Comparison of New Product Development in the Food Manufacturing Industries in Specified Locations in Britain and China

by

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A dissertation submitted in part-fulfilment of the requirements for the award of the Degree of Doctor of Philosophy

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Abstract

This research investigates new product development (NPD) in the food manufacturing industry in relation to food companies and consumers in specified locations in Britain and China. The latter has recently become a free market. A two-stage research process, which included four studies, was carried out. Interviews with food R&D personnel were used to examine the NPD concept, process, success and the perceived necessity for NPD in food manufacturing industry in both countries. Consumer's perceptions, preferences and expectations of new products were investigated, using a consumer survey. Therefore, a triangulated methodology, combining both quantitative and qualitative elements was adopted in this research:

Stage 1: Quantitative Study
- Chinese consumer study - questionnaire (139 valid returns)
- British consumer study - questionnaire (222 valid returns)

Stage 2: Qualitative Study
- Chinese food industry study - interviews (13 participants)
- British food industry study - interviews (13 participants)

The main conclusions of the study were:

- Both consumer respondents and food manufacturing industry personnel believe it is necessary and important for the food manufacturing industry in China and Britain to introduce new products into the food market to meet consumer's demands.
- Industry personnel and most consumer respondents in both countries would like to try a variety of new products, especially 'healthy and natural foods'. All groups in both countries considered this likely to be the main trend in new product development in the future.
- Although various factors influence consumer's food choice, most consumer respondents in both countries relied on 'family and friend suggestion' and 'food quality' when making purchase decisions about trying new products.
- The food manufacturing industry in both countries would like to introduce a greater variety of new products into the food market to fulfil consumer's demands, especially 'healthy and convenience' foods.
- Understanding consumer's wants and conducting efficient market research are perceived to be key issues for successful NPD in both countries.
- Social-cultural values affect consumer's thoughts on new products, therefore, when the food manufacturing industry undertakes global NPD research, the different social-cultural values (e.g. different perceptions of product intrinsic and extrinsic attributes) should be taken into consideration.
- Most British food companies and some well-established Chinese food companies in this research were active in the general NPD process. However, an immature and less advanced NPD process was used by small local Chinese food companies, who are learning to improve their NPD process.

Managerial implications are offered to aid future food manufacturers and researchers in conducting successful NPD.

Areas of future research to further explore the conclusions and concepts developed in the research and to further debate are suggested.
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<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>BBC</td>
<td>British Broadcasting Corporation</td>
</tr>
<tr>
<td>BSE</td>
<td>Bovine Spongiform Encephalopathy</td>
</tr>
<tr>
<td>COMA</td>
<td>Committee on Medical Aspects of Food Policy</td>
</tr>
<tr>
<td>DEFRA</td>
<td>Department for Environment, Food and Rural Affairs</td>
</tr>
<tr>
<td>FDA</td>
<td>Food and Drug Administration</td>
</tr>
<tr>
<td>FMI</td>
<td>Food Marketing Institute</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GM</td>
<td>Genetically Modified</td>
</tr>
<tr>
<td>GMO</td>
<td>Genetically Modified Organism</td>
</tr>
<tr>
<td>GMP</td>
<td>Good Manufacturing Practices</td>
</tr>
<tr>
<td>HACCP</td>
<td>Hazard Analysis Critical Control Point</td>
</tr>
<tr>
<td>ICC</td>
<td>International Conference and Communication</td>
</tr>
<tr>
<td>IGD</td>
<td>Institute of Grocery Distribution</td>
</tr>
<tr>
<td>MAFF</td>
<td>Ministry of Agriculture Fisheries and Food</td>
</tr>
<tr>
<td>NCC</td>
<td>National Consumer Council</td>
</tr>
<tr>
<td>NACNE</td>
<td>National Advisory Committee on Nutrition Education</td>
</tr>
<tr>
<td>NPD</td>
<td>New Product Development</td>
</tr>
<tr>
<td>NRA</td>
<td>National Restaurant Association</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>SQC</td>
<td>Statistical Quality Control</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>USDA</td>
<td>United States Department of Agriculture</td>
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*Note: The consumer samples referred to throughout the dissertation were based on specified regions in China and Britain and are not representative of the respective countries.*
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Chapter One
Chapter 1

Introduction

1.1 Background of the Study

With increased global competition, developing technologies, increased knowledge levels and expectations of consumers, and demographic, economic, and political changes (McIlveen, 1994), today’s food market is more competitive than ever. Food companies are increasingly operating in an environment where pressures from different competitors emerge. Therefore, there is increasing necessity for new product development in the food industry, to meet the growth of different requirements, to gain benefit from the market and to ensure the company’s survival. Thus, new product development (NPD) is regarded as critical to achieving corporate success (Duke, 1990), and not just as a strategic option (Craig & Hart, 1992). ‘Strategic reasons for the development of New Product Development (NPD) include profit maintenance or growth, sales growth, defence of market share or diversification into a new market’ (Davison and Howley, 1995, p1595). NPD is also an important part of a market oriented strategy for the food manufacturer (Davison & Howley, 1995).

As the consumer fulfilment process and the product (or service) process are two core business processes in most companies (Ramanthan & Schaffer, 1995), studies of both consumers and the food industry needed to be carried out in this research. Therefore, the research rationale behind the study lies in these two areas: the consumer’s perceptions, preferences and expectations of new products, and NPD in the food
industry. This research investigated NPD in the food industry in specified locations in both China and Britain, as the climate for innovation between China and Britain is different. China, as a fast growing developing country, has made great progress on its economy in recent time, especially in relation to the food industry, which has a huge potential market.

1.2 Research Rationale

Several rationales support and frame this research to answer the research questions and achieve the research aims and objectives.

1.2.1 Consumer’s Perceptions, Preferences and Expectations on New Products

The food industry is engaging in the introduction of new food products to meet the ever-changing demands of food consumers, as well as to maintain and grow their market share in order to survive in the competitive market place (Rudder, et al., 2001). Rudder et al. (2001) citing Kotler and Armstrong (1991) suggested that food manufacturers can not rely solely on their existing products, as customers want and expect new and improved products. Therefore, understanding consumer’s demands for new products is crucial for the food industry. These demands encompass consumer’s perceptions, preferences, and expectations of the new food products. A review of literature evidence (Calnan, 1990; Anderson, et al., 1995; Herne, 1995; Shepherd, 1996) suggests that consumer’s food choice is influenced by many factors, such as belief and attitudes, social-economic status, culture, gender, age and family. With this in mind, the current research seeks to reveal the factors that may affect consumer’s choice of new food products and assess consumer’s perceptions, preferences, and expectations of new products.
1.2.2 NPD in the Food Industry

New products are the lifeblood of any industry (Nuese, 1995). This is particularly true for the food industry (Best, 1991). Long-term financial success is directly related to how effectively and efficiently a company can recognise and meet consumer needs through new products. As the food industry has become more competitive, the importance of new products has also grown (Hoban, 1998). Conventional wisdom in the food industry holds that approximately 20,000 new products are introduced every year, but 95% of these fail (Matthews, 1997). A survey in late 1996 of a broad cross-section of companies from across the food manufacturing and distribution system showed that the success of new product development and introduction has improved (Hoban, 1998).

This research aims to draw a general picture of the NPD process in the current food industry and to explore the factors leading to NPD success.

1.2.3 The Climate for Innovation in China and Britain

A lively environment is important for innovation to occur, as product innovation relates to an encouraging climate, which exists in a lively environment (Earle, 1997a). Ruff (1995) argued that the food industry innovations which occurred in Britain during the 19th and 20th centuries, were interwoven with increased industrialisation and urban growth, consumer needs and political emphasis on cheap food, but also with the development of steamships and motorised vans, mechanical and chemical engineering, new agricultural methods and larger companies. The rapid growth of the food industry in China (Chen & Wan, 1995) shows how rapidly food technology can expand given the right climate for change, just as the slow spread in other countries
underlines low-technology infrastructure, poor economic status, and perhaps a lack of social and political will (Forbes, 1996).

1.2.3.1 Background of the Chinese Food Industry

China is experiencing significant growth in its economy. The growth in Gross Domestic Product (GDP) in 1990 was only 4%. It increased to 11.8% in 1994 (Anon, 1994), and it remained at a 7-9% growth rate from 1995 to 2002 (Cai & Wang, 2002). China’s national goal is to quadruple its GDP from 1980 to 2000, and to double it from 2000 to 2010. The food industry in China is considered one of the most strategic industries in the country as it ranks the third in size (Zhang, 1999). With the national economy growing, the Chinese food industry has also achieved explosive development in the past years. In 1980, the food industry output was valued at $6.6 billion. It grew to $16.6 billion in 1990 (CLIM, 1993). According to the China Food Industry Almanac of 1994, the total output of the Chinese food industry for 1991 was $31.8 billion (an exchange rate of 8.6 yuan to $1.00 was used at that period), which was 9.4% over 1990’s output (CLIM, 1993). In 1995, the Chinese food industry output was $55 billion, which was an 8-fold increase compared to 1980 and it continued to increase to $64 billion in 1997 (Zhang, 1999). The goal for China’s food industry is very impressive. By 2010, it is hoped that the output of the Chinese food industry will be twice as much as in 2000, representing an annual growth rate of 9% (Giese, 1998). During this period, with the output of China’s food industry increasing, investment in the Chinese food industry increased. Because of this increase, and the introduction of new technologies and facilities, food products have been updated quickly. New food products have been introduced to the food market at a much faster
rate than before, from new packaging and new brands to different flavours and more variety (Zhang, 1999).

1.2.3.2 Chinese Food Consumers

China’s food industry’s growth is based on an astronomical food market potential, based on its huge population of consumers. Every day Chinese consumers eat 132 million lb. of pork, 22 million lb. of vegetable oil, and 1.65 billion lb. of grains (Anonymous, 1994). The growth in demand for processed food is expected to be enormous, with a population in excess 1.2 billion (Chen & Wan, 1995).

According to 1992 Statistics, an average city household earned $873 per year, although these data could be misleading, as people in big cities enjoyed a much higher income. At this time, an average household had 3.7 persons per family, and spent nearly half of its income on food items (Chen and Wan, 1995). Household income for the larger cities -- Beijing, Shanghai and Guangzhou was $ 1,529, $ 1,765 and $ 2,824 respectively in 1994 (Chen and Wan, 1995). The average personal yearly income in Shanghai reached 37,300 yuan ($ 4,338 to 4,490) by 2001 (Shanghai Statistical Yearbook, 2001, www.sinoptic.com).

As a result of a strong consumer base, the food market is now developing in China. Meng et al.'s (1995) study, concluded that more Chinese consumers were in a position to purchase a wide variety of non-staple food products, and more processed food. Today's Chinese consumers are quite demanding about food products. They choose particular products/brands, not only because these products offer the expected function or performance benefits, but also because they can be used to express a
consumer's personality, social status or affiliation (symbolic purposes) or to fulfil their internal psychological needs, including the need for change or newness (emotional purposes) (Kim, et al., 2002). Because of these rapid changes in China, it is interesting to compare Chinese consumer demands and the NPD process in the Chinese food industry with a developed country with established NPD processes (e.g., Britain). Therefore, this study will compare Britain and China. As there is little published literature about NPD in the Chinese food industry, this study also aims to fill some of these gaps in the literature.

1.3 Research Question

Two research questions are proposed, which reflect the two dimensions of the overall research rationale.

- Is it important or necessary for the Chinese food manufacturing industry and the British food manufacturing industry to develop new products to meet consumer’s needs?

- How does the food manufacturing industry in both countries develop a successful new product to fulfil the consumer’s demands for new products?

