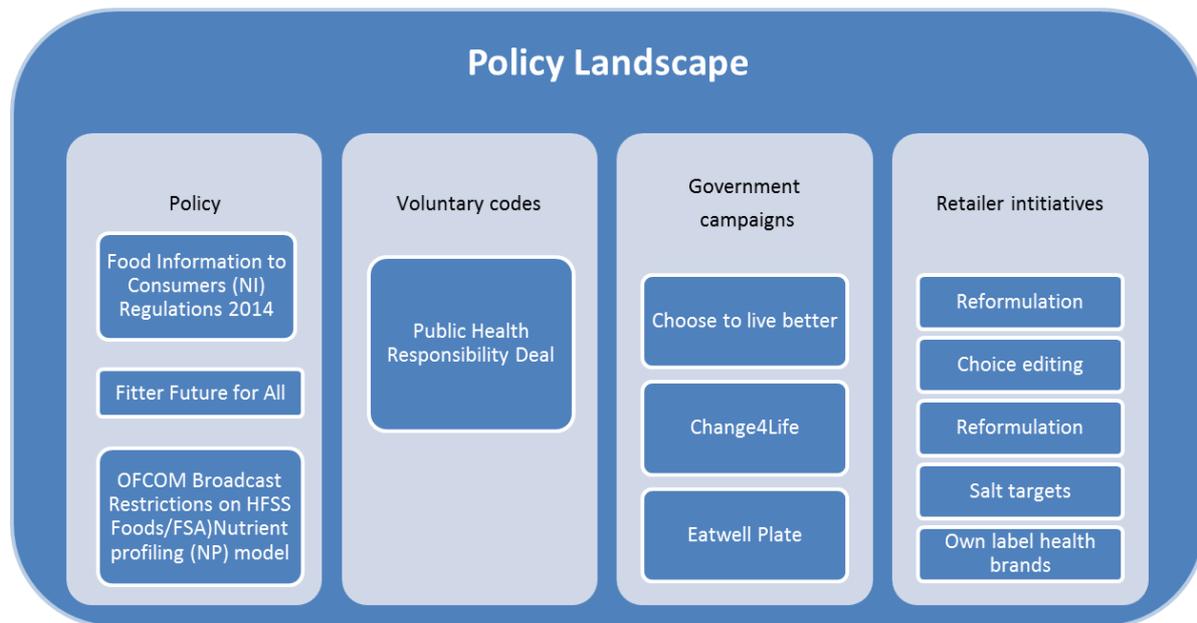
5.7 Results

The results of Stage 3 have been summarised under four core themes: (1) Policy levers; (2) Promotional activity; (3) Promotional effectiveness; and (4) Perceptions on performance. Findings from the results will be used to inform the development of a conceptual model on the push and pull factors driving 'health-orientated' promotional activity.

5.7.1 Theme 1: Policy levers

This theme relates to the current policies, voluntary codes and practices retailers and stakeholders currently recognise and/or are implementing to deliver a healthy grocery environment to the consumer. Figure 50 summarises all the policies, voluntary codes, government campaigns and individual retailer initiatives identified across the dataset.

Figure 50 Overview of the food retail policy landscape



Retailers universally confirmed their ongoing commitment to the public health agenda, with health proving a big pillar for their various food teams. The governing policy on FOP labelling, as contained within the Food Information to Consumers Regulations (2014) ^[129], was priority for many retailers. Only one retailer discussed using the OFCOM regulations for nutritional profiling ^[130] to assess the healthiness of the products they planned to advertise on television.

Some retailers have become proud signatories to a number of the UK Department of Health's *Public Health Responsibility Deal* pledges ^[131], particularly with reference to salt targets, sugar and trans fat reduction. Each retailer was cognisant of the FOP label and had been persuaded by an evidence base as to its relevance and applicability to consumers in supporting them to make informed healthier choices.

The public health stakeholders considered that multiple partners had potential to educate, inform and reinforce consumers' use and understanding of the messaging around food labels. In turn, the retailers and their membership organisations confirmed their willingness to contribute to this shared responsibility for the betterment of public health.

Similarly, in relation to current government initiatives some of the retailers have signed up to the *Change4Life* campaign ^[132] and report annually on these commitments. To a lesser extent, the *eatwell plate* categories ^[127] and the *Choose to Live Better* ^[133] initiatives were

identified by the stakeholders when referring to the initiatives that should inform healthy food retail promotions.

Retailers have sought to improve their shoppers' health by being innovative and creative in this space using a range of initiatives (e.g. targeted own-label health brands, use of health logos), and actions (e.g. reformulating their products' nutritional profiles, including micronutrients, particularly in respect of children's product lines and their own private labels). In addition, a focus on calorie reduction and portion sizes was also evident. Some retailers discussed how they have redesigned their store layout to encourage shoppers to make healthy choices (e.g. increased prominence of fruit and vegetable aisles and stands, healthy islands). One stakeholder in particular recognised the efforts of the retailers but highlighted the difficulty in promoting certain 'healthier' food categories suggesting more creative and innovative solutions are required.

"...I think we do give them a bit of a hard time for that, but actually there are healthy food options there too on promotion, but we just don't recognise them in the same way. And in many ways I suppose the healthy options are maybe more difficult to promote because it does tend to be the fresh fruit and veg and there are challenges with that. People maybe pick up on the unhealthy ones because they tend to be the sugary drinks and the sweets and the biscuits and you can stock your cupboards full of those; you don't have to eat them or drink them this week." (MO, #1)

For a number of the retailers 'health' was identified as one of among many drivers within their business, however more recently this has been challenged by the impact of the recession and changing consumer demands. One retailer highlighted the substantial progress that has been made in terms of delivering 'health' to their customers by reducing and/or removing tonnes of salt, sugar and fat from key food categories over the last year. However, this was "**easier to do in some categories than others**" (SMKT, #7, CL). Interestingly, the retailer went on to discuss the need to slowly introduce the concept of health by taking a step-wise approach so as not to overwhelm consumers or appear to be choice-editing on their behalf but rather simply "**nudging**" (SMKT, #7, CL) them within a category to choose the healthier alternative.

“Health is a big driver for our food team, and an area for development and actually from our business point of view as well” (SMKT, #5, CL)

Finally, while not specific to food retail promotions, all retailers discussed their community-based approach to health by educating and empowering consumers to make healthier choices (e.g. via school-based outreach activities, school visits and resources, etc). Many retailers discussed various school and/or community based initiatives used to promote food knowledge, healthy choices, fitness and cooking skills alongside promoting themselves as the retailer of choice.

“It is not all about price – it’s about helping communities understand food and what it is about” (SMKT, #3, CL)

While the results highlighted that all retailers were striving to promote a healthy food environment, a number of barriers to its success were identified.

Barrier 1: Confectionery consumption

Particular challenges have been articulated around confectionery, which for some retailers remains incomplete in implementing interventions at the store level. Some successes have been achieved in removing confectionery from prominent locations via a clear policy in stores regarding no sweets at checkouts, while for others, more trials are considered necessary ahead of further intervention.

“So you will only see healthy checkouts in our stores...you know, nuts, sunflower seeds, those type of convenience grab and go products” (SMKT, #1, CL)

Barrier 2: Communication between departments

Retailers discussed that working across multiple departments within an organisation, for example, marketing, sales, consumer insight, trading etc., further complicated the

achievement of collaboratively working towards public health goals, as determined by the public sector.

Barrier 3: Competitive landscape

Retailers were forthright in confirming the competition that is ongoing in a commercially volatile landscape whereby they are already striving to keep their product range at routinely low prices to better advantage consumers and acquire their custom, giving them a reason to shop with a particular retailer. There has been a seismic shift in consumer behaviour with the displacement of the big weekly shop and associated greater reliance on the top-up shop. This has meant that retailers are operating within tighter margins making it difficult to justify reinvesting profits into the drive for health when shoppers' mind-sets are geared towards value and convenience.

“The retail sector is changing dramatically with discounters, with online, with the move to convenience shopping...”
(SMKT, #4, CL)

Barrier 4: Changing consumer needs

Retailers confirmed the need to pursue a customer-led approach and are sophisticated in their understanding of their customer base informed by loyalty card data, customer research divisions, customer panels, and Kantar data. However, such an approach is challenging due to the complexity of the consumer. Retailers discussed how customers have a series of competing interests when they look at a product – no *one* defining feature prevails. In other words, health does not sit in isolation from local, quality, price/value and sustainability when purchasing food. In summation, retailers discussed the need to redefine value retailing, whereby consumers' expectations for low prices and value for money are delivered across the store without the need to shop around. Retailers are keen, through their pricing strategies, irrespective of promotional activity, to debunk the consumer perception that it is more expensive to eat healthily. In addition, one stakeholder highlighted how the retailers, in light of changing consumer demands, are continually striving to meet their needs and to support them in making healthy choices and in enhancing their food/cooking skills.

“As far as the retailer is concerned we provide what the consumer wants, we are also providing them with healthy choices, we are also providing them with education on how to cook and we are actually providing them with the recipes” (MO, #3)

Barrier 5: Consistent messaging

The retailers have established their own nutritional health campaigns, with notable success for ready meals, sandwiches, fruit and vegetables and soft drinks categories. Such campaigns have not been without their challenges, especially in terms of reacting to new expert and popular media nutrition reports which can detract from retailers' core aim of providing healthy food choices that consumers trust. Both retailers and stakeholders made a clear call for consistent and transparent nutrition messages to be communicated across the various media because it can be difficult for retailers to be both strategic and reactive. In striving to promote health it will be important, for maximum penetration, that the media reinforces the health messages already being communicated to the consumer in the food retail setting to assist in the attempt to make healthy choices the norm.

"...If you continually change the message and continually move the goalposts you lose your impact." (MO, #4)

Barrier 6: Collaboration and commitment

All interviewees, stakeholders and retailers, recognised the complexity of the obesity epidemic and considered they each had a contribution to make as part of a multi-partner commitment to seeking its solution.

"...we have a key role to play in some of the key messages that either the public health bodies or Food Standards Agency want to put out." (MO, #2)

Summary statement

Results indicated that retailers are operating in a volatile and competitive environment whereby there is a strong focus on value and keeping prices low. However, this does not negate the good work which the retailers have been doing above and below the line. Above the line, retailers' continued commitment to regulatory and voluntary codes of practice relating to health should be noted. In addition, many of the retailers have devised and implemented their own store health initiatives in an attempt to improve shoppers' choices. It is also worth noting that a number of the retailers displayed excellent practices in their drive for health below the line. A number of retailers provided evidence of using either choice-

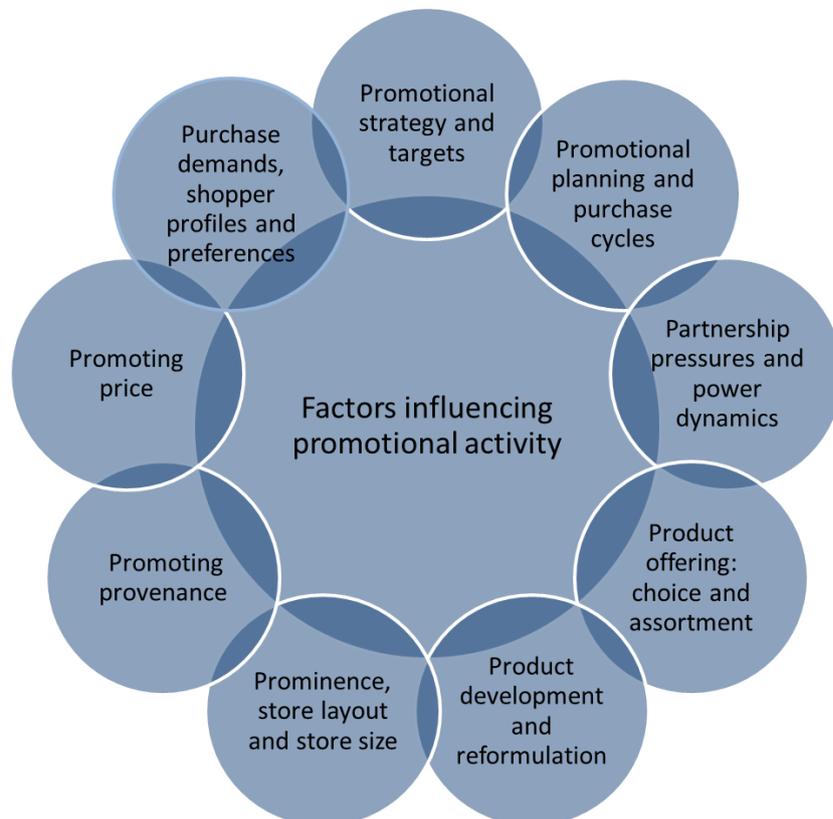
editing or nudging to promote healthy choices via their investment in the reformulation of own-label products (e.g. salt reduction, sugar reduction etc.) and management of product categories. Despite a number of barriers challenging continued progress in the area of health, retailers and membership organisations all expressed the desire to collaborate and work together with the goal of investing in current and future customers' health.

