

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

Nutrition knowledge, attitudes and practices of food industry professionals

Chayanut Osornprasoph
31 July 2003

A thesis presented in fulfillment of the
requirements for the Masterate of Food
Technology at Massey University

Abstract

Food industry professionals may be influenced by various factors in their decision to make changes in food products to enhance nutritional value. This study used the Social Cognitive model to examine these factors. The factors considered included nutrition knowledge, attitudes towards nutrition, confidence in one's own knowledge to improve nutritional quality in food products, and the perception of the company's and the consumer's views in the development/marketing of nutritionally improved products. The study was carried out in two stages, firstly a self-administered questionnaire, followed by depth interviews. Of the 199 self-administered questionnaires distributed to food industry professionals, 46 (23%) were returned via mail or internet. Frequency distributions were calculated and regression analysis was conducted to analyze the model. The depth interview schedule was designed to explore in more depth the information gathered from the self-administered questionnaire. Twelve respondents who completed the self-administered questionnaire volunteered to participate in interviews.

Overall, it was found that more than two-thirds of food industry professionals surveyed carried out work practices related to enhancing the nutrition content of foods. Most commonly they had reduced fat and sodium in their food products. Nutrition knowledge and confidence in one's own ability to improve nutritional quality in food products were found to be related to work practices enhancing nutrition, but these relationships were mediated through perception of the company's concerns about nutrition. Personal attitudes towards nutrition, however, had little effect on nutrition related food practices at work, which may be because respondents just follow what the company wants, or it may be that there are other important factors which were not examined in this study. To conclude, the main influence of nutrition consideration as part of the product development process is the company's policy, thus if the government wants to see changes in the nutrient composition of foods one approach would be to promote nutrition policies in food companies, e.g. providing financial incentives.

Acknowledgements

I would like to express my gratitude to my supervisors, Dr Janet Weber and Ms Carol Pound, for their valuable advice, patience and encouragement throughout the study. I wish to thank my parents for always being there for me when I need help.

I would also like to thank to:

- Mr Guy Defryn for his help with web survey design.
- Mr Duncan Hedderly for his help with statistically analysis
- All food industry professionals who participated in this study.
- Mr Laurens Skelly for his advice, supports and help with proofreading.
- My little girl, Alice, for emotional support and motivation to succeed my study

Table of Contents

List of tables.....	vii
List of figures.....	viii
List of appendices.....	viii
1. Introduction.....	1-1
2. Literature review.....	2-1
2.1 Introduction	2-1
2.2 Nutritional status of New Zealanders.....	2-1
2.2.1 New Zealanders' nutrition related health problems.....	2-1
2.2.2 Food and nutrition targets.....	2-2
2.2.3 New Zealanders' food and nutrient intake.....	2-4
2.3 Trends in food consumption.....	2-5
2.4 Factors that affect 'healthy' food choices.....	2-6
2.4.1 Barriers to healthier eating.....	2-6
2.4.2 The effect of nutrition information on healthy food choices.....	2-8
2.4.3 Behavioural models.....	2-9
2.4.3.1 Theory of Reasoned Action.....	2-9
2.4.3.2 Social Cognitive Theory (SCT)....	2-11
2.4.4 Summary.....	2-13
2.5 Role of the food industry in providing consumers with 'healthy' products....	2-13
2.6 Nutrition in food product development.....	2-14
2.6.1 Food product development process and the development team.....	2-14
2.6.2 Factors that influence the development of nutritionally improved products.....	2-16
2.6.2.1 Profit/sales.....	2-16
2.6.2.2 Company philosophy.....	2-16
2.6.2.3 Government policy.....	2-17
2.6.2.4 Personal interest.....	2-19
2.6.2.5 Technological advances.....	2-20

2.5.2.6 Market edge.....	2-21
2.6.2.7 Summary.....	2-22
2.7 Conclusion.....	2-22
3. Project outline.....	3-1
3.1 Introduction.....	3-1
3.2 Project aim/objectives.....	3-1
3.3 Proposed model.....	3-1
3.4 Overall project description.....	3-3
3.4.1 Questionnaire survey.....	3-3
3.4.2 In-Depth interview.....	3-5
3.4.3 Ethics.....	3-5
3.5 Summary.....	3-6
4. Methods.....	4-1
4.1 Introduction.....	4-1
4.2 Questionnaire survey.....	4-1
4.2.1 Sample.....	4-1
4.2.2 Recruitment.....	4-2
4.2.3 Self-administered questionnaire.....	4-3
4.2.3.1 Variables measurement and scaling methods.....	4-4
4.2.4 Pretesting.....	4-8
4.2.5 Questionnaire analysis.....	4-9
4.3 In-depth interview.....	4-11
4.3.1 Sample selection.....	4-11
4.3.2 Interview schedule.....	4-11
4.3.3 Pretesting.....	4-12
4.3.4 Interview administration.....	4-12
4.3.5 Interview analysis.....	4-12
4.4 Summary.....	4-13
5. Questionnaire Survey: Results and discussion.....	5-1
5.1 Introduction.....	5-1
5.2 Descriptive information.....	5-1