1.4 Research Aims and Objectives

The overall aim of this research is to investigate NPD in the food manufacturing industry in relation to both food companies and consumers in specific locations in Britain and China.

The detailed objectives of this study are:
1. To highlight the importance of product innovation in the food industry in both China and Britain;

2. To examine product innovation in food manufacture and establish the importance of product innovation in relation to marketing and the consumer;

3. To identify successful NPD processes underlying successful product innovation in the food industry in both countries;

4. To assess consumer attitudes and demands for new product development and the likely trends in food product development in both countries;

5. To investigate the differences and similarities of new food product development between China and Britain;

6. To recommend future fields of research.

1.5 Structure of the Study

The dissertation is divided into eleven chapters focusing on different subjects as follows: (Fig. 1.1 shows the research diagram.)

Chapter 1: is an introduction to the dissertation and provides the background of the study, the purpose of the research, objectives and the dissertation structure.

Chapter 2: address the concept of NPD and factors associated with new product success and failure, presents an overview of the NPD process and underlines the importance of the NPD process. It goes on to focus on NPD in food manufacture, giving an overview of NPD in food manufacture during the past 100 years; and then, explaining the importance of NPD in food manufacture; finally, shows how food companies achieve successful NPD.
Chapter 3: explores the literature associated with consumer's food choice; presents the economic and non-economic factors influencing consumer buying behaviour; explains the relationship between consumer behaviour and NPD, and shows consumer's concerns in relation to NPD, in order to assess consumer's demand for NPD.

Chapter 4: proposes a theoretical framework for this study; gives the research objectives and methodologies which have been used in the current research. It explains the research design, sampling design and different fundamental methodology approaches and strategies.

Chapter 5: explains the research instrument development of the two-phase research process, discusses the survey process, data analysis methods and the limitations of the study.

Chapter 6, 7, 8, 9 and 10: present the findings of the research: the British consumer study, the Chinese consumer study, the British food industry interviews, the Chinese food industry interviews and a comparison of the results from the two countries. The findings specific to each objective of the study are discussed in detail.

Chapter 11: integrates major views within the two stages of the research (food industry study (mainly conducted by interviews) and the consumer survey (mainly carried out by questionnaires)) and draws conclusions for the whole study, as well as giving recommendations for future research.
Fig. 1.1 Research Diagram

Research Question:
Is it important for the food industry to develop new products to meet consumer's needs?
How does the food industry develop new products to meet consumer's needs?

Research objectives:
- To highlight the importance of product innovation in the food industry;
- To examine product innovation in food manufacture and find out the importance of product innovation in relation to marketing and the consumer;
- To identify successful NPD processes underlying successful product innovation in the food industry;
- To assess consumer attitude and demand for NPD and the likely trends in food product development;
- To investigate the differences and similarities of food NPD between China and Britain;
- To recommend future fields of research.

Consumer's Needs for New Products:

Literature Review:
Consumer, Marketing and Food NPD (Chapter 3)
- Marketing and Marketing Mix;
- Consumer Orientation in the NPD Marketing Context;
- Consumer Behaviour: Perception, Food Choices (Models and Factors)
- Consumer’s Concern for NPD
- Satisfy Consumer’s needs for a Successful food NPD

Methodology:
Quantitative Study (Chapter 4 and 5)
- Choose among research approaches; and Specify sampling plan; (Chapter 4)
- Construct the Questionnaire (Chapter 5)
- Data Collection and Quantitative Data Analysis (Chapter 5)

Results and Discussions:
- Chapter 6–UK consumer study results and discussions
- Chapter 7—Chinese consumer study results and discussions
- Chapter 10 Comparison (UK and Chinese Study)

NPD in the Food Industry:

Literature Review:
NPD in the Food Industry (Chapter 2)
- New Product concept
- NPD Process (From General to the Food Industry)
- NPD Success (From General to the Food Industry)
- NPD Trends in the Food Industry

Methodology:
Qualitative Study (Chapter 4 and 5)
- Choose among research approaches; and Specify sampling plan; (Chapter 4)
- Construct interview protocol (Chapter 5)
- Data Collection and Qualitative Data Analysis (Chapter 5)

Results and Discussions:
- Chapter 8–UK industry study results and discussions
- Chapter 9—Chinese industry study results and discussions
- Chapter 10—Comparison (UK and Chinese Study)

Conclusion and Recommendation (Chapter 11)
Chapter Two
Chapter 2

Literature Review (1)

New Product Development in the Food Industry

2.1 Introduction

New Product Development (NPD) is essential for the health of companies that want to grow by internal methods (Johne & Snelson, 1990), thus the pressure to develop new products has increased (Cooper & Kleinschmidt, 1987a). If a business is to survive and grow in the rapidly changing and increasingly competitive business environment, successful NPD is vital (Mishra, et al., 1996). Clearly, effective product development effort plays a key role in today's competitive marketplace. A steady stream of new product is a necessity for the successful company, with new products often reaching as much as 30% to 40% of a company's sales (BHTgroup, 2001). Kotler (1991, p311) said “Every company must carry on New Product Development, if for no other reason that some existing company products will enter the decline stage of the product life cycle. (refer to NPD section 2.6.1)... Given the intense competition in most markets today, companies that fail to develop new products are exposing themselves to great risk.”

Research into what leads to new product success and failure has been carried out for many years (e.g, de Brentani, 2001). For the food industry, NPD is a key issue as well, and a large amount of research over the last a few years has established a wealth of evidence about NPD. Although no single variable holds the key to successful NPD, many of the widely recognised success factors share a common thread: a clear new
product concept, a successful NPD process and understanding consumers' needs (Cooper, 1993; Rothwell, et al., 1976; Piercy, 1981; Cooper and Kleinschmidt, 1994; Song & Parry, 1994).

Therefore, understanding the new product concept, NPD process, how to achieve successful NPD, and adapting to NPD trends are important for companies in the food industry if they are to survive and grow in today's competitive market environment.

This chapter reviews literature about New Product Development (NPD) moving from a general NPD perspective to food NPD specifically.

2.2 Product

A 'product' has been defined as anything which requires marketing to anybody (Douglas, et al., 1978). This definition is broad, as the product is defined to cover anything that can be offered to someone to satisfy a need or want (Kotler, 1991). Modern thoughts on 'product' are wide-ranging and in-conclusive. Cunllife (1993) compared definitions from different authors. He reported that Stanton (1981) talked of products and services as entities and Christopher (1980) referred to goods and service products, without scope for overlap. Hales and Shams (1989) go some way to resolving the problem of product facets (e.g. from appearance to the product nature).

Albaum, Strandskov and Duerr (1989) gave 'a product' a more formal definition, as the buyer (or user) receiving the sum of all physical and psychological satisfactions as a result of the purchase and/or use of a product.
Therefore 'product' means everything which the consumer receives when making the
purchase. Thus, three major components should be included, when defining a
'product' (Albaum, et al., 1989):
1. The physical product core,
2. The product package,
3. Auxiliary service.

Levitt (1984) divided the 'product' into 'tangibles' and 'intangibles', recognising the
strong link between goods and service. Thus, usually, products can be classified into
tangible goods and intangible goods, with many industries selling products that are
composed of elements of service and tangible goods, for instance, the food and
beverage industry. In the context of food operations, three levels can be determined
within the total product system: 1) Core product, e. g. food and beverage; 2) The
tangible product, e. g. furniture and fittings; 3) The augmented product, e. g. service
quality and added value (Knowles & Ware-laine, 1994). This study will concentrate
on the core product in the food industry.

2.3 Innovation

There are many definitions of innovation. For example, six definitions which can be
related to the different types of people involved in innovation are listed in the 'Shorter
Oxford Dictionary' (Trumble, et al., 2002):

- For marketers-- introduction of novelties;
- For engineers – novel practice or method;
- For designers – change in the nature of fashion;
For buyers – something newly introduced;

For consumers – substitution of a new obligation for the old;

For society – alteration of what is established by the introduction of new elements.

Earle (1997) put forward a more simple structure, with simple terms and three basic principles defined as follows:

- an innovation is new in the eye of the beholder;
- an innovation is a technological change and a social change;
- an innovation involves a wide range of people from designers to society.

Rogers (1962) also argued that an innovation is a new idea perceived by the individual, indicating that it matters little, whether or not an idea is objectively new as measured by the amount of time elapsed since its first use or discovery. Zaltman (1965) agreed with this view and pointed out that an innovation is the adoption of a new idea, product or process which is prospectively useful. However, innovation in industry is more than an idea. It is not only the process that is used to develop the idea, but also the new product or service that is recognised as new by the consumer (Bray, 1995). Every innovation could be considered as a new combination of pre-existing knowledge which satisfies some particular needs. Therefore, an innovation is one from the subset of those that are possible and those that are wanted (Simmonds, 1985). Holt (1977, p13) gave innovation a broader meaning, defining it as “a process which covers the use of knowledge or relevant information for creation and introduction of something that is new and useful.”
On the other hand, innovation is one of the principles that can be applied to strategy development. Poon (1993) defined innovation as the first commercial transaction involving: new goods (e.g. computers, microwave ovens, portable CDs), new services (e.g. flexible holiday packaging on-line, teleconferencing, direct satellite broadcasting, in-flight telephone services), new markets (e.g. Eastern Europe), new methods of production (e.g. just in time, flexible specialisation), new organisation forms (e.g. flatter hierarchies), and/or new sources of material (e.g. information). He also linked innovation to strategy development, defining strategy as “a set of principles developed by an organisation to give it direction and to allow it to continuously adapt to its changing environment.” (Poon, 1993, p236)

Tinnesand (1973) made a study of 108 different definitions of innovation, which resulted in six different groups: 1) new idea; 2) introduction of a new idea; 3) invention; 4) introduction of an invention; 5) an idea different from existing forms; 6) introduction of an idea disrupting prevailing. Later, Rosenfeld and Servo (1991) after reviewing the literature on innovation, summarised innovation as follows:

**Innovation = Conception + Invention + Exploitation**

In this context, ‘conception’ means a novel idea with respect to some frame of reference (individual, organisational or all accumulated knowledge); ‘invention’ refers to any new idea which is transformed into reality; ‘exploitation’ applies to getting the most out of an invention. Therefore, Innovation is the work that follows idea conceptions and usually involves the labour of many people with varied, yet complementary skills (Rosenfeld and Servo, 1991).
Transforming creative ideas into tangible products, or processes that will improve customer services, and make more profit for an organisation is the challenge of innovation.

2.3.1 Aspects of Innovation

Innovation usually appears in one of the following ways: 1) A discovery is made which leads to a new product; 2) A market need is foreseen and inventive, developmental work is done to create a product that will satisfy it (Webb, 1994). The cycle of innovation (Table 2.1) shows how innovation behaves in a wider context. An opportunity is created by the combination of a discovery or a need. The product must be developed and exploited before it is introduced to the environment. If this is done successfully the innovation will generate a change because it is occupying a market share of a previous product. This means that other organisations will have to innovate in order to get their market share back, thus the environment undergoes a change (Webb, 1994).

2.3.2 Classification of Innovation

Innovation includes the creation of a new product, service or process (de Brentani, 2001). At the industrial floor level, innovations are usually categorised as process innovation and product innovation (Uhlmann, 1979). The former refers to new things and the latter to how they are made (Bessant and Grunt, 1985). Product innovation would consist of changed or entirely new services and products. It can also be divided into products new to the market, products new to the company, or improved company products (Holt, 1977).
Table 2.1

The Cycle of Innovation

Discovery
Invention

Opportunity

Product development

Exploitation

New environment

needs
Demands

leads to

leads to

Innovation is concerned with change and Holt (1977) devised a schematic to show the classification of product innovation depending on the degree of change and novelty (Fig. 2.1). He pointed out that there were no sharp distinctions between the various classes.