“You see for this to go forward... it needs to be a partnership approach, so it needs the consumers to take some responsibility, it needs retailers to...continue to do what we’re doing, but to pass on that good practice, and it also needs us to work with the Department of Health” (MO, #3)

5.7.2 Theme 2: Promotional activity

In general, results indicated that all retailers used food retail promotions throughout their stores to assist in the delivery of their organisations' retailing strategy. Furthermore, results indicated that food retail promotions were also used as a technique to attract customers to the store, in addition to offering low prices. Thus the retailers are clear that part of their promotional strategy is to share open, honest, accurate and easily accessible information with their customers to support them to make healthier choices and to encourage them back to their store. Within this theme the factors influencing promotional activity will be discussed and are illustrated in Figure 51.

Figure 51 Factors influencing promotional activity



Promotional strategy and targets

The retailers confirmed that while it is a central ambition to offer the best possible products at the best possible prices, there will always be a place for promotion in their business. While there was no general agreement, some retailers have confirmed how promotional activity has increased in their business model, particularly with respect to their fresh product categories. A number of supermarkets confirmed that their promotional strategy was aligned to the drive for fresh food product category retailing.

“...the Northern Ireland consumer has changed in respect of increased demand for fresh products.” (SMKT, #3, CL)

There was further discrepancy among supermarket retailers whereby some confirmed that not all promotions drive profit margins while another commented that his store never operates on a negative profit margin.

“...what happens when you focus too heavily on promotions is then it has an impact on margin.” (CON, #6, CL)

Notwithstanding this, the retailers were adamant that they exist in a single operating market and their promotional strategies do not differ by store format, geography, demography or online platform. There was recognition of a small price difference between supermarkets and their smaller retailing formats where significantly fewer products could be displayed and the same distribution efficiencies were not possible.

In contrast to the larger multiples, convenience retailers confirmed that promotions were not replicated fastidiously in every store. Instead a degree of bespoke customisation was introduced to ensure the appropriateness of each promotion to participating stores. While store managers were encouraged to adopt food retail promotions, where these were not originally seen as immediately beneficial to a store, headquarters would trial promotions in alternate stores, thereby giving retailers the time to embed promotions before being rolled out in every store where the promotion fits the customer profile.

The convenience retailers discussed how the sales performance of promotional offers is often higher in a lower-income catchment store, reiterating the importance of promotions both in managing the household budget and the varying reactions of different consumer groups to promotional activity. In recognition of the fact that it can take time to change

shoppers' buying and eating habits, headquarters often implement auto store replenishment technologies meaning that the store is automatically re-stocked with food product categories. However, there is also recognition that there needs to be some autonomy at the local store level because it can be counterproductive to control every aspect of local stores' management.

“...controlling absolutely everything in the whole estate isn't good for developing the business and doing new things, so you will get independent retailers who go off and will do their own things as well which we can also take learnings from on an individual basis: oh that retailer is doing really well he's doing this, well let's see if we can try that in our stores.” (CON, #6, CL)

Some retailers confirmed their promotional strategy as requiring a rise in the number of healthy promotions across their store year-on-year. One retailer confirmed setting targets for proportioning healthy promotions incrementally and is currently performing above target.

“We have a commitment that at least 30% of products on promotion will be for healthy products: for that we use the OFCOM criteria. We are the only retailer to promote and report on our promotions target.” (CON, #2, CL)

Another retailer took issue with such promotional targets, arguing that target setting requires more sophisticated understanding of the relationship between proportional availability of healthy promotions and the sales performance of same.

“I've also got a little bit of an issue that when retailers say that they set targets, you know percentages and promotions being healthy ... I think that it's about what people buy.” (SMKT, #5, CL)

Promotional planning and purchasing cycles

Irrespective of planning, promotional activity can also be hugely reactive in response to what is happening in real time, not least because of weather effects and general good luck. One of the most quoted factors indicating the need to be flexible was that of weather, for example, poor weather conditions negating the pre-planned BBQ promotion.

“...but for the most part it would be around the seasonality piece, what time of year is it, what the weather’s like, what events are running, what’s new and things like that...” (CON, #6, CL)

Promotional strategy is typically planned 12 months in advance and there are always notable perennials and seasonal promotions to which the consumer has become accustomed. For example, January is exemplified by a health promotion focus after a season of indulgence. This health-space theme is often returned to in summer months when the health overlay strategy relies on more eye-catching health-based interventions.

Retailers confirmed their promotional activity as changing all the time. In general, results indicated the static and dynamic nature of the promotional planning whereby retailers are required to be both proactive and reactive.

“... a lot of stuff is fixed but if a change in the direction of the business occurs we have to respond to this”. (SMKT, #4, CL)

For some, they have increased their promotional activity over recent years while for others the focus has shifted from volume-based/bulk promotions to a price-based focus on individual product line promotions. This reflects what customers are telling the retailers they want and how they like to shop (i.e.) the growing consumer sentiment of value for money and distaste of how promotions contribute to food waste.

“...that’s not to say that we will never do buy one get one frees or 3 for 2s, but I think that the very strong step change that we’ve seen is to have a much more kind of price-based approach.”

(SMKT, #1, CL)

In summation, results showed evidence that all retailers undertake some form of promotional planning; however they display the need to be flexible in the face of competing demands.

“...so you know, you kind of bring everything together, you get a really healthy product, it’s local, it’s fresh, it’s quality, it looks great, it’s new and it’s interesting and, wow, it’s a great price as well!”. (SMKT, #1, CL)

Partnership pressures and the power dynamics

There was some debate among stakeholders and retailers as to who is responsible for deciding what is promoted. Retailers confirmed that their promotional strategies are informed by what the consumers want and they then work collaboratively with suppliers to strategically meet those consumers’ needs throughout the year. Alternatively, stakeholders opined that manufacturers and suppliers are ultimately subservient to the retailer. Furthermore, the issue of stocking healthy food retail promotions is exacerbated by the practice of slotting fees. It is for this reason that the independent grocery adjudicator was established to support the players along the food chain and redress the perceived imbalance of power. Irrespective of perspective, there should be a requirement on retailers and manufacturers to work together to list and promote healthier food products, given their unique position in channelling products to consumers.

While recognising their unique position to influence consumer choice, the retailers were similarly keen to emphasise the power of the customer in this debate. Retailers recognise that they are chasing sales in a competitive environment and there are some areas where they remain ineffective in driving consumers to healthier promotions – notably in wholegrain product categories.

All interviewees verbalised their understanding that food retailers are commercial businesses. Retailers were similarly realistic that, by necessity, a lot of their messaging is dominated by price, to the detriment of health and quality messaging opportunities.

In summation, the balance of power within the overall supply chain from producer to retailer to end consumer is constantly in a state of tension.

“So much of it is driven by the brands itself so it’s quite a complex discussion that goes on between the traders, the brands, the marketing team, the customer insight team.” (SMKT, #1, CL)

Product offering: choice and assortment

Stakeholders recognise that consumers need choice and the retailers are delivering on the choice agenda. All interviewees recognised the unique position retailers enjoy in contributing to and informing consumers about the food choice arena. However, there was equal certainty that consumers need to be astute in the current retail environment and practice the discipline of shopping around to benefit from food retail promotions. This is particularly important in an era when consumers are turning to the discount (non-food specialist) retailers to avail of value, perhaps at the expense of nutritional health.

“I do think the challenge lies perhaps you know with the discount stores ... that’s where the real challenge will be as we go forward because you have got to ask yourself ... why does someone go to that store in the first instance ... primarily it is not a food outlet, but increasingly more so.” (MO, #5)

Retailers report their strategy of focusing on value right across the shop and seeking to provide a choice of the healthy and less healthy products consumers wish to buy. They rationalise this approach as supplementing value and choice with below the line changes on how they support their customers to make the informed, healthy choice. Retailers discussed having sufficient insight into their customers to recognise that shoppers are unwilling to pay more to make the healthier choices. Of particular note was the close attention paid to the dynamics of food retail promotions. Retailers confirmed that they seek to offer a balance of food retail promotions with respect to health. Interestingly, retailers displayed a rather narrow interpretation when offering a healthy alternative to a regular or mainstream product on promotion; being reluctant to promote beyond the brand and across the wider product category. A commonly cited example was their strategy to always include the healthier, zero/no sugar soft drink alternatives on promotion when their full sugar equivalent is on promotion.

“We make sure we always have a balance of promotions so if full sugar coke is on promotion then the other diet coke and other varieties will also be on promotion.” (SMKT, #4, CL)

One multiple retailer articulated the following approach to supporting consumers to make healthy choices via a combination of shifting dynamics.

“...So there has been a kind of combination of a tweak in our promotional approach in terms of price, there have been direct health interventions in terms of sweets off checkouts, there has been below the line activity that the customers won’t immediately notice in terms of product reformulation, and there has been an on-going programme of education amongst our customer base and amongst children.” (SMKT, #1, CL)

In summation, results indicated that consumers have the expectation for retailers to deliver both choice and price within any promotional strategy. A secondary consideration is for choice to be evident across healthy and less healthy products or product categories.

Product development and reformulation

There is widespread recognition that the retailers have made significant strides in reformulating their food offer for the betterment of its nutritional profile. Such innovation requires a lot of buy-in across the supply chain in terms of adding value to the raw material to deliver innovative product choices. Some retailers explained their focus on innovation around the healthy food category – notably starchy carbohydrates and fruits and vegetables. Thus, it is key to simultaneously offer product and health innovation alongside keen prices if the healthy choice is to be seriously held in a consumer’s consideration set and ultimately selected.

“What we are really striving to do is to keep our prices permanently low on a whole range of items all the time which is particularly pertinent on items such as fruit and veg so it’s not only easy but cheap for our customers to make healthy choices all the time.” (SMKT, #4, CL)

However, there remains a counter-argument whereby time and investment are required in terms of research and product development to achieve consumer acceptance for newly formulated food products. Such products need to be offered at a promotional price to encourage product trial by the consumer with the aim of broadening their palates.

The retailers measure product reformulation success as continuing sales from both consumers who are alert to the product reformulation and those who are un-informed as to

its altered nutritional status. Such below the line success is the embodiment of product reformulation.

The retailers were realistic that they are primarily a commercial business. Convenience retailers were particularly conscious of focusing too heavily on promotions because, inevitably, this will impact on margins. Food retailers' existence depends on their profitability, and the multiples counter that the success of their own-label value propositions are also dependent on the viability of the brands in order to fund their ongoing reformulation programmes.

“...I think we also have got to be pragmatic in terms of we have got to remember we are a commercial business and actually some of our promotions drive revenue and without that revenue we actually can't reformulate our own label...so sometimes it's a bit like a vicious circle because if you take some of that away from us then we won't be reformulating or driving down salt targets because that actually costs money and we need money coming in to be able to do that.” (SMKT, #4, CL)

In the same way that some retailers consider their own label brands to be nutritionally superior and more progressive in their product reformulation, the research also pointed to the fact that perhaps more could and should be done to increase the promotional activity across their own label brands. The increase in the availability, accessibility and affordability of food could be increased where own label and national brands have promotional parity. However the Research Team is aware that to do so is not without complication.