5.2.1	Demographic information.....	5-1
5.2.2	Company and work details.....	5-3
5.2.3	General diet evaluation/advice.....	5-5
5.2.4	Sources of nutrition information.....	5-6
5.2.5	Measurement of individual variable including in the model.....	5-6
5.2.5.1	Nutrition knowledge.....	5-6
5.2.5.2	Attitudes towards nutrition.....	5-8
5.2.5.3	Confidence in one's own ability to improve the nutritional aspects of food products (self-efficacy).....	5-9
5.2.5.4	The perception of the company's and the consumer's views towards the development/marketing of nutritionally improved products (subjective norms).....	5-10
5.3	Analysis of the proposed model.....	5-10
5.3.1	Nutrition related food practices at home.....	5-11
5.3.2	Nutrition related food practices at work.....	5-12
5.3.3	Bivariate relationships between independent variables.....	5-14
5.3.4	Prediction of home and work practices related to improving nutrition using the model.....	5-15
5.4	Analysis of partial models: fat and sodium.....	5-17
5.5	The relationship of company factors with nutrition related food practices at work.....	5-21
5.6	The relationship of demographic factors with variables in the proposed Model.....	5-21
5.7	Comparison between web based and paper based survey.....	5-21
5.8	Discussion.....	5-23
5.8.1	Responses and measurement.....	5-23
5.8.2	Main findings and areas to be asked in the interview.....	5-23
6.	Interview survey: Results and discussion.....	6-1
6.1	Introduction.....	6-1
6.2	Interview results.....	6-1
6.2.1	Personal concerns about nutrition.....	6-1

6.2.2	The message of nutrition consideration.....	6-2
6.2.3	Effect of nutrition attitudes on work practices considering nutrition.....	6-3
6.2.4	Details of work practices considering nutrition.....	6-5
6.2.4.1	Factors influencing nutrition consideration.....	6-5
6.2.4.2	The amount of changes for nutritionally enhanced products.....	6-6
6.2.4.3	Problems occurred during the developing/marketing of nutritionally enhanced products.....	6-7
6.2.5	Effect of nutrition related work practices on nutrition attitudes.....	6-8
6.3	Discussion.....	6-9
7.	Overall discussion and conclusion.....	7-1
7.1	Introduction.....	7-1
7.2	Main findings.....	7-1
7.2.1	Nutrition knowledge.....	7-2
7.2.2	Nutrition attitudes.....	7-3
7.2.3	Confidence in one's own ability to improve nutritional quality in food products	7-3
7.2.4	The perception of the company's and the consumer's view towards the improvement of nutrition quality in food products	7-4
7.2.5	Product type.....	7-4
7.3	Possible influence in increasing 'healthy' food supply: Government role and lawsuits.....	7-5
7.4	Comparison of web based and paper based survey.....	7-6
7.5	Survey limitations.....	7-7
7.6	Future research.....	7-8
7.7	Conclusion.....	7-8
8.	Appendices.....	8-1
9.	References.....	9-1

List of Tables

Table 2.1: Three of the major causes of death in New Zealand from 1997 to 1999.....	2-1
Table 2.2: Macronutrients intake of New Zealanders compared to New Zealand Nutrition Taskforce targets.....	2-4
Table 2.3: The product development process.....	2-15
Table 5.1: Respondents' demographic information.....	5-2
Table 5.2: Respondents' positions in the company.....	5-4
Table 5.3: Products manufactured and marketed by the company that respondents work for.....	5-4
Table 5.4: The size of the company that respondents work for.....	5-5
Table 5.5: Descriptive information of each variable including in the model	5-8
Table 5.6: Percentage of respondents who had done work practices in each category for each type of consideration	5-13
Table 5.7: Bivariate relationships between independent variables.....	5-14
Table 5.8: Assessment of the 'full' model.....	5-15
Table 5.9: Assessment of the 'full' model with subjective norms divided into consumer and company norms.....	5-16
Table 5.10: Subjective norms of respondents who reported seldom or never considering nutrition in product development or marketing	5-17
Table 5.11: Descriptive details of variables in partial models: fat and sodium	5-18
Table 5.12: Partial models : home fat and sodium reduction practices	5-19
Table 5.13: Partial models: nutrition enhancing practices at work related to fat and sodium reduction	5-20

List of Figures

Figure 2.1: New Zealand's Food-related health targets	2-3
Figure 2.2: Theory of Reasoned Action.....	2-10
Figure 2.3: Social Cognitive Model : Reciprocal determinism.....	2-12
Figure 2.4: A proposed model based on SCT in the study of fruits and vegetables consumption in elementary school children.....	2-13
Figure 3.1: The proposed model for this study.....	3-3

List of Appendices

Appendix 4.1: The invitation letter.....	8-1
Appendix 4.2: The information sheet.....	8-3
Appendix 4.3: The Questionnaire.....	8-5
Appendix 4.4: Follow-up letter.....	8-18
Appendix 4.5: The pretest questionnaire.....	8-20
Appendix 4.6: The interview information sheet.....	8-32
Appendix 4.7: The interview schedule.....	8-11
Appendix 5.1: Responses of nutrition knowledge questions.....	8-35
Appendix 5.2: Responses of nutrition attitude questions	8-36
Appendix 5.3: Responses of questions regarding confidence in own ability to improve nutritional quality in food products.....	8-37
Appendix 5.4: Responses of questions regarding the importance of others' view towards the development/marketing of nutritionally improved products.....	8-37
Appendix 5.5: Responses of questions regarding nutrition related food practices at home.....	8-38
Appendix 5.6: The analysis of general linear model.....	8-39
Appendix 6.1: Examples of interview transcripts.....	8-42