**Fig 2.1 Classes of Product Innovations (Holt, 1977, P15)**

<table>
<thead>
<tr>
<th>Original Product Innovations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Basic (technical break-throughs)</td>
</tr>
<tr>
<td>2) Incremental (improvement innovations)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Adopted Product Innovations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Adapted adoptions (improvements)</td>
</tr>
<tr>
<td>2) Pure adoptions (copying)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Major improvements</td>
</tr>
<tr>
<td>2) Minor improvements</td>
</tr>
</tbody>
</table>

The keystone of successful product innovation is to find a good new idea, as without good ideas to develop, there can be no successful product innovation (Karger, Delmar & Gen, 1960).

### 2.4 Product Innovation- New Product Development

According to the innovation classification from previous researchers (e.g. Uhlmann, 1979; de Brentani, 2001), innovation has been divided into product innovation and
process innovation. Product innovation, mainly new product development, will be the focus of this study.

There is considerable confusion over the meaning of the term ‘new product’. Part of the problem of defining a ‘new’ product is in identifying what is actually new about it. It can have many meanings, depending on different people’s views. According to Kingsbury (1967), scientific researchers believe that new products are a set of physical properties, ways of putting together specifications and objective performance standards. By comparison, Hegarty and Hoffman (1990) regarded ‘new product’ as: something new to the firm or its marketing beyond more updates to the annual marketing plan. Some researchers, such as Wasson (1960), regard ‘new products’ as all products which differ in any way from those previously produced or sold by a given company, as well as changes in advertising appeals for existing products. He said: “what is new depends on what the customer perceives, or can be brought to perceive…. Even the well established (product) can be ‘new’ so far as the buyer is concerned.” (1960, p52).

Other researchers have argued that ‘new products’ would exclude from the definition of new products everything except really fundamental innovations. Therefore, the following problem associated with definition of a new product apparently arises: “New to whom?”, “New in What Way?”, “How New?”, “New When?”. As these questions illustrate, there are many dimensions to a new product. A single definition is not enough to encompass all the relevant viewpoints and shades of meaning (Buzzell & Nourse, 1967).
Usually, entrepreneurs regard a new product concept as either a relatively new product or a brand new product (SMEnet, 2001). A relatively new product is one that is new to its company, not to competitors and consumers. It allows a company to expand its line of products for new business opportunities. Costs of developing this type of product are low but the problem is to position them in the market, because the consumers might prefer the products of competitors. A brand new product is one that is new to both the company and its competitors and consumers. The company is a "volunteer" in manufacturing this product. The consumers are being introduced to this product for the first time. This is a quite difficult and complex process (both in the production and sales stages). Costs for research, design, production testing and test marketing are often high (SMEnet, 2001).

The scientific community likes to think of a new product as new specifications, new performance standards and the like all together. Manufacturers tend to take it as a process to be carried out. Marketers tend to think of a new product as a strategy, and put it into a marketplace. However, a new product is not only one or other of the above, it is all of them (Kingsbury, 1967).

In the food industry, three principal groups in the economy – consumers, food manufacturers, and food distributors and retailers are important stakeholders in new product development. Therefore, it is desirable to give three different definitions of new products from the viewpoint of each group.

Manufacturers perceive new products as an organisation of work, as a result of careful control of costs and efforts; something packaged. They define new products as
distinctly new products, product line extensions, and product improvements (Buzzell & Nourse, 1967).

**Distributors and retailers** perceive the idea of a new product in terms of how somebody talks about it, how people are motivated to use it; how its distribution is handled. They pay more attention to "new brands", "new types of products", "new items". (Buzzell & Nourse, 1967)

**Consumers**: New products are categorised on how much behavioural change or new learning is required to be a consumer. From a consumer’s point of view, new products are based on newness (Robertson, 1967). Gravens (1991) stated that identifying new products based on their effect on consumer consumption patterns is consistent with the marketing philosophy in which new product ideas should satisfy needs that are not being met by existing products.

Therefore, the definition of 'new' should be clearly understood to cover a range of classifications when new product development is discussed. Newness can also be considered as an essential subjective concept, dependant upon one’s state of knowledge or, in the case of a firm, its current range of activities (Baker, 1985).

Booz, Allen and Hamilton (1982) described a broad concept, which has been widely accepted by most food manufacturers and retailers. It defined 'new' in six categories:

1. **New-to-the -world**: Such products generally are the first of their kind or create an entirely new market, such as ready-meals or convenience food. As there is high risk and uncertainty associated with developing such products, this kind of innovation is not common, compared with other innovations.
2. New-to-the-Company; market extension: new categories of products that allow entry into an established market. This kind of product is new to the company but not new to the world.

3. New-to-the-Company; range extension: This kind of new product supplements a company's established product lines. These products are always produced by a company that is usually extending its existing product range as a part of an ongoing tactical review.

4. Product or Line extension: Line extensions are new package sizes, new flavors, or new shapes of existing products; they represent additions to an existing line of products, and as such no fundamental new technology, ingredients, or form are employed by them. A line extension would not normally be expected to have its own marketing plan or budget, its own product manager (if applicable), profit and loss statement, or distinct brand name; it may, or may not, have its own advertising campaign or budget, otherwise, these would normally be employed only at the time of its introduction (Buzzell & Nourse, 1967). Therefore, this kind of new product provides improved performance or greater perceived value, replacing existing product (Crowford, 1983), for example, by 'cost reduction'.

5. Repositioning: Existing products are targeted to new markets or market segments. This type of product development is one of most popular strategies adopted by food manufacturers. On the other hand Davison and Howley (1995:1597) noted that "repositioned products are most apposite to the manufacturer and would appear to the retailer as a 'new-to-the-company product'.”

6. Retailers' views of the new product offer—cost reductions.

Among these six groups, Kotler (1991) showed that less than 10% of new products were totally innovative and new to the world, as these involve the biggest cost and
risk in their newness, to both the company and market. Most new products were improved existing products. Davison and Howley (1995) also reported that the proportion of extended or duplicate products was much higher than the entirely new products. They found that most retailers thought that few truly innovative new products (i.e., new-to-the-world) came across their desk for consideration, and some new product offers were cost reductions.

2.5 The Needs, Challenge and Significance for NPD in the Food Industry

The food industry in western nations is becoming increasingly competitive. Grunert et al. (1996) attributed this trend to the general decrease in government subsidies to the food and agricultural industry and a reduction in the trade barriers which formerly afforded some protection to local food companies. In addition, consumer behaviour is becoming increasingly less predictable, more fragmented and less consistent, leading to more demand by consumers for value added food products rather than greater quantities of food (Imram, 1999). Thus, food manufacturers are in the business of meeting the consumers’ ever-changing demands and developing food products, which are original and have the ability to increase their company’s share of a particular market (Rudder, et al., 2001). In recent years, the pace of product change has accelerated considerably in more and more markets (Johne & Snelson, 1987). To compete in the current highly competitive food marketplace, food companies are under increasing pressure to develop new products and services that are both timely and responsive to consumer needs. Food companies can not stand still and must be aware of opportunities coming to them to improve their profitability (Rudder, et al., 2001). They must keep abreast of current technology and continue to be innovative in
developing new processing technologies and formulating new food products, as well as upgrading existing product lines. The most common reason for the companies to develop their products is fear of competitors who might offer more attractive alternatives (Freeman, 1982).

As appealing product offerings are the centrepiece of a successful marketing strategy, pressures from NPD are especially intense for marketing and sales personnel, because of their position at the boundary between the company and marketplace (Olson et al., 1995). The food industry may need to be proactive in product development, but, new products failing to make a worthwhile contribution to the overall profits of a company will be withdrawn from the market (Rudder, et al., 2001). Food manufacturers and retailers need to pay more attention to the research and development of new product and processes (Imram, 1999). However, whereas marketers typically play an important and the leading role in the development process, collaboration with other functional areas such as production and design is also important to create a profitable and timely new product (Gupta & Wilemon, 1990; House & Price, 1991; McCann & Galbraith 1981; Sounder 1987; Urban, Hauser, and Dholakia 1987; Wind 1981).

Kotler and Armstrong (1991) suggested that manufacturers should be proactive because every company needs a NPD program to respond to the rapid changes in taste, technology, and competition. Indeed, according to Imram (1999), food product development is important to a food firm’s ability to meet and sustain consumer demand, as there are many considerable challenges faced by the product manufacturers and retailers during food product development; these include constraints of finance, manpower, time and the need for continual innovation.
NPD is undoubtedly important for businesses that want to compete on the basis of quality and suitability for purpose. All businesses will need to update their products and possibly even to develop completely new products, particularly when new technology makes this attractive, otherwise, they will in time be overtaken by competitors (Foster, 1986). Some factors that drive the need for a continual supply of new consumer products are:

- Product lifecycles (section 2.6.1) are finite. New products are commercialised, they flourish and they die and must be replaced.
- Management often dictates an aggressive programme of business growth.
- Changing market, demanding products to suit the change.
- New technology or knowledge might merge with consumer demands.
- Regulatory issues may emerge which dictate change or modification to existing products (Fuller, 1994).

For academic reasons, there is an urgent need for more research on new product development (Johne & Snelson, 1987).

### 2.5.1 New Product Advantage

In previous research (Calantone and Cooper 1981; Cooper 1996; Crawford 1983; Edgett, Shipley, and Forbes 1992; Griffin and Hauser 1991), new product attributes, such as new product quality, reliability, newness, and uniqueness, more concretely showed the ability of a firm to meet consumer needs, and differences between alternatives on the important attributes provided direct evidence of advantage (Day and Wensley 1991). Reduced cost can also constitute product advantage. According to
Buzzell & Nourse (1967), new products have tended to reduce food costs to meet the increasing consumers requirements of buying cost-reduced products.

Cooper (1982, p248) regarded new product advantage as an important attribute of differential advantage and noted that “programs that have a major impact on the firm involve highly innovative and high-technology products, ones that feature several differential advantages (offer unique features to the customer and permit the customer to do a unique task)”. Similarly, in 1997, Song and his colleagues (1997) found a significant positive relationship between the level of new product success and measures of product competitive advantage, which included the presence of unique features, relatively high product quality, and the ability to reduce consumer costs or enable the consumer to perform a unique task.

New product advantage may also be correlated positively with product market performance, and new products have created a substantial and increasing workload for food distributors (Buzzell & Nourse, 1967; Li & Calantone, 1998). A number of authors have found that new products always lead to superior product performance (Cooper 1983; Edgett, Shipley & Forbes, 1992). Buyers usually prefer new products with superior features (Carpenter & Nakamoto, 1989) and they have a favourable perception of such products in term of both purchase preference and actual behaviour when the benefits of these features outweigh the costs (Alpert and Kamins, 1995).
2.5.2 The Challenge to Product Development

Companies have discovered the return that can be produced by adding value in the form of convenience, nutritional factors, variety, economy and consistent quality, and the main aim of any product development effort is to generate products that perform as well as they were designed to (McIleen, 1994). The challenges in technical development are pivotal, and include recipe development, food safety, and control of chemical, physical and biological causes of spoilage (Fuller, 1994). McIlveen gave three pressures leading to need to change in response to pressures imposed by:

- Increasing global competition. New market challenges are emerging in and from Eastern Europe, The Third World, Asia and South America. Simultaneously, Local, EC and developed world markets are becoming increasingly competitive.

- Developing technologies, leading to increased knowledge levels and expectations of consumers. By 2000, the nutraceutical revolution in product had dramatically changed the nature of the food industry (Stewart-Knox & Mitchell, 2003). In relation to nutraceuticals, DeFelice (1995) gave two primary messages 1) the industry must develop proprietary patented products and 2) the industry must develop the capacity to demonstrate the clinical benefits of such products, if market growth and profit of margins were to be increased.