“The issue primarily is that a lot of own-label doesn't go on promotion and a lot of it is branded activity....it is about low prices and we don't have promotional activity on those items and sometimes it is about balancing. If we don't promote our own-label ranges then does that mean we are giving off a worse perception than on what we are delivering?” (SMKT, #4, CL)

In summation, the goal of product reformulation is distinctive in striving to reach population targets for public health. Retailers attach huge significance to their *choice editing* role whereby consumers are ultimately choosing between products that have been reformulated to make the healthy choice the easy choice. This permits healthy choices to happen naturally due to the number of healthy lines present from which to choose. The stakeholders simplify this message as consumers choosing between good/better/best to a reformulated product offering between better/best.

Prominence, store layout and store size

Stakeholders and retailers agree that shoppers are influenced by the layout of food stores since layout contributes to the thought process of the shopper. For example, retailers afforded prominence to key promotional locations, for example, end of aisle and dedicated promotional aisles, with inferences to impulse purchases made at till points. Some retailers stressed the importance of relocating fruit and vegetables to more prominent locations throughout the store in their drive towards increasing the sales of fresh goods. In particular, convenience retailers were keen to discuss the prominence they afforded to fruit and vegetables, and noted how they had relocated fruit to prime locations traditionally taken up by confectionery. Some went further, and introduced sampling stands to actively encourage their customers to try seasonal fruits and berries.

“...we have introduced sampling units, sampling stands so to try and encourage people to try new things.” (CON, #6, CL)

These results highlight issues around selecting healthier promotions which suitably fit the design and layout of the store. For example, some convenience retailers identified that the proportion of promotional offers is “**decided for them**” dependent on the “**square footage of the store**” (CON, #6, C). In addition, convenience retailers indicated that the prominence of their promotional offers is not necessarily concentrated in typical promotional areas and instead are often “**dotted about throughout the store**” (CON, #2, CL).

These results indicate that where prominence is coupled with attractive price points and/or promotional activity initial evaluations have indicated success, with encouraging early sales volume generated as a result.

Promoting provenance

It was interesting to note that the *local* angle was a key focus among NI food retailers. It would seem that in the context of the UK multiples, the NI shopper fares favourably with respect to receiving the national promotions supplemented by the local promotional policies offering value for money prices across the product spectrum that people in NI really want to buy.

“So I suppose what we have done here is translate and build on that national policy into products and prices that really matter to Northern Ireland customers and given that the research is Northern Ireland based, I think that’s a valid build in terms of trying to make that really count at home here” (SMKT, #1, CL)

Promoting price

Several retailers confirmed their commitment to growing their fresh food sales. Indeed, ‘fresh’ produce was used interchangeably by retailers to mean ‘healthy’. Accordingly, retailers have placed great emphasis on running price promotions for fresh, often local, fruits and vegetables giving local producers key space in stores. One retailer operated a promotional bundle whereby fresh, quality and local key vegetables/potatoes lines were offered for a competitive price (49p). Another retailer has trialled price promotions (49p – 79p) on three key fruit and vegetable lines and is currently rolling this out across the country.

Recently, the convenience retailers confirmed their shift towards price reductions and standalone offers with increased stickering on product lines to address customer perception that convenience stores are more expensive than their supermarket counterparts. There was general agreement among convenience retailers that straight price reductions resonate favourably with consumers conducting top-up shops because they support the convenience retailers’ value credentials.

“...everybody was doing £1 lines, so we would have changed some of our thinking towards having more £1 deals...” (CON, #6, CL)

Purchase demands, shopper profiles and preferences

There is universal agreement that retailers have an important role to play in influencing and informing shoppers’ food choices. This is particularly true in stringent times when consumers are operating within a budget and food retail promotions can support them in provisioning their household. NI consumers’ perceptions have changed, as have their shopping habits. NI

consumers are recognised by the interviewees as very savvy and brand-focused and it will take retailers considerable investment of time and money if they hope to change these perceptions and behaviours. To this end, the retailer agreed that it is difficult to overly-segment consumers because they demonstrate different shopping behaviours dependent on their need at the given time.

There was agreement among interviewees, particularly among the public health stakeholders, that the varying requirements of differing consumer groups must be considered to enable consumers to benefit from the variety of food retail promotions available to them.

Stakeholders and retailers agree that food retail promotional strategies and indeed consumers' response to food promotions differ. The task is made more complex because consumers will not necessarily buy a product simply because it is available on promotion unless they typically buy it anyway, but they will buy a product on promotion because it represents a bargain to them.

“Promotions are about switching people’s choices within a category: it’s not that you go into a store to buy a doughnut and you get a banana and you want that instead. Promotions have to be about switching within that category rather than between categories” (SMKT, #4, CL)

Some retailers provided insight into reported consumer willingness to switch brand within product categories, which can lead to the unintended consequence of impacting on competitor sales.

“Sometimes you have got something on promotion, now a good example of this is, we’ve put a 12 pack of eggs on at £1, well you’ve victim lines that are in the store, the other 6 pack eggs, we would call them victim lines...” (CON, #6, CL)

Summary statement

The retailers confirmed that their promotional activity is driven by a number of factors which support the challenge in achieving the balance of healthy food retail promotions while simultaneously satisfying consumer choice and price expectations. Results showed that the majority undertook some form of promotional planning but retained flexibility in this process to allow for variations in demand, reformulations at product category level, and to satisfy trade-offs within the supply chain.

5.7.3 Theme 3: Perceived effectiveness of promotional offers

This theme will address retailers' and store managers' perceptions of the effectiveness of differing types of promotions. It is important to note, for reasons pertaining to confidentiality, that no participant was asked to provide sales data regarding the performance of a promotion and/or individual product items. Subsequently, results are based on participants' perceived value of each type of promotion rather than their actual value. Throughout this theme case studies on each type of promotion and their perceived effectiveness are discussed.

From the store managers' perspective, the vast majority of convenience retailers were in agreement that price reductions were perceived as the most effective form of promotion. Standalone offers and multi-buys also proved reasonably popular. Similar to the convenience retailers, the supermarket/discounter store managers perceived price reduction as the most effective form of promotion. The case studies below identify each type of promotion and their perceived effect on consumer demand.

Bulk discounts

The appeal and use of bulk discounts (e.g. BOGOFs) has declined in recent years across convenience and supermarket retailers primarily due to concerns over food and packaging waste, however, some key insights on the advantageous nature of this type of promotion was evidenced.

“Bulk discounts operate where we are trying to clear volume of product – not our primary process”. (SMKT, #5, CL)

Bulk discounts – Key insights from retailer interviews

Definition: *Product available as part of deal for buying more than one of the SAME product e.g. Buy one get one free, buy one get one half price, buy two get a third one free, buy one get one half price*

- Provide good value for money.
- Useful for short-life products (e.g. milk)
- Effective on popular branded lines and familiar items
- Ineffective on new products (e.g. risk that consumer may not like product)
- More effective when linked to an event or seasonal promotion
- Useful tactic for upselling (e.g. consumers making already planning to purchase the product on offer)
- In a convenience store setting consumers are put off bulk discounts as they do not want to buy a lot when under time-pressure
- Work well for the following types of food categories: soft drinks, milk and branded products

Price reductions

As previously stated, price reductions tended to be deemed the most frequently used and effective type of promotion. However, one supermarket retailer (CL) commented disinterest in price reductions given the legislative complexities around this promotional activity. Another retailer discussed the limited use of price reductions due to a preferred emphasis on quality, while one convenience retailer highlighted that, at times, too much emphasis is placed on price reductions.

“Sometimes we think our leaflet, we are too much into price reduction, you know that we would comment ourselves we think we are too cheap for things” (CON #6, CL)

Price reduction – Key insights from retailer interviews

Definition: *The pre-promotional price is shown alongside the price reduction = £xx savings shown e.g. Save 50%: was £2 now £1*

- Preferred by consumers as they like to see a reduced price.
- Shows the customer a genuine cost-saving.
- Price reductions are easily understood by the consumer.
- Effective way to attract the customer to the store
- Price clarity is important
- The customer is not obliged to buy more than one item – the saving is the value.
- These offers work well for the following types of food categories: impulse items and confectionery

Standalone offers

Greater attention is being afforded to standalone promotions, for example, *Round Pound* deals and price matching with the multiples as the region comes out of recession. Retailers are cognisant of the need to provide a more balanced mix of savings across the stores (e.g. a variety of promotional types) due in part to their awareness of consumer fatigue with promotional activity. One retailer indicated that these fixed price £1 deals are not necessarily a promotion in the typical sense but rather act as mechanism for consumers to navigate their way around the store and for the purposes of comparison within a product category.

“...we might have a big price point that says in red and yellow £1 and it might be on the end of an aisle and have a huge sign but that might just be its price rather than a specific promotion”
(SMKT, #4, CL)

Standalone offers – Key insights from retailer interviews

Definition: No information on pre-promotional price is provided and no price saving is shown e.g. Only £1, Only £3

- Retailers have dedicated sections to £1 offers.
- Good price points will sell if the promotion offers good value for money.
- The type of product on offer may impact on the success of the promotion.
- Typically used for branded products that do not usually sell.
- More prevalent among the convenience retailers within the sample.
- Supermarkets showed less reliance on these types of offers stating their aim is to invest in everyday low prices across a range of items.
- Standalone offers work well for the following product categories: cakes and branded goods.

Multibuy

Results yielded limited discussions around the effectiveness of multibuy however one supermarket retailer did highlight that historically these types of promotions were popular but have succumbed to the increased popularity of price reductions and standalone offers.

“... For the core shopper this tactic can help them across their weekly shop” (SMKT, #4, SM)

Multibuy promotions – Key insights from retailer interviews

Definition: *The SAME product for a special price (but may have flavour variations) e.g. Any 2 for £3, Any 3 for £5*

- Tends to have a slower customer response
- Retailers need to be careful not to dilute the effect of the promotion by making the offer too close to the original price.
- This is good for the weekly shopper seeking variety (e.g. 2 fruit variations in one offer)
- They are of limited benefit to consumers living in a one-person household.
- These types of offers are typically used within the following product categories: yoghurts, jelly, meats, ready-meals and fresh goods.

Mix and match

Results indicated a degree of popularity of mix and match promotions. A number of both convenience and supermarket retailers discussed how many of their fresh produce lines would offer these types of deals. Key categories included meat, fish, fruit and vegetables.

“Three for twos, or 2 for £3, or, there is quite a lot of deals across produce...meat, so salmon, skinless, sort of basic chicken and protein, tend to be healthier lines ...” (SMKT, #1, CL)

Mix and match – Key insights from retailer interviews

Definition: *This is a choice combination of DIFFERENT products – for a set price e.g. any 3 fruit items for £3, Any 2 frozen items for £5, 3 for 2 – cheapest free*

- Not as effective for a convenience retailer as it is asking for a higher customer spend.
- Difficult to stock due to space limitations within convenience retailing formats
- They can work well if the mixes of products complement each other towards a meal solution.
- Ineffective when customers buy all the same variety of a product instead of varying it.
- Typically used in the following product categories: fruit, fresh goods, meats and ready-meals.

Certain % extra free

Results revealed limited discussion surrounding promotions which offered the customer a 'certain % extra free'. The majority of interviewees who discussed this type of promotion stated that its effectiveness centred on driving customer satisfaction around getting more of a product they like than driving profit.

Certain % extra free – Key insights from retailer interviews

Definition: *No price of cost saving is shown however the pack size is offering a certain % extra free e.g. 33% extra free, 150ml extra free*

- Least effective among convenience retailers but effective among supermarket retailers
- Has a role to play if the price is also enticing as well as the volume on offer
- Typically only stocked on more popular product ranges
- Can cause consumer confusion in working out the cost saving. (e.g. additional volume per pack compared to the unit price)
- Some consumers feel they are getting something for nothing (e.g. volume and value).
- They do not increase sales but improve customer satisfaction towards brand and retailer
- Effective for supermarket retailers when used as part of a weekly shop
- More effective on products which consumers buy on a regular basis.
- These offers are typically on the following product categories: crisps, meat and bakery goods

Meal deals

The use of meal deal promotions was noted to be of greater importance among supermarket retailers when compared to convenience retailers. However, one convenience retailer stated that “**on occasions**” throughout the year they would try to group together key items to make a meal deal (CON, #6, CL). It was worth noting that even within this meal deal option one supermarket retailer offered customers the choice to make their ‘deal’ healthier.

“...we respond to customers’ feedback so within our meal deal there is often a fruit choice there for dessert, we do fruit juice also as a choice instead of alcohol.” (SMKT, #5, CL)

Meal deals – Key insights from retailer interviews

Definition: *Product combinations FROM A NUMBER OF CHOICES which make a lunch/dinner at a specified price*

- Less reliance on meal deals among convenience retailers
- Greater likelihood of convenience retailers using meal deals for lunchtime offerings
- The mechanics and planning required around the types of promotions are difficult
- The logistics of aligning different suppliers offering differing components of the deal can be challenging
- Difficulty in linking customer preferences to the deal.
- Clarification of the meal deal components need to be made clearer to consumers.
- Can cause frustration for the consumer at the till point if they have not gathered the right components.
- They are useful for key occasions throughout the year (e.g. Christmas, Hallowe’en)
- This is a popular promotion among supermarket retailers and is the reason for patronage of a specific store.

Throughout the interviews participants had the opportunity to identify and discuss other types of promotional offers and strategies, which have proved popular within a store setting. These responses are summarised and explained in Table 24 below.

Table 24 Explanation of promotional types

Promotional type	Explanation
Personal selling/ Link Sale	Two retailers discussed the use of staff to promote sales of key product items by using link sales. <i>“We would also do lots of link sales, trying to link products together...where our operators at the till you know, if they see somebody buying a chicken, they say, you know, do you need a sauce to go with that...it’s to encourage the customer to think of alternatives but it’s also a sales drive as well.”</i> (CON, #6, CL; SMKT, #4, CL)
Smart couponing	One retailer has trialled smart couponing, informed by customer data held on store loyalty cards, which targets low-income consumers who do not buy fruit and vegetables. The retailer has evaluated the intervention and found that shoppers buy fruit and vegetables and continue to do that for the duration of the couponing programme, with behavioural effects levelling off after three months. (SMKT, #2. CL)
Sponsorship of national and local events/campaigns	Two retailers discussed the use of National (e.g. Olympics) and local (e.g. Breakfast week) events/campaigns to promote sales of key products. (SMKT, #1, CL; SMKT, #7, CL)
Movie tie-ins	One retailer discussed the effectiveness of movie tie-ins on foods which are used to promote (e.g. Minion themed cupcakes) (SMKT, #4, CL)
Loyalty schemes	Some supermarket retailers mentioned the use of their in-store schemes to reward shoppers loyalty through the use of coupons and offering additional points on specific products.

Summary statement

The results indicated that price reductions and standalone offers were perceived as the most effective type of offer across the retailers to attract consumers to make a promotional purchase. Volume-based promotions (e.g. BOGOFs) were noted as least effective, especially for convenience retailers and retailers targeting one-person households.

5.7.4 Theme 4: Perceptions on performance

This theme will address stakeholders' and retailers' perceptions of the study in general, the results from the in-store audit and the perceived effectiveness of different types of promotional offers. Overall perceptions of the study will be discussed to identify any potential limitations of the study. Following this, the positive and negative perceptions of the results from the in-store retail audit will be detailed.

Perceptions of the study - Positive reactions

Overall, the interviewees' reactions to the audit results have been interesting. There was widespread support for the independent nature of the research, the timeliness of the study, its usefulness in supporting retailers in determining what a healthy balance looks like, and its NI-specificity. There was general agreement that the audit reported a positive result which merited constant reinforcement across the private and statutory sectors, and indeed broadcast media.

“...I think and what’s reassured me out of this a bit is that it’s independent...there is quite a lot of talk from NGOs about how this is an area that needs to be legislated, which is extremely difficult to do, because it contravenes all sorts of competition laws. But when you look at this, and you look at the balance it would indicate that it’s already being done.” (SMKT, #5, CL)

The retailers perceived the audit results as vindication of their efforts in this arena and interpreted the findings as corroboration that they were doing the right thing for their customers in terms of strategies and choices made on their behalf. It was interesting to note the positive way in which the retailers interpreted the research findings. No retailer advocated complacency in their ongoing commitment to promoting public health. Instead, they indicated that these data supported their health efforts and were aligned with the direction of travel of their corporate strategy and signposted areas and/or product categories on which to focus future efforts in seeking to achieve the right balance in healthy food retail promotions. These results suggest that early engagement with retailers from the outset of the study is a useful model on which to base future research approaches relating to the public health agenda.

“...Really good news...it reassured me that actually we are doing a pretty good job.” (SMKT, #5, CL)

The theme of the benefit of a two points in time study was revisited by retailers who welcomed the two phase approach to the audit and argued that their below the line product reformulation efforts may well be in evidence over the duration of this research. They further commented that additional reformulation outcomes may be apparent in future and pointed to the benefits of repeat independent auditing over time.

Perceptions of the study – Potential limitations

The Research Team is aware that there is not perfect symmetry between the research design and food retail promotional practice. For example, it was necessary to select a set number of promotional locations to audit across the store while some promotional activity was discounted from study (e.g. loyalty card rewards, price matching and couponing).

Similarly the Research Team recognises the differences that exist between convenience and supermarket/discounters with respect to space restrictions. The promotional space available in larger retailers is disproportionate to that available in some convenience retailers meaning that space by necessity is more limited in terms of the stock keeping units (SKUs) available.

“We are primarily a convenience retailer so it’s not always fair, necessarily, to compare a convenience retailer with a retailer that operates out of larger premises like a supermarket because the convenience market is designed to cater to particular needs.” (CON, #2, CL)

Differences in the number of brands available within and between categories (e.g. a limited variety of brands exist in categories such as fresh fruit, vegetables, dairy and meat) are evident when compared to other value-added categories (e.g. biscuits, soft drinks, ready meals and crisps). Subsequently, due to the inherent imbalance of weightings across the proportion of brands available within each product category, and by virtue of the fact that the results of this study are aggregated to reflect product categories bilaterally (i.e. *healthy* and *less healthy*), caution should be applied when interpreting the results.

Finally and importantly, there was hope among the retailers that this research would disperse any call for the regulation of food retail promotions. This was concerning to retailers, who considered that such interference would contravene competition law. There is already a sense among the stakeholders that the NI food market is over-politicised and over-governed. Therefore there is merit in ensuring that policy requirements are explained and understood rather than pursuing an overzealous approach to regulation. Such an approach is also in keeping with FSA in NI’s regulatory strategy ^[134] which seeks to protect the consumer interest while simultaneously reducing the administrative burden on business by ensuring that regulatory functions do not repeat what is already being done effectively by others.

“If you want retailers to move on something you’re better to get them to move together and having them involved” (MO, #3)

Perceptions of retail audit results – Positive reactions

Overall, the retailers displayed a positive reaction towards the results of the audit with important benefits for improved understanding and communication between internal and external departments to better inform decision and policymaking.

“Well I think we could share the information with our trading team and with our marketing team as well, and I think there are opportunities. I think it would be good to work probably with the Food Standards Agency more you know ...” (CON, #6, CL)

The convenience retailers were particularly interested in the audit results and commented on the influence these data should have in future promotional strategy where different value offers may be needed in different locations to deliver the best value and choice to consumers and the best return on investment to retailers.

“...We have a store in [town] and we would sell very low percentage of promotions whereas if you had a store in [town], it would be very high. It just depends on the demographics of the community, so that people in [town] know what they want and something on promotion doesn’t change their habits, whereas in a working class area... every penny is important to them” (CON, #6, CL)

Stakeholders reported their surprise that price reductions were so pronounced in the retailers’ promotional toolkit. This was because there was the perceptions that multibuys are more obvious than price reductions throughout the retail setting. This is important in the context of food retail promotions because there is a concerted effort among retailers to reduce reliance on volume promotions which are typically funded by the manufacturer and are widely perceived to distort volume and contribute to food waste. There was unanimity

among retailers that volume promotions are not aligned with retailers' corporate social responsibility commitments to reduce food waste.

Stakeholders perceived the central tenet of the research to be the precursor to incentivising the retailers to further promote healthy food (food decreed as healthy) and indeed promote it more prominently. There was some uncertainty that such efforts would indeed alter consumer behaviour, since consumer behaviour is complex and often illogical. Stakeholders and retailers pointed to the need for any such evaluation of progress to be measured on a longitudinal basis and highlighted the merits of re-visiting the independent audit as their focus is on delivering a balance of promotions across the calendar year.

*"I don't think we have ever looked at it completely across the board in terms of the number of promotions at one set time."
(SMKT, #4, CL)*

The idea of longitudinal balance was discussed by several retailers who considered it important to appreciate the research in the context of a shopper's overall basket. It is important to provide the consumer with choice and for there to be a choice of *healthy* and *less healthy* products available on promotion to fulfil consumers' requirements for an appealing shopping experience.

Perceptions of the results from the retail audit - Negative reactions

Retailers were realistic that the audit results highlighted key product categories as future areas for continued reformulation. While retailers were in agreement that the results showed a positive balance of health they noted this did not mean that they could become complacent.

"I think they [results] do support the company's health campaign but I also think, and I always think there is room for improvement, whenever we do something..." (SMKT, #5, CL)

Summary statement

Results indicated that positive perceptions of the study were expressed across all retailers however it must be noted that limitations and concerns about the design and implications of the study were raised. Furthermore, results identified that, in general, retailers concurred positive perceptions towards the results of the Stage 2 in-store audit. While this highlighted the good work which some retailers have undertaken to improve the healthiness of their

shoppers' choices the need for continual idea generation, evaluation and development in this area remains.

5.8 Conclusion

This chapter sought to identify the current policy levers and factors influencing retailers' promotional activity. In addition, results pertaining to the perceived promotional effectiveness were also considered, informed by insight from retailers and store managers. Every retailer confirmed the value in participating in this independent research, providing as it did the opportunity to be both outward and inward looking on the subject of the healthiness, or otherwise, of their food retail promotions.

Chapter 6

Conclusion and Recommendations

6.0 Introduction

The purpose of this research was to determine the healthiness, or otherwise, of food retail promotions among NI food retailers. The research is deemed appropriately timed and relevant to addressing some of the following concerns: rising obesity levels; rising food prices; the competition among retailers in recessionary times; the primacy of retail grocery stores' promotional activity in shaping consumers' food choices and encouraging healthy dietary behaviours. Thus the three-stage investigation represents a valuable public/private partnership opportunity to work collaboratively with the retailers upon which consumers rely to provision their households. In addition, the data and insight gathered in the preceding chapters has informed the following reflections, conclusions and recommendations.

6.1 Analytical reflections

Stage 1: Rapid Evidence Assessment

A REA was undertaken to identify and evaluate the current body of evidence on food retail promotions. A synopsis of the main conclusions is outlined below:

1. No studies were identified specific to the Republic of Ireland, UK and or NI and therefore the international nature of the findings may not be fully applicable to the NI context.
2. Consumers exhibited the following behaviours in response to purchasing food retail promotions: value-seeking; volume-seeking; brand-switching; impulsivity; and variety-seeking.
3. Results identified several factors as impacting on the effectiveness of food retail promotions including: low-prices; store format; prominence; seasonality; product offering; and the profile of the shopper.
4. In terms of health and how food retail promotions impacted on food choices the following dietary behaviours were exhibited: switching not shifting behaviour; buy more eat more; pay less, buy healthy; meaningful message framing makes for healthier choices; price priorities reduce responsiveness to health labels; prominence provides potential to improve healthy choices and; promoting certain product categories can motivate purchase.
5. Consumers attach importance to price discounting as an effective promotional tool for reasons of managing their household budget and permitting them to make a purchase based on quality and other attributes. However, price discounts seem to have ambiguous effects; they do encourage the purchase of healthy products, but also lead to increased energy purchases.
6. Volume-based promotions can be perceived as greater value for money relative to the unit price.
7. Consumers' responses differ to each variant of promotional activity, dependent on their price sensitivity, product category and its perceived stockability.