- Demographic, economic and political changes, and the potential environmental impact; increasingly important in terms of product disposal. Costs, the availability of people and skills, competitor actions and market conditions such as shortening product life cycles bring additional pressures, while consumers are becoming ever more discerning in terms of the perceived quality, value, and functionality of the products they buy (McIlveen, 1994). (Chapter 3 section 3.3.2.2 will discuss demographic difference and consumer’s food choice.)
2.6 NPD Process

All products have their own finite life cycles—research and development, market growth, product maturity, market decline. Products will be displaced in the market by changing tastes and the emergence of superior products; therefore, firms must master this cycle and pursue a way of creating new products which will meet changing needs.

2.6.1 Product Life Cycle

The product life cycle shows the market place of a product before it become obsolete and finally loses its appeal as more attractive products appear. The life of a product can be divided into four major phases (Webb, 1994):

1. **Research and development**: This phase is the development of the product. During this period, there will have to be investment, which should be considered as being at risk. No return can be expected during this period.

2. **Market growth**: During this phase, the new product is introduced into the market, and if it is successful and has appeal, its usefulness will be realised by an increasing number of consumers. In this phase, product costs will usually be at their highest due both to the costs of start-up and a need to recover development expenditure. However, as the initial supplier can usually demand a higher price before rival products emerge, profit potential may also be at its highest.

3. **Product maturity**: At this stage, both the effects of competition and the eventual total size of the market will combine to limit sales to a stable, sustainable figure. Generally, manufacturing costs will be at their lowest.

4. **Market decline**: This phase represents decline in both sales and production. Three main reasons for this decline are that the market has become saturated and the
only demand is for replacement, demonstrably superior products arrive or attitudes and tastes change such that the original appeal no longer exists.

There is evidence for shortened life cycles. The reason for this include rapid development of new technology, aggressive marketing, consumer willingness to try new products, the power of mass communications and advertising, and the increasing pace of technological innovations and the rapid rate of new product introduction (Rosenau, 1990).

Manufacturers need to maintain products in the ‘growth or product maturity phases’ to remain competitive. This is achieved through NPD.

2.6.2 General NPD Process

NPD is the process of bringing new ideas into use (Nystrom, 1991). It starts with the strategic goals (Ramanujan and Mensch, 1985), then develops through product development, process development, marketing development and organisational development, or combinations of them. In the market, the new ideas are developed by the interrelationship of the company and consumers, using the methods of market development and market launch. The final stage of this process is diffusion through the targeted sector of society to final adoption by individuals of the product (Earle, 1997b, Fig 2.2).
The NPD process may be taken as a series of steps or activities, including idea generation, product development, and product commercialisation (Song, et al., 1997). The inherent complexity and interactive nature of the NPD process make it very difficult to define, but it generally begins with a concept and ends with the launch of a new product. Many authors have proposed models of NPD, which are reviewed in this section.

- Models Characterising the Process Activities

During the development of process, an important component of the complexity of NPD is the need to perform separate and distinct activities. Cooper (1975) characterised the process as two groups of activities – marketing and technical. In 1983, Crawford analysed the NPD process and proposed a model that recognised the dilemma between the requirements of practical efficiency and thoroughness in NPD (Fig. 2.3). The initial stages are recognised as being sequential, whilst the crucial elements of development are seen as parallel, three-pronged activities including technical, marketing and the product concept evaluation.
Fig. 2.3 The NPD Sequence of Activities

Source: Crawford (1983), p8

Based on Crawford’s Model, Johne and Snelson (1987) summarised 6 key points in the NPD process:

- New product planning
- Idea generation
- Screening and evaluation (of technical and marketing aspects)
- Technical development
- Marketing appraisal
- Launch
1. New product planning

The need for this stage as an intrinsic element of the corporate planning system has been stressed by many researchers (Day, 1975; Utterback, 1982; Crawford, 1983). New product planning aims to provide strategic direction to innovation, as well as to define the strategic area for innovation, the goals of the new product activity and the program to achieve those goals (Crawford, 1980). However, Poter (1985) and Hamermesh (1986) found new product planning techniques required more research on how different business strategy options do and might translate into new product development plans. A NPD planning system incorporates such questions as the degree to which new product should be related to existing business activities, internal growth versus acquisition; and innovation versus imitation (Johne and Snelson, 1987).

2. Idea generation

The idea generation process aims to generate the diversity of information required to recognise gaps in product performance and derive possible solutions (Baker, 1980; Urban & Hauser, 1980; Geschka, 1983). In the industrial marketplace, the consumer is frequently the main source of NPD ideas. The implications are that idea generation should be rooted in the assessment of market needs (Hippel, 1978; Parkinson, 1982).

3. Screening and evaluation (of technical and marketing aspects)

The screening decision is of pivotal importance in the NPD procedure and it is an important tool in solving and isolating problem-areas in particular product proposals and their development (Cooper, 1985).
4. Technical Development

The NPD process includes a series of activities which seek to generate a number of development options from which the optimum is chosen. The technical development process should be guided by a clear statement of corporate and project goals (Goltz, 1986).

5. Market appraisal

The generation, evaluation and testing of marketing options based on market forecasting and product testing is a crucial strand of the development process. Moreover, how and why traditional marketing techniques can most usefully be adapted to the NPD process is important (Johne & Snelson, 1987).

6. Launch

A successful launch is the identification of innovative customers who provide a bridgehead market from which further market penetration is developed (Baker, 1975; Shanklin & Byans, 1984). The launch strategy should be tailored to the type of new product involved. Simple line extensions are launched via the sales-force using a familiar customer base, while more innovative products (e.g. completely new to the world products) need an aggressive market introduction strategy. New product’s diffusion through the marketplace is linked strongly to the level of sales support and the overall company’s innovative image (Choffray & Lillien, 1983).

In 1990, Johne and Snelson’s further research defined the essential tasks during the NPD process. Fig. 2.4 provides an overview of the tasks involved.
Fig. 2.4 Essential product development tasks

Product development planning

Idea generation

Screening and exploration in concept

Development

Technical

Prototype

Preproduction

Production

Marketing

Continuing evaluation

Checking the concept

Checking potentials

Agreeing sales plans

Launch

Source: Johne and Snelson (1990) How high achievers manage product change, p36

Compared with Cooper’s framework and Crawford’s model, this model provides an overview of the minimum tasks involved, which include product development planning; idea generation and concept exploration; screening; physical development; and launch. The most distinct difference is that this model divided the essential development tasks into two main activities: initiation activities and implementation activities. All those tasks aimed at initiating product change, such as product planning, idea generation, concept development and exploration are grouped as initiation activities. Implementation activities are those tasks aimed at getting an actual development completed, such as technical and marketing development and launch. Table 2.2 shows the difference between each model.
Table 2.2 The Difference between Cooper’s (1975) model, Crawford’s (1983) model and Johne and Snelson’s (1990) model of NPD process

<table>
<thead>
<tr>
<th>Model</th>
<th>Cooper’s (1975)</th>
<th>Crawford’s (1983)</th>
<th>Johne and Snelson’s (1990)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities</td>
<td>Marketing</td>
<td>Marketing</td>
<td>Initiation: product planning</td>
</tr>
<tr>
<td></td>
<td>Technical</td>
<td>Product physical</td>
<td>idea generation, concept</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(product concept</td>
<td>development and exploration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>evaluation)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Technical</td>
<td></td>
<td>Implementation: marketing, technical and launch.</td>
</tr>
</tbody>
</table>

Urban and Hauser (1993) proposed a simplistic model of the NPD process that had five steps: opportunity identification and screening, product design, testing, commercialisation, and post-launch control. It showed that critical information and other inputs and outputs are exchanged across functions in the NPD process (Moenaet, et al, 1990). As Song et al (1997) noted, the tendency for cross-functional cooperation research in the past has been to group the technical activities as R & D’s domain and then examine the R & D-marketing interface. Whereas some of the technical activities are clearly the domain of manufacturing (e.g. pilot and full-scale production), others fall under R&D’s functional jurisdiction (e.g. preliminary technical assessment and product development). The implication is that an accurate representation of cross-functional relationships in NPD must include all three functional perspectives: R & D, manufacturing, and marketing.
• Other Models

Many other conceptual models have been proposed describing the NPD process in a variety of ways; including the Contingency Model, Holt’s Model, and Globe et al.’s Model.

The contingency model, which takes into account additional environmental and organisational variables was proposed by Shrivastana and Sounder (1987). It includes the strategic management of NPD and consists of 3 types of NPD transfer which can be tailored for different organisations. They are:

**Stage Dominant (SD):** formal groups are technically and organisationally specialised in this stage.

**Process Dominant (PD):** in this stage, no discrete transfer points between organisational groups exist.

**Task Dominant (TD):** all staff are strongly oriented to complete the task and to achieve the end product.

In support of this model, Barclay and Benson (1990) agreed that a multi-disciplinary approach was needed with many parallel developments, not only between departments but also within departments. They suggested that a company’s internal development process needs to be closely tied-in with its corporate objectives and linked to the external environment, to allow new ideas into the organisation.

Holt (1977) suggested that the various models of NPD were put into three levels with increasing degrees of complexity.

**First level:** product innovation as a one dimensional model.
The model illustrates that needs are satisfied by the conversion of resources into products. The products may be new for the company or new for the market.

**Second level:** product innovation as a three-dimensional process: control, transformation, and organisational process.

**Third level** includes a four-stage product innovation process: generation of ideas, utilisation of ideas, preparation for implementation and manufacturing and marketing. It is a simple model illustrating the basic stages of the transformation and control processes.

Globe et al (1974) gave a Model of NPD from a societal point of view (Table 2.3). The various stages seldom take place at the same location, and different persons and organisations usually take part. This product innovation process takes a long time, and there are great differences both between industries and within the same industry.

<table>
<thead>
<tr>
<th>Preconception Period</th>
<th>Innovation Period</th>
<th>Post-innovative Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discovery</td>
<td>Invention</td>
<td>Application</td>
</tr>
<tr>
<td>Technological Advances</td>
<td></td>
<td>(First realisation)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New Application</td>
</tr>
</tbody>
</table>


### 2.6.3 NPD Process in the Food Industry

The product development process in the food industry was first presented in the 1960’s, however, it has taken a long time for it to be recognised as a method of scientific
research. In 1967, Buzzel and Nourse made early attempts to identify the important stages (research and development, product testing, test marketing and launch) in the process. Earle et al. developed it further in 1968. The technical principles of food product development and manufacture were identified in their theories. Desrosier and Desrosier (1971) pointed out that a management determination of the current product fields and markets was the first stage in the product development process, so as to set up a plan for changes in existing products and the introduction of new products. Philip (1976) described detailed methods for technical development, particularly for formulation and processing. In 1984, Meyer also highlighted business strategy, but considered product concept development and product optimising as important stages in the product development process. Earle, in 1985, suggested seven stages. In his study, each stage combines market research and technical research and a critical analysis of all the available information, leading to management formulation of a go or no-go decision between each stage.

Since the 1990’s, several authors have identified the importance of NPD in strategic planning and the importance of the combination of marketing and technical development in the food NPD process (Hnat, 1994, Turner, 1993, Rudolph, 1995, Earle, 1997). Three important considerations in the food product development process were emphasized by Earle (1997a: 19-20):

- The coordination of several research techniques broadly described as processing research and marketing research;
- The involvement of the consumer in the product development process;
- The critical ‘go or no-go’ decisions that must be made by top management between stages.
Besides the above, the evaluation of the markets for any product was absolutely vital, and the success of a project was noted as being greatly influenced by the attitude of the top company executives (Earle, 1997a).

Booz, Allen & Hamilton (1982) provided the most popular conceptualisation of the NPD process, which is used in this study to test the NPD process in both the Chinese food industry and the British food industry. They put forward a seven-step new product development process identifying the activities involved in bringing new ideas to the market place, which was widely accepted by food companies (Rudder, et al., 2001). The seven steps are as follows:


1. **New Product Strategy**: It is necessary for a firm to develop some mechanism – either formal or informal and to develop new products for commercialisation (Hisrich & Peters, 1978). Strategies might include marketing strategies for a new product, product strategies for NPD, pricing strategies for NPD, distribution strategies for NPD (SMEnet, 2001).

2. **Idea Generation**: The process of generating new ideas may consist of brainstorming, reverse brainstorming, attribute listing, groups, or problem inventory analysis (Hisrich & Peters, 1978). Therefore new ideas come from many sources. In Von Hippel’s study (1986), the major sources of new product ideas were: Internal technology (technical groups of ideas); Customers; Competitors and Miscellaneous (including suppliers, other
Kotler (1996) divided the sources into 5 Groups: internal sources, customers, competitors, distributors and suppliers, and other sources.

**Internal sources** usually come from formal research and development or company executives, managers, salespeople and guest-contact employees, as they are in daily contact with customers.

**Customers:** In order to solve consumer's problems, companies can analyse customer questions and complaints to find new products. This can be done through consumer survey and observation. Kotler (1994) indicated that customers' needs and wants were the logical place to start in the search for new-product ideas. He also argued that a company may benefit from finding the products which customers often create on their own and putting them on the market.

**Competitors:** Nearly 27% of new product ideas come from analysing competitor's products (Kotler, 1996). Kotler (1996) noted that two points needed to be considered when a company collects new ideas from their competitors. Firstly, the company should be able to produce the product at least as well as the originator. The copy product will be compared to the original, and the product will fail if the comparison is negative. Secondly, regional cultural and social differences must be taken into consideration when a company transplants an idea from a different area.

**Distributors and suppliers:** As most distributors are close to the market, they can provide much information from consumers and collect new-product possibilities for the company. Simultaneously, suppliers can inform the company on new concepts, techniques and materials that can be provided to develop new products (Kotler, 1996).

**3. Screening:** Techniques for evaluating new product ideas may consist of a checklist or discussion where ideas are either eliminated or considered further. The purpose of
screening is to drop poor ideas as early as possible and the rationale is that product-development costs rise substantially with each successive development stage (Kolter, 1991).

4. **Business Analysis**: This stage involves assessing the characteristics of the market and checking the feasibility of the product idea (Rudder, et al., 2001). Management needs to prepare sales, cost and profit projections to determine whether they satisfy company objectives. If they do, the product concept can move to the product-development stage (Kotler, 1991). This analysis should also provide further evaluation of ideas in order to eliminate any of those not considered favourably at this point.

5. **Development**: Prototype development of the idea must be evaluated in terms of production problems, safety requirements, costs, and other modifications necessary before entering any test market (Kotler, 1991). This phase requires a more formal review and planning process that ensures the concepts are technically feasible, and the products are profitable (APQC, 2000). This involves development, which at its most basic, involves turning an idea into a product (Rudder, et al., 2001).

6. **Testing**: The setting up of test markets can provide valuable data on the nature of the market and marketing strategy changes or product modifications necessary to ensure a successful launch (Rudder, et al., 2001).

7. **Commercialization**: The new product is launched into the market at full-scale production with a significant commitment of the firm’s resources and reputation (Hisrich & Peters, 1978). Hisrich & Peters (1978) argued that the new product
The development process requires the conscious effort of top management to prevent the launch of products which have inadequate market analysis, product defects, higher development costs, poor timing, or poor marketing strategy. Kotler (1991) also indicated that if a company goes ahead with commercialisation, it will face its largest cost to date in contracting for manufacturer or acquiring manufacturing facilities.

Some researchers (Crawford, 1983; Cooper & Kleinschmidt, 1986; Page, 1993) have noted that the development in the food industry of the NPD process was paralleled in other industries. They argued that a formal NPD process was too rigid for use in industry during the early days. Jewson (1991) investigated food companies’ NPD processes during the 1970’s and 1980’s and found that there was no single, definitive process that was followed by food manufacturers in developing a new product. The process of NPD was becoming much more fragmented between the 1970’s and 1980’s, as some companies took risks to launch products as quickly as possible. However, more recently, it has been found that these processes have become more formulised, and even small companies have claimed that they use 70% of the stages (Earle, 1997a).

**2.7 Success of New Product Development**

Understanding the factors that determine NPD success or failure has become an important point for both researchers and practitioners in today’s competitive global marketplace. For more than 20 years, researchers have tried to understand the reasons for NPD success. The vast literature on NPD success (e.g. Cooper, 1993; Song and Parry, 1994; Lord, 1999 and Rudder, et al., 2001) can be generally divided into four areas: 1) the NPD risks; 2) issues relating to the NPD process; 3) the reasons for NPD failure; 4) the factors of new product and NPD success.
2.7.1 The risk of NPD

New product development is considered to be vital for a firm’s long-term survival (Cooper, 1996). At the same time, it is a risky undertaking and research supports the idea of failure as endemic in a manager’s mind (Poolton & Barclay, 1998). For example, during the 1960’s, on average, 58 new products were considered for every successful new product introduced, whereas by 1981, the average was down to around seven (Booz, Allen & Hamilton, 1982). It has long been known that the NPD process takes time, costs money (Coleman, 1998) and requires the collaboration, communication, and coordination of cross-functional and cross-regional teams (Grabber, 1996). In addition, differentiation via product innovation often involves new technologies, unforeseen customer and competitor reactions, and the confluence of many unstructured marketing problems (Miles & Snow, 1978; Miller & Friesen, 1984; Carson & Cromie, 1989; Roberts, 1990). Environmental unpredictability—the difficulty of forecasting the behaviour of competitors and consumers is increased by all of them (Khandwalla, 1981). Therefore, it is difficult to know how consumers and competitors will react to new offerings and to anticipate the various problems that might occur (Klisiaris, 1998). Pierz (1995) found that overall risks associated with NPD—or lack of them—are characterised by two critical elements in evaluating the NPD process: financial risk and marketing risk.

**Financial risk**

Development costs, sales projections, manufacturing costs, capital equipment cost and cash flow requirements are the five main costs which should be considered is components of financial risk. Companies must carefully assess each individual project
on an overall opportunity basis to determine whether to invest in their NPD plan. For each project, financial risk must be weighed against the marketing risk.

**Marketing risk**

There are two main marketing risks: a product may fail to meet consumer needs and expectations or a competitor could bring a product to market ahead of your introduction, eliminating any competitive advantage. Therefore, after a big investment in NPD, a competitive entry could thwart a product launch. A strong competitive entry in a short life cycle industry could put a competitor out of business.

In order to reduce risk, Pierz (1995) gave five factors for consideration from the marketing point of view.

- Degree to which market is changing
- Level of customer need
- Degree to which this product or service meets the customer’s need
- Ability of competitor to introduce similar or better product
- Ability of competitor to introduce product faster.

Both financial risk and marketing risk should be considered through increased expenditures in research and development as companies and investors demand higher rates of return based on higher levels of risk (Pierz, 1995).

Polk et al (1996) suggested that technical risk is also an important component of risk in NPD.
2.7.2 NPD Failure

Though all firms commonly aim to be tactical by developing individual new products, there is no general standard. It is obvious that not all products quickly become spectacular profit or sales successes. According to Hisrich and Peters's (1978) study, research and development of new products in 1976 amounted to over $38 billion, which provided some insight into the substantial losses suffered each year from product failure. Most new products are removed from the marketplace at one of the earlier stages of their introduction owing to low sales volumes. The estimated rate of failure varies from 10% to 90%, depending on the reporting source (Hisrich and Peters, 1978). In Hisrich and Peters' (1978) findings, the disparity may be explained by examining the method used to define a new product, and the manner in which a failure was determined.

A number of authors since the 1970's have examined factors increasing the risk of product failure. Hopkins and Bailey (1971) divided non-technical reasons into environmental and organisational categories.

Environmental reasons include small market, uncertainty with consumer, high level of competition, and obsolescence.

Organisational reasons are lack of marketing expertise, lack of production expertise, R& D cost escalation, shortage of resources and faulty communications with firms.

Nielsen researchers (1973) analysed the reasons for the failure of 30 new grocery products by using a useful statistical assessment of why many new products failed. They concluded that 67% of products failed owing to the faults in the product itself or
in the packaging, 15% of new products failed because of pricing policy, 15% for the lack of trade acceptance, and 3% because of advertising or lack of advertising support.

By comparison, Hisrich and Peters (1978) cited the results of The National Industry Conference Board in 1976, giving reasons for new product development failure as follows:

1. Inadequate market analysis 32%
2. Product defects 23%
3. Higher costs than anticipated 14%
4. Poor timing 10%
5. Competition reaction 8%
6. Inadequate marketing effort (includes weaknesses in sales force, distribution, and advertising) 13%

From these figures, it was shown that **marketing problems or inadequacies** were the main reasons for most failures (inadequate market analysis, poor timing, competition and sales force, distribution, and advertising) followed by product defects. Similarly, in Buzzell and Nourse’s study (1967), a substantial percentage (nearly 80%) of the reasons given for discontinuing a product were a result of marketing misjudgements or inadequacies. Cooper (1975) found that the inadequate performance of a number of marketing activities such as a preliminary market study, a detailed market study, product tests, the test market was the primary reason for failure.

**Product defects** are the technical deficiencies in designing and production. They are the second most common cause of new-product failure. Gruenwald (1985) pointed out that
the quality control of material, substituted material, novel improvements, lowering the
quality assurance surveillance, poor labour training, early technical obsolescence versus
more sophisticated competition, over-engineering and over-building were among
manifestations of poor technology. These problems occurred when there was a lack of a
proper NPD process with gaps (no market testing) (Cooper, 1988) and there were no
integrated production chains (Cooper, 1982).

Therefore, the reasons for new product failure are many and complex. Littler, et al.
(1995) also lays stress on two areas of uncertainty: technical uncertainty and market
uncertainty.

Cooper gave three barriers to product success in his study in 1979, which confirmed
some of Hisrich & Peter’s (1978) findings:

- Having a high-priced product, relative to competition (with no economic advantage
to the consumer);
- Being in a dynamic market (with many new product introductions)
- Being in a competitive market, where consumers are already well satisfied.

In subsequent studies (Cooper & Kleinschmidt, 1986), he focused on 114 production
companies and analysed reasons for the above, and established key factors to be:

- Under estimation of competitive position of the market;
- Over estimation of potential target market;
- Product’s price too high;
- Technical product deficiencies.
These four key factors confirmed Hisrich and Peter's (1978) findings that inadequate market analysis (underestimation of competitive position of the market; overestimation of potential target market; and product's price too high), product defects (technical product deficiencies) and higher cost than anticipated (product's price too high) were the main reasons for NPD failure.

More recently, Hill & Jones (1995) highlighted the extent of risk in NPD. They generalised the main reasons of the failure of NPD as:

- Uncertainty: As no one can predict the product demand, NPD is risky, although good market research can reduce the risks of failure.
- Poor commercialisation: This occurs, when there is an intrinsic demand for new technology, but the technology is not well adapted to consumer needs.
- Wrong marketing orientation: Companies often make the mistake of marketing a technology for which there is not enough demand.
- Too much time: That companies are slow to get their products to market which may cause them to fail to introduce a successful new product. The longer the time between initial idea and final marketing, the slower the 'cycle time', the more likely it is that competitors will beat the firm to market and gain a first-mover advantage.