8. Store format impacts on the availability and perception of food retail promotions to the extent that the *prominence* of locations was more important than the *number* of locations. Explicitly, increasing the prominence of healthy products by enlarging their availability, while concurrently permitting access to less healthy food products, is a promising strategy to promote sales.

It is possible from the REA to elicit policy recommendations based on international learning. Specifically, there is potential for:

- price reduction strategies to stimulate healthy food purchases and encourage consumers, and particularly lower-income consumers, to afford to purchase product categories previously beyond their budget, allowing them to make a purchase based on quality and other higher-order services;
- use of promotional strategies for healthier product categories that have been proven to work in promoting less healthy foods including their prominent accessibility and availability;
- education efforts to raise consumer awareness of the variety of healthy food promotions that are available in-store to reduce the perception that only less healthy food products are promoted; and
- suppliers and retailers working purposefully together towards the achievement of the communal public health objective of obesity reduction.

The REA is conclusive in its finding that food retail promotions are effective when they are consumer-centric, meaningful and consider all players along the food chain for the pragmatism of the promotional activity in the retail setting.

Stage 2a: Independent in-store retail audit

An in-store audit of food retail promotions was undertaken to gather evidence on promotional activity and the nutritional content of products among supermarket and convenience retailers currently operating in NI. A synopsis of the main conclusions is outlined below:

- The main types of promotional offers across all stores were: 'price reductions'; 'standalone offers'; and 'multibuys' accounting for 88% of all promotions.
- The promotional price and percentage saving across promotional offers varied. The promotional prices of 'price reduction' and 'certain % extra free' were lower than all other offers. In addition, there were notable differences on percentage savings across promotions with 'price reduction', 'certain % extra free' and 'meal deals' offered the greatest percentage saving across all retailers.
- Differences in the prominence of promotional offers at the various promotional sites were noted. The greatest number of promotional offers were found at the 'end of

aisles' and on 'promotional stands'. The 'checkouts' and the 'fruit and vegetable promotional displays' offered the least amount of promotional offers.

- In recognition of the fact that retailers and consumers already widely understand and use FOP labels, the primary analysis of the healthiness of food retail promotions relied on this scoring mechanism. The FOP labelling (categories: red, amber and green) identified a similar number of products categorised as 'red' (47.5%) as categorised as 'amber' or 'green' (52.5%). Similar findings were obtained for individual nutrients scored (sugar, fat, saturated fat and salt). Additionally the mean FOP score was 9.3 (SD 3.0), which fell into the amber category.
- Further analysis using other nutritional indicators present further and deeper insight into the nutritional status of food retail promotions.
 - The Nutritional Quality Index highlighted that two thirds of all promoted products were 'less healthy'.
 - Using the *eatwell plate* food categories, just less than half (43%) of promoted products were classified as 'foods high in fat and sugar' and 12% were fruit and vegetables.
- Results identified an association between the prominent positioning of promotional offers and their 'healthiness'. Most promotional products situated at 'promotional buckets', promotional stands' and 'checkouts' were classified as red using FSA FOP categories. As expected, promotional products situated at the 'fruit and veg promotional stand' were classified as green.
- Significant differences were also noted on the price of promotional products in relation to their 'healthiness'. Firstly, using both the FSA FOP categories and Nutritional Quality Index score, promotional products categorised as 'red' or 'less healthy' were more expensive than those classified as 'amber', 'green' or 'healthier'. Secondly, both 'healthy' and 'less healthy' products showed similar percentage savings. Finally, the *eatwell plate* identified products in the 'meat, fish, eggs, beans and non-meat proteins' and products in the 'foods high in fat and sugar' as the most expensive. However, these categories, coupled with the 'milk and dairy' group, also offered the greatest percentage saving.
- Comparisons between the pre- (Phase 1) and post-Christmas (Phase 2) phases showed that there was a greater proportion of 'bulk discounts' in Phase 1 and a greater proportion of 'mix & match promotions' in Phase 2. In regards the 'healthiness' of the promotions there was a higher percentage of products classified as 'amber' or 'green' in Phase 2 compared to Phase1.
- Convenience stores were more likely to offer 'standalone' promotions, while supermarket/discounters were more likely to offer 'multibuys' and 'mix & match' promotions. Aligned to the central research question, convenience stores obtained a higher (healthier) FSA FOP score (M = 9.6, SD = 3.1) compared to supermarket/discounters (M = 9.2, SD = 2.9), and promoted more foods classified as 'green' (24% vs 17%), but were more likely to promote foods from the 'foods high in

fat and sugar' category (47% vs 40% for convenience stores and supermarkets/discounters respectively).

The in-store audit is conclusive in its finding that a balance (47.5% (red) vs 52.5% (amber/green) in favour of health exists among food retail promotions in NI. In addition, price-based promotions as opposed to volume-based promotions were utilised more often across the retailers. Finally, relationships between the healthiness of a food retail promotion and its prominence was identified. Results revealed some differences in promotional type and percentage saving when comparing online to in-store and it was reassuring to note that 'healthier' products were promoted to the same extent as 'less healthy products' in terms of percentage savings.

Stage 2b: Independent online retail audit

An online audit of food retail promotions was undertaken to gather evidence on promotional activity and the nutritional content of products among supermarket and convenience retailers currently operating in NI. A synopsis of the main conclusions is outlined below:

- The main types of promotional offers across all stores were: 'price reductions' (61%); and 'multi-buys' (33%) accounting for 94% of all promotions. Notably there was no 'certain % free' or 'meal deals' over the total study period for all retailers.
- The promotional price and percentage saving across promotional offers varied. The promotional prices of 'mix and match' and 'bulk discount' were lower than all other offers. In addition, there were significant differences on percentage savings across promotions with 'bulk discounts' 'offering the greatest percentage saving and 'multibuys' offering the least percentage saving across all retailers.
- In recognition of the fact that retailers and consumers already widely understand and use FOP labels, the primary analysis of food retail promotions relied on this scoring mechanism. The FOP labelling (categories: red, amber and green) identified a similar number of products categorised as 'red' (47%) as categorised as 'amber' or 'green' (53%). Similar findings were obtained for individual nutrients scored (sugar, fat, saturated fat and salt). Additionally the mean FOP score was 9.4 (SD 3.0), which fell into the amber category.
- Further analysis using other nutritional indicators present further and deeper insight into the nutritional status of food retail promotions.
 - The Nutritional Quality Index also highlighted that 65% of all promoted products were 'less healthy'.
 - Using the *eatwell plate* food categories, just less than one-third (30%) of promoted products were classified as 'foods high in fat and sugar'.
- Significant differences were also noted on the price of promotional products in relation to their 'healthiness'. Firstly, using both the FSA FOP categories and Nutritional Quality Index score, promotional products categorised as 'red' or 'less healthy' were more expensive than those classified as 'amber', 'green' or 'healthier'.

Secondly, no differences were observed between the percentage promotional saving for 'less healthy' and 'healthier' products. Finally, the *eatwell plate* identified products in the 'meat, fish, eggs, beans and non-meat proteins' and products in the 'foods high in fat and sugar' as the most expensive and promotions in the "bread, rice, pasta, starchy foods' and 'fruit and veg' categories as the least expensive. The greatest percentage saving on promotions were found in the 'milk and dairy foods' and 'high in fat and sugar' categories.

- Convenience stores were more likely to offer 'price reduction' promotions, while supermarkets were more likely to offer 'multibuys' promotions online. Aligned to the central research question, convenience stores and supermarket promotions online obtained very similar (FSA FOP scores M= 9.4, SD = 3.0 vs M=9.4, SD= 3.1) percentage of products in each of the FSA FOP categories (e.g. energy red 77% vs 75%, energy amber 3% vs 3% and energy green 20% vs 22%), and Nutritional Quality Index scores ('less healthy' 66% vs 64% and 'healthy' 34% vs 36%). In addition, distribution of promotions across the *eatwell plate* categories was similar with the exception that supermarkets promoted slightly more 'fruit and veg' and less 'foods high in fat and sugar'.

The online audit is conclusive in its finding that when applying the FSA FOP categories nearly half (47%) of all online food retail promotions were categorised as red while the remaining 53% were categorised as amber/green. In addition, both price-based (e.g. price reductions) and volume-based promotions (e.g. multibuys) were popular across the retailers.

Stage 3: Interviews

The purpose of Stage 3 of the research was to explore the perspectives of key stakeholders and retailers on the feasibility of promotional strategies in delivering public health targets. A synopsis of the main conclusions is outlined below:

1. There was widespread support for the independent nature of the research, the timeliness of the study, its usefulness in supporting retailers in determining what a healthy balance looks like, and its NI-specificity. The research served to encourage retailers in their healthy food retail promotions efforts.
2. All interviewees confirmed their ongoing commitment to the public health agenda with retailers recognising their contribution to improving shoppers' health by providing retail environments, conducive to informed, healthy food choices.
3. Fully progressing such public health commitments is not without its challenges. The following challenges were identified: prominence of confectionery; communication between departments within an organisation; the current competitive landscape; changing consumer needs; and consistent messaging of nutritional messages.
4. Despite a number of barriers challenging continued progress in the area of health, retailers and membership organisations all expressed the desire to collaborate with the goal of investing in current and future customers' health.

5. Retailers attached great importance to the prominence they afford to fresh fruit and vegetables which often now have been relocated to prime locations traditionally taken up by confectionery. There has also been considerable education effort to raise local communities' healthy food awareness, while retailers have invested heavily in product reformulation.
6. Retailers' promotional activities have to attract customers to the store by driving footfall through offering genuine savings to the value conscious consumer. There has been a shift towards retailers' central strategy being one of redefining value by offering low prices across the product spectrum. However, retailers were unanimous in their belief that promotions will remain necessary to their business strategy.
7. Simultaneously, retailers reported being conscious of focusing too heavily on promotions because of the inevitable impact on margins with implications for sustained funding of their ongoing reformulation programmes which can deliver population-level nutritional benefits by making the healthy choice the easy choice.
8. The retailers confirmed that their promotional activity was driven by a number of factors which support the challenge of achieving a balance of healthy food retail promotions. These factors included: promotional strategy and targets; promotional planning and cycles; partnership pressures and power dynamics; product offering; product development and reformulations; prominence; provenance; price; and purchase demands.
9. In commonality with Stage 2, the retailers confirmed in Stage 3 the perceived effectiveness of price reductions as promotional activities. Similarly, standalone offers were reported as being useful (alongside price reductions) in addressing customer perception that convenience stores are more expensive than their supermarket counterparts.
10. Volume-based promotions (e.g. BOGOFs) were noted as least effective, especially for convenience retailers and retailers targeting one-person households. Public health stakeholders reported their surprise about the popularity of these tactics given their general perception that volume-based discounts were more prolific, while retailers were aligned with consumers in the potential for food waste attributable to this type of promotion.
11. Promotional activity was recognised by the retailers as being both strategic and reactive but the focus of promotions has shifted from volume-based to price reductions, in answer to general protestations against wasteful food practices and responding to changing consumer preferences.
12. There was scope in revisiting food retail promotions to secure their full potential in delivering benefits to both the consumer and the business.
13. Retailers reported how their promotional strategy did not differ by retail format or geography but the convenience retailers were particularly convinced that their food

retail promotions could be better utilised by better understanding their customers' response to their promotional offer.

14. There was some debate around the usefulness of setting promotional targets based on health criteria. One retailer confirmed that it had exceeded its target while others stated distaste for additional regulatory activity. There was general agreement that there is merit in ensuring that future policy requirements are explained and understood rather than pursuing an overzealous approach to regulation.

The retailer interviews were conclusive in confirming that to date retailers have made good progress in maintaining and further investing in above and below the line initiatives (e.g. product reformation, nutritional labelling, recipe cards, smart couponing etc.) to promote healthy choices to consumers.