Finally, Mishra et al (1996) separated reasons for NPD failure into problems at the R & D/marketing/manufacturing interfaces, proficiency of development activities, and newness of production process of firms. In addition, the "shortage of important ideas in certain areas", "fragmented markets", "social & governmental constraints", "coastlines of the development process", and "capital shortages" are also considered as factors that hinder NPD (Kotler, 1991).
2.7.3 NPD Success

This section will discuss the measurements of NPD success and the factors influencing NPD success.

A. The measurements of NPD success

The measures of product success can be classified into two groups: "financial" and "non-financial" (Hart, 1993). Most researchers use financial measures such as "profit" (Saunders and Wong 1985; Hooley & Lynch, 1985; ICC Performance Analysis 1989; Baker et al., 1988), "sales growth" (Baker et al., 1988), "turnover" (Fraizer & Howell, 1983), "return on investment" (Hooley & Lynch, 1985), "inventory turnover" along with the softer, non-financial measures such as "innovativeness" (Goldsmith and Clutterbuck, 1984), "market standing" (Saunders and Wong 1985; Hooley & Lynch, 1985), "ethical standing", "employee conditions", "employment prospects", "industrial relation", "legal standing" and "social responsibility" (Saul 1983; Carrol, 1979).

Hart (1993) based on these studies (Saunders & Wong, 1985; Hooley & Lynch, 1985; ICC Performance Analysis, 1989; Baker et al., 1988; Carrol, 1979; Saul 1983) concluded that the bases of the financial measurements of new product success are profit, assets, sales, capital, and equity and the basic Non-financial measurements of success are design, activity, market, technological, and commercial.
Based on Cooper's (1981) NPD study, which investigated new product success factors (product differential advantage, project resources compatibility, market need, growth and size and economic advantage to the user), de Brentani (1986) suggested five new product screening criteria to all firms: 1) financial potential 2) corporate or product synergy 3) technological synergy 4) differential advantage and 5) estimated product life.

B. Factors Influencing NPD Success (Industry in General)

The academic and professional literature in NPD is typically concerned with identifying factors which contribute to success. Researchers have sought to identify aspects of the management and implementation of the NPD process which distinguish successful companies from the unsuccessful ones by using both qualitative and quantitative approaches. The critical factors identified in a variety of research projects are remarkably consistent across a range of studies (Craig & Hart 1992).

Studies of new product failures, product successes and the comparison of successes and failures (National Industrial Conference Board, 1964; Piercy, 1981; Cooper, 1993; Rothwell, 1972; Rothwell et al., 1974; Rothwell, 1976; Cooper and Kleinschmidt, 1987ab, 1993, 1994; Song and Parry, 1994) have shown different success factors. These product success reasons include competitive or differential advantage, synergies, product familiarity, market attractiveness and the competitive situation. Certain management practices, such as early project/product definition, quality of execution of certain pivotal activities, and the launch itself, have been identified as key to success in these studies. Commonly cited determinants of success emerge as being important contributors to successful NPD in a variety of markets, for a multiplicity of products and in a number of different time periods. They include market knowledge and
marketing skills (Cooper, 1979), a clearly structured NPD process (Peters and Waterman, 1982), senior management commitment (Johne and Snelson, 1988), and interfunctional co-ordination particularly in relation to the marketing/ R & D interface (Gupta and Wilemon 1991). Rubenstein's (1976) Survey of U.S New Product success and failure furthermore showed that no single factor of success and failure could be isolated. In this investigation, the more important facilitators were identified as:

1. The existence of a product champion.
2. Marketing factors such as need recognition.
3. Strong internal communication.
4. Superior techniques for data gathering, analysis, and decision making and planned approaches to venture management. (p15-20)

In 1993, Cooper and Kleinschmidt investigated more than 100 new projects in the chemical industry in four countries (U.K, Germany, U.S and Canada), focusing on leading firms such as ICI, Dupont, Dow and Exxon. Their investigation addressed new product performance by looking at new product success in different ways, including profitability, speediness and time to market, impact on the company, market share and even from a technical success standpoint. The results showed that the main factors in success were market knowledge, marketing skills, top management commitment, and organizational flexibility. These were the core elements of best practice for the success of a new product. Table 2. 4 Summarises the main NPD success factors from different literature sources.
1. Market Knowledge, Marketing Skills and Technical Factors

Project SAPPHO (Rothwell, 1977) compared and contrasted a set of successful and unsuccessful innovations from the same market, and found market knowledge, marketing skill, and technical factors are important to new product success. The study identified that successful companies:

1) Had a better understanding of user needs.
2) Paid more attention to marketing and publicity.
3) Performed development work more efficiently, but not necessarily more quickly.
4) Made more use of outside technology and scientific advice.
5) Had responsible individuals in more senior positions with greater authority.

Kulvik’s (1977) success /failure study in Finland yielded similar results to the above, but additional facilitators included a good ‘company/product profit’, the utilisation of technical ‘know-how’ of the company and familiarity with both the product’s market and technologies. Rothwell (1977) concluded that successful innovation is a coupling process in which the company matches its technological capacity to the needs of the marketplace.

Project NewProd. separated 102 new product successes from 93 failures in 102 firms (Cooper, 1980 ), and revealed similar results for NPD success ( Table. 2.4). Three years’ later, Maidique and Zirger (1983) in their Stanford Innovation Project analyzed NPD success and failure. They concluded that success is likely to be greater under the market circumstances (Table. 2.4).
2. Managerial Factors

Maidique and Zirger's (1983) concluded that there was a high level of management support for the project from the development stage through to launch in companies with successful NPD.

More recently, Howley and Davison (1995) investigated the issue of organisation for new product development in 50 well-known British-based companies and found the key factors in new product success. Their work confirmed the work of previous researchers. They concluded that there were six key aspects leading to success:

1. The need for objective market research at an early stage to ensure that there is a potential demand of the required volume;
2. A real comparative advantage against existing competition;
3. **Commitment from top management**;
4. Commitment from the sales force;
5. Adequate resources for a sustained communications programme;

In general, the most effective companies in new product development area have been found to have some common characteristics that represent key ingredients for success. They have a culture and leadership that support continuous creativity and ongoing innovation. They focus intensely on customers needs and the values that are sought in the market place (Hoban, 1998).
### Table 2.4 NPD Success Factors from Different Literature Sources

<table>
<thead>
<tr>
<th>Group 1 Market Knowledge, Marketing Skill and Technical Factors:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market knowledge and marketing skills; (Cooper, 1979, 1980, 1995)</td>
</tr>
<tr>
<td>Understanding user needs; (Rothwell, 1977)</td>
</tr>
<tr>
<td>Marketing research; (Rothwell, 1977)</td>
</tr>
<tr>
<td>Product market knowledge; (Kulviks, 1977)</td>
</tr>
<tr>
<td>Marketing co-ordination (Gupta &amp; Wilemon, 1991)</td>
</tr>
<tr>
<td>Marketing factors recognition; (Rubenstein, 1976)</td>
</tr>
<tr>
<td>R&amp;D process is well planned and executed; (Maidique and Zirger, 1983)</td>
</tr>
<tr>
<td>Customer needs focus; (Hoben, 1998)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 2 Technical Factors:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology and scientific advice; (Rothwell, 1977)</td>
</tr>
<tr>
<td>Technologies identification; (Kulviks, 1977)</td>
</tr>
<tr>
<td>Superior techniques; (Rubenstein, 1976)</td>
</tr>
<tr>
<td>Having technical and production synergy and proficiency; (Cooper, 1980)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 3 Managerial Factors:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Had responsible individuals in more senior positions with greater authority than their counterparts; (Rothwell, 1977)</td>
</tr>
<tr>
<td>Senior management commitment; (Johne and Snelson, 1988)</td>
</tr>
<tr>
<td>Having a good ‘product/company fit’ with respect to managerial and marketing resources; (Cooper, 1981)</td>
</tr>
<tr>
<td>There is a high level of management support for the project from the development stage through to launch; (Maidique and Zirger, 1983)</td>
</tr>
<tr>
<td>Commitment of top management; (Davison &amp; Howley, 1995)</td>
</tr>
<tr>
<td>Culture and Leadership; (Hoben, 1998)</td>
</tr>
</tbody>
</table>

### 2.7.4 Manage the NPD Process Leading to NPD Success in the Food Industry

The current process for developing new products has been said to be seriously flawed (Rudolph, 1995), contributing to the estimated 80% or 90% of new food products failing within one year, although there are no published data on successes and failures of new food products. Being complex and iterative, the food product development process has proved difficult to define and model (Rudolph, 1995). Barclay’s (1992) research work developed over 40 years and showed that much of the work studying the NPD process leading to NPD success is unknown to product development managers. He investigated current practices in NPD at 149 UK-based companies. Only 78 were found to have some form of a new product guide to help manage the process, and 65 of the 78 stated their guide had originated through experience. Only one company based its new
product development process on literature describing process models. As traditional approaches to managing the product development process result in unbalanced milestone structures, they often fail. As Barclay said: “The (food product) development process needs to be linked with the corporate objectives and to the external environment to allow new ideas into the organisation.” (Barclay, 1992, p307). It is important that each group provides input to all of the milestones throughout the process, while the peak activities shift (Rudolph, 1995). A good process is flexible and continuously evolving, therefore, many advantages of this process for project leaders, team members and management are based on the following features:

- Use of common, project-specific vocabulary facilitates communication in the case team, management, and project reviewers.

- Development of a standard framework of milestone deliverables reduces project start-up time.

- A consistent definition of milestone structure allows for internal benchmarking.

- A proven methodology allows for more accurate project planning, including: allocating resources, establishing budgets, and scheduling tasks (Rudolph, 1995,p4).

Rudolph (1995) stated that there were three phases to the total milestone-driven food product development process leading to a successful NPD. The phases defined as product definition, product implementation, and product introduction are shown as follows:
A. **Phase I: Product Definition** includes a strategic plan, market opportunity assessment, the business plan and product definition.

B. **Phase II: Product Implementation** includes prototype development, benchmarking, product optimisation, market strategy and testing, and scale-up and trial production.

C. **Phase III: Product Introduction** is led by sales but supported through all other functional areas, especially marketing and distribution. In this stage, product support is a complementary milestone that builds product success and repeat business, as it feeds back valuable information to other functional areas that can lead the process for line extensions, product upgrades, and the creation of new opportunities.

In reviewing the various processes of new product development, increasingly the importance of the corporate objectives, strategies and operating plans are an integral part of the plan. To some extent this was also the view of Meyer (1984) where he placed it as the first of eleven stages of successful new product development:

1) Develop clear corporate objectives;
2) Draft strategic and operating plans to fulfil corporate objectives;
3) Generate new concepts;
4) Screen, test and prioritise new concepts;
5) Translate concepts into optimised prototypes;
6) Refine prototypes with consumer sensory tests;
7) Scale up production from pilot plant to commercial operations;
8) Conduct in-home use test;
9) Place products in a market simulation test;
10) Test new product line;
11) Introduce product line into national distribution.

Stages 5 to 7 should include both marketing and technology. Drew and Lyons (1986, p78-79) argued that implicit in these stages are the processes of:

- setting contextual quality targets for a product;
- translating those into key attributes;
- developing a process to achieve the target attributes consistently;
- testing the resulting products against the contextual quality targets, i.e. checking their excellence/acceptability.

The members of the food distribution chain should be considered during all these stages as well, including the wholesaler, grocer retailer, retail caterer-commercial/welfare, domestic user, ultimate consumer in home or food service operation (Drew and Lyons, 1986).

To derive a high rate of return from new, competitive, up-to-date products generated and launched within a guaranteed short time-scale, at target cost, and with acceptable quality and variety, an effective food NPD process must:

- allow companies to capitalise quickly on changing consumer trends, for example the influx of “healthier alternative” products;
- lend flexibility in times of crisis;
- erect barriers of entry into new markets by competitors.
- probe new marketplace opportunities (Mcllveen, 1994).

Mcllveen (1994) also stated that food product development comprised a lengthening list from basic product issues to packaging, quality assurance, technical aspects, nutritional
information and artwork, ingredients purchasing, marketing, national accounts and factory/production/engineering considerations. In order to manage the NPD process more effectively, a NPD system should ensure 5 points:

1) the agreement of well defined briefs between, as well as within, departments;
2) new ideas being screened at an early stage to help concentrate efforts on major projects;
3) order and discipline are built into all developments;
4) confidence is being with customers;
5) Improve the rate of response in bringing new profitable ideas to early fruition (Mcllveen, 1994).

The fact that most products require R&D support throughout the product lifetime if the consumer is to remain satisfied is ignored by many companies, therefore the improvement process may be understood as:

1) product quality improvement, or customer satisfaction in terms of flavour, ingredients, reformulation, processing, packaging or physical characteristics
2) profit improvement, via formulation, alternative ingredients, ingredient consolidation, product standardisation, process or packaging (Graf & Saguy, 1991, p49-89).

In addition, in order to achieve a successful NPD process in the food industry, some factors such as competition, and product life cycle need to be considered.
a. Competition in the Food Industry

Competition must be considered carefully in food manufacture and retail, whether external or internal. As a matter of corporate policy, many companies create products which compete with each other internally (Goodman, 1970). For example, a frozen dessert topping, competing with a successful powdered topping (Angelus, 1970).

Company products must remain cost-competitive to minimise impact of external competition. A new product is likely to find many potential sources of competition, when it first enters in a market dominated by other companies. Consideration of the longevity of life for the new product, pricing levels, volume levels, types of packaging, and the level of quality itself require expert attention (Desrosier & Desrosier, 1971).

b. Life Cycle

Desrosier & Desrosier (1971, p137) cited Goodman’s study of about 250 products over a 5 years’ span. “Two major conclusions resulted: First, there is a specific, recognisable, definable, life cycle for a product. ...... Second, it is possible to regenerate a product at least once, and on an average, this regeneration might add another year to the life of a product.”

In today’s food business arena, technology and a highly consumer-oriented market, have demanded the continuous development of evermore innovative products that meet expectations (e.g. leading to a shorter life cycle). The shortening of a product’s life cycle and an increasing consumer demand for more variety and quality have led to a pressing need for tools that can help new product development (Trijp & Steenkamp, 1998; Dekker and Linnemann, 1998). Thus, accelerating the new product development
cycle is critical not only because the life span of an average new product is short, but for market needs. Line extensions and competitive response products generally are not designed to have long life cycles. If a new product can generate profits and prop up market share for a few years, it is considered a success (Hollingsworth, 1998). The evidence for this shortened life cycle is the actions taken by practitioners; the judgements of knowledgeable people and research data (Rosenau, 1990).

Products that are launched successfully often experience a shorter than planned life cycle (Hood, et al., 1997). The pathway to successful NPD and commercialisation of a new product is complicated. Most new retail food products need 1-5 years to finish the commercialisation cycle (Best, 1991) and the typical cost for launching a new food product may be in the range of £20 to £50 million (Fordham, 1993; Friedman, 1989), presumably owing to heavy market promotion (Hood, et al., 1997).

### 2.7.5 Food NPD Failure

New Product development in the food industry remains primarily in the hands of producer/processor, thus, there have been increasing demands on their resource base. The cost of NPD is growing but the likely returns are declining. For example, from 1988 to 1992, the composite food industry R&D spending in U.S fell between 0.7-2.0% of sales (Best, 1991). Although this figure is lower than other technology driven industries, such as chemicals (3.6%), it still represents $1.9billion (after accounting for the 40% or so of total R & D expenditures not devoted to product and process development (Hood, et al, 1997)). Therefore, R & D represents a large component of the overall expense in launching new products.
The success ratio of new food products is very low. Out of 24,543 new products in Britain reported by Ernst&Young and AcNielsen, only 539 were truly innovative (new to the world products) and 33 were real market successes. Based on Prime Consulting Group’s categories (i.e. product’s sales trend over an extended period of time, adjusted for the introductory period), data for all new products showed that only 1,100-1,200 products could be regarded as truly new products. Other sources have suggested that only about 33% of new product introductions were deemed to be successful, 42% were still in distribution but with declining sales, and 25% had failed (Adams, 1997; Hoban, 1998). The U.S food industry is troubled by the widely held “myth” that of the approximately 20,000 new food products introduced annually, more than 90% fail (Connor & Schiek, 1997; Hollingsworth, 1996; Mathews, 1997). Similar failure-rate figures have been reported by others (80% in the past decades, reaching a peak of 91% in 1989; Hollingsworth, 1994). New food product introductions in US topped 9,000 (Best, 1991, p1) in 1989, and rose by about 30% to over 12,000 by 1991 (Fordham, 1993). However, few of them reached the marketplace, with only 10% of new products surviving consumer testing and 1% or less making it to market. The annual cost of these failures is estimated at about $12 billion dollars (McFie, 1994). In 1995, with more than 20,000 new products launched in the U.S, new product failure rates were as high as 85% by some estimates, making it a costly, high-risk challenge (Hollingsworth, 1996). These figures clearly highlight pressure on new product development. Several reasons for new food product failures were given by Hood et al. (1997):

1. did not fit corporate strategic imperatives;
2. did not deliver on promises to end-user;
3. lack of competitive point of difference;
4. did not achieve minimum sales volume forecast;
5. failed to fill a consumer need; as Lynon (1986) discussed, the risks to the food producers are less when their consumer, the retailer or wholesaler, specifies the details of the product.

6. Insufficient planning;

7. Wrong timing for market introduction;

8. Poor management.

2.7.6 Successful Food NPD

To ensure successful NPD, the food industry must search for market leadership and profitability (Hultink, et al., 1999). Research into food new products has shown certain factors for success. Stewart-Knox & Mitchell (2003) compared the results from three recent investigations (in the U.K., USA, and Denmark) and found that common conclusions from all three studies were that market and consumer knowledge and retailer involvement, were associated with NPD success (Table. 2.5).
Table 2.5 Factors Determining Success in New Food Product Development

<table>
<thead>
<tr>
<th>Source of data*</th>
<th>UK Model</th>
<th>Danish model</th>
<th>USA survey (Hoban, 1998)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factors</td>
<td>(S-Knox, et al., 2003)</td>
<td>(Kristensen, et al., 1998)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unique product of high quality</td>
<td>Original concept more successful</td>
<td>Most important factor for success</td>
</tr>
<tr>
<td></td>
<td>Market/consumer Knowledge</td>
<td>Predictive of success</td>
<td>Second important factor for success</td>
</tr>
<tr>
<td></td>
<td>Top management Involvement</td>
<td>No association with outcome</td>
<td>Third important factor for success</td>
</tr>
<tr>
<td></td>
<td>PD organised/Technical synergy</td>
<td>No association with outcome</td>
<td>Factor for success</td>
</tr>
<tr>
<td></td>
<td>Consumer/retailer Involved</td>
<td>Predictive of success</td>
<td>Factor for success</td>
</tr>
<tr>
<td></td>
<td>Supplier/others Involved</td>
<td>Predictive of success</td>
<td>Factor for success</td>
</tr>
<tr>
<td></td>
<td>Food technologist Involved</td>
<td>Not assessed</td>
<td>Factor for success</td>
</tr>
</tbody>
</table>

*Data are extracted from the research presented in Hoban (1998), Kristensen et al., (1998) and Stewart-Knox et al. (2003).

Source: Stewart-Knox, et al., (2003), P60

The major difference was that studies carried out in the USA and Denmark indicated that top management was a determinant of product success, whereas the UK study found it to be the third importance to the NPD success. This apparent contradiction reflected industry structure, management culture and marketing environment differences in different countries (Stewart-Knox, et al., 2003). From their analysis (Hoban, 1998; Stewart-Knox, et al., 2003 and Kristensen, 1998), it can be found that food product success appears contingent on a high quality product, top management support, sound consumer knowledge and cross-functional team work. Market and consumer knowledge, especially, were the key success factors (Stewart-knox, et. al, 2003).
In order to minimise new food product failures, many researchers have attempted to develop a model to capture the success factors (Saguy and Moskowitz, 1999; Linnemann, et al., 1998, Kirk, 1998). Saguy and Moskowitz (1999) provided a paradigm shift to successfully cope with the immense risk and high failure rates of food product development. That shift included “higher-order” involvement of consumers in the development process: consumer data drive ongoing development and act as the yardstick for final acceptance. Hence, this shift meets consumers’ demands and addresses real and perceived quality attributes; it has been defined as “total consumer compliance” (Watzke & Saguy, 2001, p175). Linnemann et al. (1998) suggested a similar model, using consumer-oriented development. This model is a model for translating consumer preferences and perceptions into desired technological developments. However, the paradigm shift is only one dimension of a much more complex and immense problem defined as innovation. Some business environments have been bombarded by paradigm shifts in consumer preferences that need to be addressed. Some of the most important of these are generalised below:

- Mergers and consolidations involving major companies have led to new product proliferation in an attempt to gain market share as the number of independent players is reduced (Linnemann, et al., 1998).

- Rising disposable income among consumers leading to changing lifestyle with an increased emphasis on health and nutrition (Linnemann, et al., 1998).

- Expansion of line extensions or “me-too” products which have shorter development cycles and meet consumer needs. Thus business repetitiously do what they have done in the past, making only minor product modifications (Udell & Pettijohn, 1991).
- Increased presence of value-added commodity products (e.g. poultry products and peanut butter) with modifications in nutrition, variety, economy, quality and product form (Best, 1991; Fuller, 1994; Graf, 1994).

In addition, companies needed to compress the development cycle time and reduce cost, which they have done by assuming greater risk by eliminating much of the market testing and consumer testing trials (Hood, et al., 1997).

Moreover, successful NPD requires knowledge sharing across a very broad knowledge base, and effective information communication (Purser, et al., 1992). For example, communication between marketing and R & D helps the NPD team to understand about consumer needs, technology and competition (Moenaent, et al., 1995). Integrating consumer research (such as surveys and sensory evaluation) into food NPD enhances the chances for a successful new product introduction (Bogue, et al., 1999; Suwannaporn, 2000).

### 2.8 Overview of NPD in the Food Industry during the Past 100 Years

With the introduction of large-scale, on-line manufacturing, new preservation processes and faster distribution systems, the food industry started to develop from a craft into a technology 100 years ago. Food processors moved from producing food in batches to the use of continuous industrial production lines with minimal amounts of skilled labour. Accompanied by the growth in living standards, these rapid technological changes resulted in even greater opportunities for product development (Earle, 1997).
In the first 50 years of the 20th century, process development produced many new foods (e.g. freezing led to the production of frozen peas, mechanical breadmaking to cheap white bread, pasteurisation to bottled milk and fat hydrogenation to margarine). Marketing activity mainly comprised the selling of large quantities of cheap food (Earle, 1997).

After World War II, many new products were introduced to the consumer market, for example, dehydrated potatoes, frozen dinners and specialities, frozen juice concentrates, liquid dietary foods, non-fat dry milk, packaged rice, and powdered coffee creamers. Therefore, the growth of the prominence place of these foods in food consumption occurred almost entirely in the period during and since the war (Buzzell & Nourse, 1967). Buzzell & Nourse (1967) also argued that substantial changes in existing product had occurred since World War II, such as presweetened and nutritional cereals (cold breakfast cereals), instant-blending flour, and synthetic juices. More recently research in the developed world has led to the development of new ingredients (fun foods, minimum nutrient and even non-food ingredients), such as imitation fat with little or no nutritional value (Tansey & Worsley, 1995).