6.2 Recommendations

This composite report identified several recommendations arising from the three stages of the study. The recommendations are fully explained below and their evidence base is identified in Table 25.

Recommendation 1: Maintain momentum

Retailers and national brand manufacturers should continue their reformulation programmes to deliver below the line benefits at the population level and make the healthy choice the easy choice. Coupled with this, retailers should encourage the promotion of healthy food product categories with an associated reduced reliance on less healthy food promotions. A positive momentum to continue to skew the balance of food retail promotions towards healthy food product categories is merited. Stakeholder and shareholders should encourage and support manufacturers'/retailers' reformulation efforts and food retail promotion strategies to be as cognisant of the public health agenda as they are of profit and food waste.

Recommendation 2: Make it meaningful

Retailers should consider the meaningfulness of food retail promotions informed by consumer insight. Retailers and policy makers should undertake consumer research to arrive at an evidence base to support promotional planning that meets consumers' expectations, preferences and requirements. Targeted promotions should render food retail offers appropriate for a diversity of consumer groupings including: single person households requiring smaller portion sizes; householders shopping for a large family; cash-poor households, time-poor shoppers; consumers with limited confidence in respect of food and cooking skills etc.

Recommendation 3: Play on prominence

Retailers should increase the prominence of healthy food promotions to increase the visibility, availability, accessibility and affordability of healthy foods to arrive at a shopping environment conducive to health. Greater prominence should be afforded to clear message framing and promotions around fruit and vegetables that incentivise consumer buying behaviour in this product category.

Recommendation 4: Explore early engagement

Greater engagement regarding the public health agenda is required between statutory authorities, public health bodies and the private retail sector. Government agencies, membership organisations and retailers should engage meaningfully on food retail promotions. Where retailers are consulted from the outset on decisions that ultimately impact upon them, there is greater potential for buy-in when implementing any arising policy recommendations. Thereafter, good practice should be disseminated among all key players.

Recommendation 5: Pursue promotional parity

Retailers and manufacturers should consider promoting own labels and national brands on a comparable footing so that consumers can access both favoured national brands and keenly priced, product reformulations equally.

Recommendation 6: Promote a consumer and food skills strategy

Relevant government departments should co-ordinate interested parties' consumer education programmes and awareness-raising campaigns to develop consumer understanding to identify the healthier choice.

Recommendation 7: Streamlining shared intelligence

This three-stage investigation has independently audited retail food promotions and retailers' strategies for implementing these. Results indicated that there remains a gap in understanding how consumers choose from the range of promotions available to them and how they are used thereafter in meal planning. Further research is therefore recommended to explore what and why consumers select from the food retail promotional offer and reconcile this information against FSA in NI's food purchasing (on promotion) data (Kantar WorldPanel). Such an approach could support FSA in NI's nutritional surveillance responsibilities by understanding consumer purchasing behaviour around food retail promotions and their contribution to available consumption data (National Diet and Nutrition Survey).

Table 25 Evidence source for identified recommendations

Recommendation	Stage 1	Stage 2a	Stage2b	Stage 3
Recommendation 1: Maintain momentum				
Recommendation 2: Make it meaningful				
Recommendation 3: Play on prominence				
Recommendation 4: Explore early engagement				
Recommendation 5: Pursue promotional parity				
Recommendation 6: Promote a consumer and food skills strategy				
Recommendation 7: Streamlining shared intelligence				

Table 26 Recommendations

Overarching theme	Responsible party	Recommendation	Suggested actions	Indicators of success
Making the healthier choice the affordable and easy choice	Retailers	Maintain momentum	<ul style="list-style-type: none"> Continue with product reformulation programme both nationally and locally 	<ul style="list-style-type: none"> Continue to aspire to product reformulation saturation
			<ul style="list-style-type: none"> Continue to skew the balance in favour of amber and green colour coded promotions 	<ul style="list-style-type: none"> Amber and green colour coded categories further outweigh red colour-coded promotions
			<ul style="list-style-type: none"> Continue to consider public health outcomes alongside profit 	<ul style="list-style-type: none"> Meaningful engagement through a biannual retail forum, led by FSA in NI, in conjunction with the CCNI, to discuss issues of joint interest and shared intelligence⁵
		Make it meaningful	<ul style="list-style-type: none"> Continue to gather and use consumer insight to meet the needs of diverse consumer groupings when planning promotions 	<ul style="list-style-type: none"> A suite of targeted promotions that meets the expectations, preferences and requirements of different types of households
			<ul style="list-style-type: none"> Build responsiveness to consumer behaviour and preferences through dynamic promotional planning 	<ul style="list-style-type: none"> Promotions are responsive to changing consumer demands, ensuring amber and green colour coded categories further outweigh red colour coded promotions
	Play on prominence	<ul style="list-style-type: none"> Increase prominence of amber and green colour coded categories of food retail promotions 	<ul style="list-style-type: none"> A shopping environment with easily visible healthier promotions. 	
	Multi-Agency collaboration	Explore early engagement	<ul style="list-style-type: none"> Continuous engagement regarding the <i>Fitter Future for All</i> strategy between statutory authorities, public health bodies, consumer bodies and the food retail sector 	<ul style="list-style-type: none"> Meaningful engagement through a biannual retail forum, led by FSA in NI, in conjunction with CCNI, to discuss issues of joint interest and shared intelligence¹
		Pursue promotional parity	<ul style="list-style-type: none"> FSA in NI, in collaboration with the Department of Health, should continue a 	<ul style="list-style-type: none"> Increased promotion of reformulated own label products

⁵ The Food Retailer Forum, led by FSA in conjunction with CCNI will be made up of food retailers, food retail and industry representatives and may, at times, invite other parties to discuss areas of special interest

			public health conversation at a national level between manufacturers, retailers and national brands to discuss the feasibility of the promotion and accessibility of food/drinks products	
		Promote a consumer and food skills strategy	<ul style="list-style-type: none"> Relevant government departments/ agencies and consumer bodies should ensure the implementation of the consumer and food skills element of <i>A Fitter Future for All</i> strategy, targeted at all age groups, delivered in partnership with food retailers, community and voluntary based consumer organisations 	<ul style="list-style-type: none"> Empowering consumers to identify and chose the healthier choice among retail promotions
		Streamlining shared intelligence	<ul style="list-style-type: none"> Scrutinise the shelf-life of food retail promotions through further analysis into the durability of food bought on promotion alongside consumer purchasing behaviour 	<ul style="list-style-type: none"> Informed retailers' strategies for equitable and meaningful promotion of fresh/perishable food product categories alongside other amber and green product categories
			<ul style="list-style-type: none"> Engage in ongoing research to explore food retail promotions in relation to consumer perspective and purchasing behaviour 	<ul style="list-style-type: none"> Reconciliation of in-store promotional availability data, Kantar WorldPanel food purchasing on promotion data and National Diet and Nutrition Survey consumption data to provide a holistic perspective on the impact of promotional activity on dietary behaviour
			<ul style="list-style-type: none"> Repeat the independent audit element of this research to review progress within three years 	<ul style="list-style-type: none"> Effective and timely measurement of the balance of red, amber and green colour code product categories in food retail promotions for the benefit of the consumer
			<ul style="list-style-type: none"> Policy makers should consider the food promotional strategies in other food related businesses (e.g. catering and/or foodservice industry and non-food specialist discount retailers) 	<ul style="list-style-type: none"> Achievement of a baseline equivalent from other significant contributing sources to understand their food promotional activities.

6.3 Conclusion

There remains the issue that the multiples, by definition, operate in a market larger than NI, where a lot of what they do is nationally-driven. To this end, the outcome of this research impacts beyond the region into national retail policy and strategy. Most certainly, while awaiting future direction about the UK's *Public Health Responsibility Deal*, the retailers welcome this research as contributing to their future monitoring and evaluation activity in response to national public health policy.

References

1. Lan, H., Lloyd, T. and Morgan, W. (2014) *Supermarket promotions and food prices*. Available from: <http://competitionpolicy.ac.uk/documents/8158338/8199490/CCP+Working+Paper+14-2.pdf/aa2afd7d-4a04-4d78-b963-9fd1d62b7dfe> [Accessed 17/08/14].
2. British Retail Consortium (2009) *British retailing: a commitment to health*. London: British Retail Consortium.
3. Consumer Council (2013) *Hard to stomach – the impact of rising food costs for Northern Ireland consumers*. Belfast: Consumer Council.
4. Safefood (2012) *The cost of overweight and obesity on the Island of Ireland*. Dublin: Safefood.
5. Caraher, M. (2012) *Food poverty: a new hunger. Presentation at the West Belfast annual health lecture 10.08.12*. Available from: http://www.belfasttrust.hscni.net/pdf/Caraher_W_Belfast_conf.pdf [Accessed 17/08/14].
6. Department of Health, Social Services and Public Safety (2012) *A fitter future for all: framework for preventing and addressing overweight and obesity in Northern Ireland 2012-2022*. Belfast: Department of Health, Social Services and Public Safety.
7. Mintel (2013) *Attitudes towards pricing and promotions in food and drink – UK*. London: Mintel.
8. Mintel (2014) *Grocery retailing – US*. London: Mintel.
9. Bury, G. and Solmonson, S. (2013) *Medica Members to Enjoy New Healthy Savings Program*. Available from: <http://www.businesswire.com/news/home/20130617005989/en/Medica-Members-Enjoy-Healthy-Savings-Program#.VbDzpPIVhBc> [Accessed 17/08/14].
10. Gedenk, S. A., Neslin, K. L. and Ailawadi, K. L. (2006) Sales promotion. In Kraft, M. and Mantrala, M. K. (Eds) *Retailing in the 21st Century*(2006), Heidelberg: Springer.
11. Sherman, L. Gottfredson, D. MacKenzie, D. Eck, J. Reuter, P. Bushway, S. (1997) *Preventing Crime: What Works, What Doesn't, What's Promising* Washington: US Department of Justice.
12. Deaton, S. (2004) *Conducting an Evidence Assessment - Method and Lessons Learned*. Unpublished paper.
13. Hope, K. (2014) *The death of the weekly supermarket shop*. BBC News Online Available from: <http://www.bbc.co.uk/news/business-29442383> [Accessed 6/10/14].
14. Food Standards Agency in Northern Ireland (2012) *Exploring food attitudes and behaviours in Northern Ireland: Findings from the Food and You Survey 2012*. London: Food Standards Agency.
15. Gedenk, S. A., Neslin, K. L. and Ailawadi, K. L. (2006) Sales promotion. In Kraft, M. and Mantrala, M. K.(Eds) *Retailing in the 21st Century*(2006), Heidelberg: Springer.
16. Institute of Grocery Distribution. (2014) *A guide to price and promotions*. London: Institute of Grocery Distribution.
17. Ramanathan, S. and Dhar, S. K. (2010) The Effect of Sales Promotions on the Size and Composition of the Shopping Basket: Regulatory Compatibility from Framing and Temporal Restrictions. *Journal of Marketing Research*. 47, 542–552.
18. Cassady, D., Jetter, K. M. and Culp, J. (2007) Is price a barrier to eating more fruit and vegetables for low-income families? *Journal of the American Dietetic Association*. 107, 1909-1915.

19. Glanz, K., Basil, M., Maibachm, E., Goldberg, J. and Snyder, D. (1998) Why Americans eat what they do: taste, nutrition, cost, convenience, and weight control concerns as influences on food consumption. *Journal of the American Dietetic Association*. 98 (10), 1118-1126.
20. European Commission (2006) Risk Issues. *Special Eurobarometer*. 238, Wave 64.1
21. Waterlander, W. E., de Mul, A., Schuit, A. J., Seidell, J. C. and Steenhuis, I. H. M. (2010) Perceptions on the use of pricing strategies to stimulate healthy eating among residents of deprived neighbourhoods: a focus group study. *International Journal of Behavioral Nutrition and Physical Activity*.7, 44.
22. Drewnowski, A., Monsivais, P., Maillot, M. and Darmon, N. (2007) Low-energy-density diets are associated with higher diet quality and higher diet costs in French adults. *Journal of the American Dietetic Association*. 107 (6), 1028-1032.
23. Jetter, K. M. and Cassady, D. L. (2006) The availability and cost of healthier food alte Maillot, M., Darmon, N., Vieux, F. and Drewnowski, A. (2007) Low energy density and high nutritional quality are each associated with higher diet costs in French adults. *American Journal of Clinical Nutrition*. 86 (3), 690-696.rnatives. *American Journal of Preventative Medicine*. 30 (1), 38-44.
24. Honkanen, P. and Frewer, L. (2009) Russian consumers' motives for food choice. *Appetite*. 52, 363-371.
25. Consumer Council (1999) *What's in store? Consumer views on grocery shopping*. Belfast: Consumer Council.
26. Dobson, P. (2011) *The lure of supermarket special offers: a healthy choice for shoppers? Inaugural lecture: 29.11.11*. University of East Anglia.
27. Laroche, M., Pons, F., Zgolli, N., Cervellon, M. and Kim, C. (2003) A model of consumer response to two retail promotion techniques. *Journal of Business Research*. 56, 513-522.
28. Hamlin, R.P., Lindsay, S. and Insch, A. (2012) Retailer branding of consumer sales promotions. A major development in food marketing? *Appetite*, 58, pp. 256 – 264.
29. Dowler, E. A., Kneafsey, M. Lambie, H., Inman, A. and Collier, R. (2011) Thinking about 'food security': engaging with UK consumers. *Critical Public Health*. 21 (4), 403-416.
30. Department of the Environment, Food and Rural Affairs. (2010) *Food statistics pocketbook 2010*. Available from: <http://www.defra.gov.uk/evidence/statistics/foodfarm/food/pocketstats/documents/foodpocketbook2010.pdf> [Accessed 10/09/14].
31. Adetunji, J. (2012) Are supermarkets responding to challenge of 'nutritional recession'? *The Guardian*14.12.12.
32. Glendall, P., Hoek, J., Pope, T. and Young, K. (2006) Message framing effects on price discounting. *Journal of Product & Brand Management*. 15 (7), 458–465.
33. Goswami, P., and M. Mishra. 2009. Would Indian consumers move from kirana stores to organized retailers when shopping for groceries? *Asia Pacific Journal of Marketing and Logistics*. 21 (1), 127–43.
34. McNeill, L. S. (2012) Sales promotion in the supermarket industry: a four country case comparison, *The International Review of Retail, Distribution and Consumer Research*. 22 (3), 243-260.
35. Waterlander, W. E., de Boer, M. R., Schuit, A. J. Seidell, J. C. and I. H. M., Steenhuis. (2013) Price discounts significantly enhance fruit and vegetable

- purchases when combined with nutrition education: a randomized controlled supermarket trial. *American Journal of Clinical Nutrition*. 97, 886–95.
36. Anderson, E. T. and Simester, D. I. (2003) Mind your pricing cues. *Harvard Business Review*. 81, 97–103.
 37. Hawkes, C. (2009). Sales promotions and food consumption. *Nutrition Reviews*, 67(6), 333–342.
 38. van Heerde, H., Leeflang, P. S. H., & Wittink, D. R. (2004). Decomposing the sales promotion bump with store data. *Marketing Science*, 23(4), 317–334.
 39. French, S. (2003) Pricing effects on food choices. *The Journal of Nutrition*, 133(3), 841S–843S).
 40. Dhar, R., Huber, J. and Khan, U. (2007) The shopping momentum effect. *Journal of Marketing Research*. 44, 370–78.
 41. Chandran, S. and Morwitz, V. G. (2006) The price of 'free'-dom: consumer sensitivity to promotions with negative contextual influences. *Journal of Consumer Research*. 33, 384–92.
 42. Simpson, L. S. (2006) Enhancing food promotion in the supermarket industry: A framework for sales promotion success. *International Journal of Advertising*. 25 (2), 223-245.
 43. Vallette Florence, P., Guizini, H., and Merunka, D. (2011). The impact of brand personality and sales promotions on brand equity. *Journal of Business Research*, 64 (1), 24–28.
 44. Yi, Y., and Yoo, J. (2011) The long-term effects of sales promotions on brand attitude across monetary and non-monetary promotions. *Psychology and Marketing*, 28 (9) 879–896.
 45. Foster, G. D., Karpyn, A., Wojtanowski, A. C., Davis, E., Weiss, S., Brensinger, C., Tierney, A., Guo, W., Brown, J., Spross, C., Leuchten, D., Burns, P. J. and Glanz, K. (2014) Placement and promotion strategies to increase sales of healthier products in supermarkets in low-income, ethnically diverse neighborhoods: a randomized controlled trial. *American Journal of Clinical Nutrition*. 99, 1359–68.
 46. Maillot, M., Darmon, N., Vieux, F. and Drewnowski, A. (2007) Low energy density and high nutritional quality are each associated with higher diet costs in French adults. *American Journal of Clinical Nutrition*. 86 (3), 690-696.
 47. National Consumer Council (2004) *Rating retailers for health: how supermarkets can affect your chances of a healthy diet*. London: National Consumer Council.
 48. Kwon, S. and Jang, S. (2011) Price bundling presentation and consumer's bundle choice: The role of quality certainty. *International Journal of Hospitality Management*. 30, 337–344.
 49. Mishra, A. and Mishra, H. (2011) The influence of price discount versus bonus pack on the preference for virtue and vice foods. *Journal of Marketing Research*. 48, 196 – 206.
 50. Hardesty, D. M. and Bearden, W. O. (2003) Consumer evaluations of different promotion types and price presentations: the moderating role of promotional benefit level. *Journal of Retailing*. 79 (1), 17–25.
 51. Kamins, M. A., Folkes, V. S. and Fedorikhin, A. (2009) Promotional bundles and consumers' price judgments: when the best things in life are not free. *Journal of Consumer Research*. 36, 660–70.

52. Litvak, D.S., Calantone, R.J. and Walshaw, P.R. (1985), "An examination of short-term retail grocery price effects", *Journal of Retailing*, 61 (3), pp. 9-25.
53. Teng, L. (2009) A comparison of two types of price discounts in shifting consumers' attitudes and purchase intentions. *Journal of Business Research*, 62, pp. 14 – 21.
54. Raghurir, P., Inman, J. J. and Grande, H. (2004) The three faces of price promotions: economic, informative and affective. *California Management Review*. 46 (4), 1–19.
55. Krishna, A., Briesch, R., Lehmann, D.R. and Yuan, H.(2002) A meta-analysis of the impact of price presentation on perceived savings. *Journal of Retailing*. 78 (2), 101-18.
56. Milliron, B. J., Woolf, K and Appelhans, B.A. (2012) A point-of-purchase intervention featuring in-person supermarket education affects healthful food purchases. *Journal of Nutrition Education and Behavior*. 44 (3), 225-232.
57. Fam, K.-S., Yang, L. and Tanakinjal, G. (2008) Innovative sales promotion techniques among Hong Kong advertisers – A content analysis. *Innovative Marketing*. 4 (1), 8-15.
58. Diamond, D. and Sanyal, A. (1990) The effect of framing on the choice of supermarket coupons. *Advances in Consumer Research*. 17 (1), 494-500.
59. Heilman, C., Lakishyk, K. and Radas, S. (2011) An empirical investigation of in-store sampling promotions. *British Food Journal*. 113 (10), 1252 – 1266.
60. Stinson J. (2014) *Discount chain Lidl expanding as shoppers shun 'big two' grocers*. Available from: <http://www.belfasttelegraph.co.uk/business/news/discount-chain-lidl-expanding-as-shoppers-shun-big-two-grocers-30771061.html> [Accessed 25/11/14].
61. Passport (2014) *Grocery retailers in the United Kingdom*. Euromonitor International.
62. Horowitz, C. R., Colson, K. A., Hebert, P. L. and Lancaster, K. (2004) Barriers to buying healthy foods for people with diabetes: evidence of environmental disparities. *American Journal of Public Health*. 94 (9), 1549-1554.
63. Gordon, C., Ghai, N., Purciel, M., Talwalker, A and Goodman, A. (2007) *Eating well in Harlem: how available is healthy food?* New York, NY: New York City Department of Health and Mental Hygiene.
64. Graham, R., Kaufman, L., Novoa, Z. and Karpati, A. (2006) *Eating out, eating well: access to healthy food in North and Central Brooklyn*. New York, NY: New York City Department of Health and Mental Hygiene.
65. Farley, T. A., Rice, J., Bodor, J. N., Cohen, D. A., Bluthenthal, R. N. and Rose, D. (2009) Measuring the food environment: shelf space of fruits, vegetables, and snack foods in stores. *Journal of Urban Health*. 86 (5), 672-682.
66. Larson, N. I., Story, M. T. and Nelson, M. C. (2009) Neighborhood environments: disparities in access to healthy foods in the U.S. *American Journal of Preventative Medicine*. 36 (1), 74-81.
67. Peattie, S. (1998) Promotional competitions as a marketing tool in food retailing. *British Food Journal*. 100 (6), 286–94.
68. Dannefer, R., Williams, D. A., Baronberg, S., and Silver, L. (2012) Healthy Bodegas: Increasing and Promoting Healthy Foods at Corner Stores in New York City. *American Journal of Public Health*. 102 (10), e29.
69. Grigsby-Toussaint, D. S., Moise, I. K. and Geiger, S. D. (2011) Observations of marketing on food packaging targeted to youth in retail food stores. *Obesity Journal* 19 (9).

70. Kerr, J., Sallis, J. F., Beomby, E. and Glanz, K. (2012) Assessing reliability and validity of the *gropromo* audit tool for evaluation of grocery store marketing and promotional environments. *Journal of Nutrition Education and Behaviour*, 44 (6) 597–603.
71. Van Kleef, E., Otten, K. and van Trijp, H. C. M. (2012) Healthy sacks at the checkout counter: a lab and field study on the impact of shelf arrangement and assortment structure on consumer choices. *BMC Public Health*. 12, 1072.
72. Marteau, T. (2014) *Restricting displays could curb consumption without affecting price or availability*. Available from www.cam.ac.uk/research/news/end-of-aisle-displays-encourage-consumption-of-alcohol-and-fizzydrinks#sthash.VV8CPAbP.dbuf [Accessed 25/11/14].
73. Glanz, K., Bader, M. D. and Iyer S. (2012) Retail grocery store marketing strategies and obesity: an integrative review. *American Journal of Preventative Medicine*. 42, 503–12.
74. Mintel. (2014) *Supermarkets - more than just food retailing – UK*. London: Mintel.
75. Keynote. (2014) *C2DE Consumer*. Richmond: Keynote.
76. van't Riet, J. (2013) Sales effects of product health information at points of purchase: a systematic review. *Public Health Nutrition*. 16, 418–29.
77. Escaron, A.L., Meinen, A. M., Nitzke, S. A. and Martinez-Donate, A. P. (2013) Supermarket and grocery store-based interventions to promote healthful food choices and eating practices: a systematic review. *Prevention of Chronic Disease*. 10, E50.
78. Ghirardelli, A., Quinn, V. and Sugerman, S. (2011) Reliability of a retail food store survey and development of an accompanying retail scoring system to communicate survey findings and identify vendors for healthful food and marketing initiatives. *Journal of Nutrition Education Behaviour*, 43 (4 suppl 2), S104–S112.
79. van Heerde, H., & Neslin, S. (2008). Sales promotion models. In Wierenga, B. (Ed.) *Handbook of Marketing Decision Models*. New York, NY: Springer.
80. Seymour, J. D., Yaroch, A. L., Serdula, M., Blanck, H. M. and Khan, L. K. (2004) Impact of nutrition environmental interventions on point-of-purchase behavior in adults: a review. *Preventative Medicine*. 39 (supplement 2), S108-S136.
81. Martin-Biggers, J., Yorkin, M., Aljallad, C., Ciecierski, C., Akhabue, I., McKinley, J., Hernandez, K., Yablonsky, C., Jackson, R., Quick, V. and Byrd-Bredbenner, C. (2013) What foods are US supermarkets promoting? A content analysis of supermarket sales circulars. *Appetite*. 62, 160–165.
82. Ailawadi, K., & Neslin, S. (1998) The effect of promotion on consumption. Buying more and consuming it faster. *Journal of Marketing Research*, 35, 390–398.
83. Chandon, P., & Wansink, B. (2002). When are stockpiled products consumed faster? A convenience-salience framework of post-purchase consumption incidence and quantity. *Journal of Marketing Research*, 39, 321–335.
84. Ni Mhurchu, C., Blakely, T., Jiang, Y., Eyles, H. C. and Rodgers, A. (2010) Effects of price discounts and tailored nutrition education on supermarket purchases: a randomized controlled trial. *The American Journal of Clinical Nutrition*. 91 (3), 736-747.
85. Nederkoorn, C. (2014) Effects of Sales Promotions, Weight Status, and Impulsivity on Purchases in a Supermarket. *Obesity*. 22, E2-E5.

86. Ball, K., McNaughton, S. A., Ni Muurchú, C, Andrianopoulos, N., Inglis, V, McNeille, B. Le, H, N, N. D. Leslie, D. Pollard, C. and Crawford, D. (2011) Supermarket Healthy Eating for Life (SHELf): protocol of a randomised controlled trial promoting healthy food and beverage consumption through price reduction and skill-building strategies. *BMC Public Health*, 11, 715.
87. French, S. (2005) Population approaches to promote healthful eating behaviors. In *Obesity Prevention in Public Health*. Edited by D. C, RW. J. Oxford: Oxford University Press, 101-127.
88. Waterlander, W. E., Steenhuis, I. H. M., de Boer, M. R., Schuit, A. J. and Seidell, J. C. (2012) Introducing taxes, subsidies or both: The effects of various food pricing strategies in a web-based supermarket randomized trial. *Preventive Medicine*. 54 323–330.
89. Waterlander, W. E., Steenhuis, I. H. M., de Boer, M. R., Schuit, A. J. and Seidell, J. C. (2013) Effects of different discount levels on healthy products coupled with a healthy choice label, special offer label or both: results from a web-based supermarket experiment. *International Journal of Behavioral Nutrition and Physical Activity*.
90. Epstein, L.H., Dearing, K. K., Roba, L. G. and Finkelstein, E (2010) The influence of taxes and subsidies on energy purchased in an experimental purchasing study. *Psychological Science*. 21, 406–414.
91. Nordstrom, J. and Thunstrom, L. (2009): The impact of tax reforms designed to encourage healthier grain consumption. *Journal of Health Economics*. 28,622–63.
92. Mytton, O., Gray, A., Rayner, M. and Rutter, H. (2007) Could targeted food taxes improve health? *Journal of Epidemiology and Community Health*. 61, 689–694.
93. Eyles, H., Ni Mhurchu, C., Nghiem, N. and Blakely, T. (2012) Food pricing strategies, population diets, and non-communicable disease: a systematic review of simulation studies. *Public Library of Science Medicine*. 9:e1001353.
94. Sturm, R., Ruopeng, A., Segal, D. and Patel, D. (2013) A Cash-Back Rebate Program for Healthy Food Purchases in South Africa Results from Scanner Data. *American Journal of Preventative Medicine*. 44 (6), 567–572.
95. Mishra, A. and Mishra, H. (2011) The influence of price discount versus bonus pack on the preference for virtue and vice foods. *Journal of Marketing Research*. 48, 196 – 206.
96. Wertenbroch, K. (1998) Consumption self-control by rationing purchase quantities of virtue and vice. *Marketing Science*. 17 (4), 317–37.
97. Huyghe, E. and Van Kerckhove, A. (2013) Can fat taxes and package size restrictions stimulate healthy food choices? *International Journal of Research in Marketing*. 30, 421–423.
98. Sutherland, L. A., Kaley, L. A. and Fischer, L. (2010) Guiding stars: the effect of a nutrition navigation program on consumer purchases at the supermarket. *American Journal of Clinical Nutrition*. 91,1090S–4S.
99. Bodor, J. N., Ulmer, V. M., Dunaway, L. F., Farley, T. A. and Rose, D. (2010) The rationale behind small food store interventions in low-income urban neighborhoods: insights from New Orleans. *Journal of Nutrition*. 140 (6), 1185-1188.
100. Song, H. J., Gittelsohn, J., Kim, M., Suratkar, S., Sharma, S. and Anliker, J. (2009) A corner store intervention in a low-income urban community is associated with

- increased availability and sales of some healthy foods. *Public Health and Nutrition*. 12 (11), 2060-2067.
101. Gittelsohn, J., Dyckman, W. and Tan, M. L. (2006) Development and implementation of a food store-based intervention to improve diet in the Republic of the Marshall Islands. *Health Promotion and Practice*. 7 (4), 396-405.
 102. Curran, S., Gittelsohn, J. and Anliker, J. (2005) Process evaluation of a store-based environmental obesity intervention on two American Indian reservations. *Health Education Resource*. 20 (6), 719-729.
 103. National Consumer Council (2008) *Cut-price, what cost? How supermarkets can affect your chances of a healthy diet*. London: National Consumer Council.
 104. Kantar WorldPanel (2012) *Promotional data for Northern Ireland food product categories*. Personal communication to Food Standards Agency in Northern Ireland.
 105. Ludwig, D. S. and Nestle, M. (2008) Can the food industry play a constructive role in the obesity epidemic? *Journal of the American Medical Association*. 300 (15), 1808-1811.
 106. Nestle, M: (2007) Conclusion. The politics of food choice. *Food politics. How the food industry influences nutrition and health* Edited by: Goldstein E. Berkeley: University of California Press. 58-374.
 107. Den Hoed, R.C. and Elliott, C. (2013) Parents' views of supermarket fun foods and the question of responsible marketing. *Young Consumers*. 14 (3), 201-215.
 108. Elliott, C. (2008) Marketing fun foods: a profile and analysis of supermarket food messages targeted to children. *Canadian Public Policy*. 34 (2), 259-273.
 109. Mehta, K., Phillips, C., Ward, P., Coveney, J., Handsley, E. and Carter, P. (2012) Marketing foods to children through product packaging: prolific, unhealthy and misleading. *Public Health Nutrition*. 15 (9), 1763-1770.
 110. Chapman, K., Nicholas, P., Banovic, D. and Supramaniam, R. (2006) The extent and nature of food promotion directed to children in Australian Supermarkets. *Health Promotion International*. 21 (4), 331-339.
 111. Harris, J., Schwartz, M. and Brownell, K.D. (2010) Marketing foods to children and adolescents: licensed characters and other promotions on packaged foods in the supermarket. *Public Health Nutrition*. 13 (3), 409-417.
 112. Elliott, C. (2008) Assessing 'fun foods': nutritional content and analysis of supermarket foods targeted at children. *Obesity Reviews*. 9 (4), 368-377.
 113. Elliott, C. (2012) Packaging health: examining 'better-for-you' foods targeted at children. *Canadian Public Policy*. 38 (2), 265-281.
 114. Millar, S. (2005) Obesity: can packaging help? *Paper, Film and Foil Converter*. 79 (8), 24.
 115. Kelly, B., Chapman, K., Hardy, L., King, L. and Farrell, L. (2009) Parental awareness and attitudes of food marketing to children: a community attitudes survey of parents in New South Wales, Australia. *Journal of Paediatrics and Child Health*. 45 (9), 1-5.
 116. Waterlander, W. E., Steenhuis, I. H. M., de Vet, E. and Seidell, J. C. (2009) Expert views on most suitable monetary incentives on food to stimulate healthy eating. *European Journal of Public Health* 2009.
 117. World Health Organisation (2013) Global Action Plan for the Prevention and Control of NCDs 2013-2020. Available from: http://www.who.int/nmh/events/ncd_action_plan/en/ [Accessed 01/08/15].

118. Vinkeles-Melchers, N. V. S., Gomez, M. and Colagiuri, R. (2009) Do socio-economic factors influence supermarket content and shoppers' purchases? *Health Promotion Journal of Australia*. 20 (3), pp. 241 – 246.
119. British Dietetic Association (2014) *First Major Retailer to go 'Junk-Free' at the Checkout*. 22.05.14.
120. BBC News. (2014) *Tesco to end checkout sweets in 'healthy choice' move*. Available from: <http://www.bbc.co.uk/news/uk-27514077> [Accessed 25/08/15].
121. Anon (2015) M&S banishes Percy Pig and Colin the Caterpillar sweets from its checkouts after calls for customers to cut sugar intake by half, *Daily Mail*. Available from: <http://www.dailymail.co.uk/news/article-3166033/M-S-banishes-Percy-Pig-Colin-Caterpillar-sweets-checkouts-calls-customers-cut-sugar-intake-half.html> [Accessed 18/07/15].
122. Geliebter, A., Ang, I. Y., Bernales-Korins, M., Hernandez, D., Ochner, C. N., Ungredda, T., Miller, R. and Kolbe, L. (2013) Supermarket discounts of low-energy density foods: effects on purchasing, food intake, and body weight. *Obesity*. 2, E542–8.
123. Phipps, E. J., Braitman, L. E., Stites, S. D., Singletary, B., Wallace, S. L., Hunt, L., Axelrod, S., Glanz, K. and Uplinger, N. (2014) Promoting fruit and vegetable purchases. *American Journal of Public Health*. (E-publication ahead of print; DOI: 10.2105/AJPH.2013.301752).
124. Blakely, T., Ni Mhurchú, C., Jiang, Y., Matoes, L., Funaki-Tahifote, M., Eyles, H. C., Foster, R. H., McKenzie, S. and Rodgers, A. (2011) Do effects of price discounts and nutrition education on food purchases vary by ethnicity, income and education? Results from a randomised, controlled trial. *Journal of Epidemiology and Community Health*. 65, 902–8.
125. Wilkie, W. L., Desrochers, D. M. and Gundlach, G. T. (2002) Marketing research and public policy: the case of slotting fees. *Journal of Public Policy and Marketing*. 21, 275–288.
126. Bell, E.A., Castellanos, V.H., Pelkman, C.L., Thorwart, M.L. and Rolls, B.J. (1998) Energy density of foods affects energy intake in normal-weight women. *American Journal of Clinical Nutrition*, 67 (3), 412 – 420.
127. Public Health England (2014) Your guide to eatwell plate helping you eat a healthier diet. Available from: [https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/340869/2014-250 - eatwell plate Final version 2014.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/340869/2014-250_-_eatwell_plate_Final_version_2014.pdf) [Accessed 14/08/15].
128. Cohen, J. (1988) *Statistical power and analysis for the behavioral sciences* (2nd ed.), Hillsdale, N.J., Lawrence Erlbaum Associates, Inc.
129. Food Standards Agency (2014) *Food Information Regulations 2014: Summary guidance for food business operators and enforcement officers in Scotland, Wales and Northern Ireland*. Available from: <https://www.food.gov.uk/sites/default/files/fir-guidance2014.pdf> [Accessed 25/08/15].
130. Department of Health (2011) *Nutrient Profiling Technical Guidance*. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/216094/dh_123492.pdf [Accessed 25/08/15].
131. Department of Health (2015) *Public Health Responsibility Deal*. Available from: <https://responsibilitydeal.dh.gov.uk/pledges/> [Accessed 25/08/15].

132. National Health Service (2015) Change for Life. Available from: <http://www.nhs.uk/change4life/Pages/change-for-life.aspx> [Accessed 25/08/15].
133. Public Health Agency (2015) Choose to Live Better. Available from: <http://www.choosetolivebetter.com/> [Accessed 25/08/15].
134. Food Standards Agency (2015) *Food we can trust: Food Standards Agency strategic plan 2015-2020*. London: Food Standards Agency.
135. British Nutrition Foundation (2015) Eating outside of the home. Available from: <http://www.nutrition.org.uk/healthyliving/healthyeating/outofhome.html> [Accessed 25/08/15].