The manufacturers grew and by the 1980s, became the biggest food groups in many countries, especially in Britain and the U.S.A. Most product markets in Europe were quite concentrated, with the top three suppliers (Unilever, Nestle, BSN) tending to dominate by the early 1990s (Tansey & Worsley, 1995). After 1990, the large international food companies focused on a limited number of branded products and market in areas where worthwhile volume sales could be built up because of the more competitive food market. Food companies are spending more and more effort in NPD
research (Katz, 1999), Katz (1999) found that the range of increase in spending to get new ideas on the shelf range from about 6% to over 400%.

Hart (1997) noted that the most impressive changes in the previous 100 years were in areas of methods of food preservation, improvements in methods of thermal processing and packaging. He also identified the development of new materials, and discoveries in nutrition science, along with the uses of such information in both food processing and food product development to meet nutritional needs. Gross (1997) also identified new ingredients and new technology as the most important developments. Salmon (1992) showed that 'nutrition development' was an important development in New Food Product Developments in five European countries. Continuing concern in the food industry for the safety of its products, has resulted in ongoing research to ensure food safety (Forsythe and Stevenson, 1997).

Hubbard (1997, p66) generalised two significant developments over the past 50 years:
1) the growing regulations of the government (FDA, USDA, Delaney Clause, weights and measures, labelling, GMP and HACCP);
2) the application of statistical quality control (SQC) to all phases of food research and operations.

Earle (1997) summarised the key stimuli in the emergence of product development and the process of new product development in the food industry in the 100 years prior to 1997, encompassing a number of the views above:

- New production processes, new preservation methods and new distribution channels;
• Increased emphasis on marketing, recipe development and on-line production;

• Marketing research, consideration of consumer needs and development of new ingredients;

• Integration of marketing activities, consumer research and new technologies.

2.9 Trends of Food products and NPD in the Food Industry

Although it is somewhat difficult to predict the food industry trends in the future, many trends and figures have been given. Hollingsworth (1996) stated that eight of the 10 most popular foods today were on the list a decade ago. Therefore, what people will be eating ten years from now is likely to be similar to today's list, although the form may be a little different (for instance, turkey ham instead of real ham, because people are eating healthier alternatives to traditional foods). Future trends will be based on modifications of the foods available and most popular now, as people only change when the new food product has a better 'value' in terms of health, price or convenience (Hollingsworth, 1996). O'Donnell (1999) of R&D Executives predicted trends to 2005 by reviewing new products over a number of years (see Fig 2.5).
**Fig 2.5 Food trends from 1993 to 2005**

<table>
<thead>
<tr>
<th>1993</th>
<th>1995</th>
<th>1997</th>
<th>1999</th>
<th>2005 (Predictions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced-calorie/fat or diet food</td>
<td>Reduced-fat foods</td>
<td>Reduced-fat foods</td>
<td>Lowest cost among competitors</td>
<td>Formulation cost control</td>
</tr>
<tr>
<td>Least cost ingredient formulations</td>
<td>Least cost ingredient formulations</td>
<td>Least cost ingredient formulation</td>
<td>All-natural/clean label foods</td>
<td>All-natural foods and some organic foods</td>
</tr>
<tr>
<td>Reduced-cholesterol foods</td>
<td>Reduced-calorie diet foods All-natural/no additive foods</td>
<td>Reduced-calorie diet foods</td>
<td>Reduced-fat foods Organic foods</td>
<td>Nutritionally enhanced foods</td>
</tr>
<tr>
<td>Reduced-sodium foods All natural/no additives</td>
<td>Reduced-sodium foods additive foods</td>
<td>All natural/no additives</td>
<td>Calcium-fortified foods</td>
<td>Reduced-fat foods</td>
</tr>
<tr>
<td>Organic foods</td>
<td>Reduced-cholesterol foods</td>
<td>Reduced-sodium foods</td>
<td>Reduced-calorie foods</td>
<td>Reduced-calorie foods</td>
</tr>
<tr>
<td><em>Calcium-fortified foods not listed in 1993</em> Organic foods</td>
<td>Added calcium foods</td>
<td>Organic foods</td>
<td>Reduced-sodium foods</td>
<td>Foods with cholesterol-lowering ingredients</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Issues indicated as having the greatest increase in R&D activity or as providing the most business opportunities, ranked from highest to lowest by O’Donnell. (1999).*


This section is divided into two parts: 1) Trends in food products; 2) Trends of food manufacturing for NPD.

**2.9.1. Trends in Food Products**

Sloan (1998) reported consumer trends to 2020 and beyond as follows: “Natural becomes the norm”, “Technololiterates will open growth avenues” and “Focus on health”. Katz (1999) also pointed out the top product development trends in the food industry in Europe: The top trend was the concept of “Authentic” used to describe both flavour and texture. “Health” was viewed by some food technologists and marketers as a functional food issue, and it was said to be the second top trend. He also argued that
European trends will become universal and will yield to alternative priorities in other parts of the world. Nutritional or functional foods may well become the major interest among food processors, as a way to differentiate products.

Sloan (2001) summarised the top 10 trends in food products as follows:

**Trend 1: “Do-it-for-me” Foods:** This means convenience foods, such as pre-prepared food. Sloan (1999) stated that fresh-frozen, extended refrigerated shelf-life, and sterilised shelf-stable meal technology would be worth pursuing by food marketers. In the U.K the chilled ready meals category has achieved “destination status”, with the home meal replacement market projected to reach $109 billion, by 2002. Grijspaardtvink (1996) also reported convenience as the second most important food trend. This trend was linked to the more solitary lifestyle that is emerging in Europe as consumers are eating alone more often and spending less time preparing food. Its market in Europe is expected to maintain growth into the 21st century. This trend includes easily prepared, ready made products, consumed as snacks (Sloan, 1999).

**Trend 2: Super Savvy and Sophisticated:** Ethnic foods and vegetarianism are other trends in which the European market has increased interests. As consumers become more well-travelled, more technology-literate, and have more disposable income, they will create a powerful market for more provocative, flavorful-and often healthier-restaurant-quality fare (Sloan, 2001). The interest in ethnic foods has been expressed as a consumer preference for highly seasoned foods and multicultural cuisine.
Trend 3: Balance: A large group of seemingly more-health-conscious consumers are looking for greater balance and nutritional convenience in prepared meals. Therefore, balance is a future trend for food (Sloan, 2001).

Trend 4: Form Follows Function-Bites, Bits and bags (Snack): Appetisers represent one of the most versatile food forms for the decade ahead. They are bite-sized. Thus, unique portable forms and packages are emerging. With more consumers than ever eating at their desk or on the road, this kind of food is projected to reach $2 billion in sales by 2002 (Kalorama, 1998).

Trend 5: A New Kind of “Home-spun”: The new wave of international peasant and comfort foods will begin to become the older person’s favourites. Seventy-five percent of Americans reported that they were looking for home style or comfort foods on menus (NRA, 2000).

Trend 6: Kid-influence: Children rarely cook and often do not know how to cook. However, they have a growing participation in selecting and purchasing foods, and have money of their own (Sloan, 2001).

Trend 7: light and Lively: “Freshness” is one of the important choices for today’s consumers, linked to their need for health. It has been identified by the majority of culinary and food service trend predictors (researchers) as the most important food trend of next decade from now (Sloan, 2001).

Trend 8: Crossover Meal Patterns: The food nature of today’s consumer is changing. NPD group (2000) confirms that the ‘top 10’ items most commonly served for dinner
have not changed much, but the order has been rearranged. The distinction between
snacks and meals is blurring, thus crossover meal patterns have appeared (Sloan, 2001).

**Trend 9: “Do-it-Yourself” Health:** As consumers take more and more responsibility
for their own health, they are buying fortified, functional, and performance-enhancing
foods. More than half of population in the US eats a vitamin-fortified or calcium-
fortified food or beverage (NPD Group, 2000). Energy beverages and bars are
approaching $4 billion in sales. Most analysts put the U.S functional food market
between $15 billion and $20 billion (Sloan, 2000). Meanwhile, European consumers are
keenly aware of the close relationship between food and health, and this translates into
consumer demand for specific products. (For example, as fresh is associated with an
agreeable taste, good quality, good nutrition and above all—healthful foods, the
consumer need for fresh and healthy food is increasing.) A new approach to health
named the “Self Care Movement” is estimated to be a $42 billion supermarket retail
opportunity in America (FMI/Prevention, 2000).

**Trend 10: Clean, Pure, Natural, and Safe:** The demand for cleaner, purer, and more
‘close to nature’ foods is accelerating and many consumers consider natural and organic
food the safest. Concern has been fuelled by mounting media attention to a wide range
of issues, including mad cow disease (BSE), food poisoning outbreaks and GMOs
(Sloan, 2001). Sloan (2001) predicted that organic, all-natural, additive/preservative-
free, free range, non GMO, and even kosher foods represent a strong and sustainable
market for the decade ahead.

In conclusion, these top 10 trends can be grouped into four main areas: convenience
(trend 1, 2, 4, and 8), healthy (trend 3, 7, 9, and 10), flavourful (trend 5 and 2) and fun
(trend 6). Therefore, the foods in the future will be more healthy, flavourful, fun and convenient.

2.9.2 Trends in Food Manufacturing for NPD

New product trends relate to food manufacturing trends in the food system. Earle (1997b) identified two main innovations in the food system:

- For ingredients and formulated foods: production—processing—manufacturing
  Manufacturers can choose from thousands of ingredients, for instance, low-calorie ingredients. Food manufacturers also influence the development and production of agricultural and marine raw materials to meet legal requirements and consumers' concerns. It will be one of their future innovative strategies.

- For fresh foods: production — distribution
  This may be new types or new varieties. Growth in fresh food will result in an increasing number of brands in this area and also an increasing need for ensuring and marketing food safety. Simultaneously, packaging innovations have been quickly accepted by food manufacturers owing to the reductions in production cost, and the need for attractiveness on the supermarket shelves.

According to Earle (1997b, p174), in searching 'total food technology', food manufacturers could seek innovations in the retail sector and develop new retail outlets that they could own outright or in a joint venture with other manufacturers or retailers. Two possible innovations in the future will be:

1) marketing a specialised range of nutritionally designed products by nutrition boutiques;
2) cooperation with fast-food outlets to develop a new combined manufacturing and retail system to provide fresh meals or part meals to take home.

Additionally, new technologies in food manufacture have an important role in changing the way foods are developed and produced (Katz, 1997). Four food technology trends have been identified by Katz (1997): specific bacterial controls, improving final flavour through delivery systems, new low-fat products, and the use of enzymes and physical modification technology to replace some chemical treatments.

More recently, Ferrante (1999) listed the top 10 food manufacturing trends as:

1. Automation/information/integration
2. Packaging innovations/convenience
3. Flexibility/efficiency
4. HACCP/food safety/compliance
5. Outsourcing/co-packing
6. Training/retaining workers/teams
7. Broadening product lines/branding
8. Expansion/new equipment purchase
9. Supply chain management/JIT/reducing warehousing
10. Electronic orders/Internet sales/e-commerce.

2.10 Conclusion

As increased competition and social, cultural, and economic changes necessitate new product development to maintain competitive parity in each industry, managers will face more challenges and pressures. New product development varies from a
modification of an old product to a truly new product based on new technology representing something far removed from anything else available in the market place. This process of classification is close to the marketing philosophy. The main aim in this philosophy is satisfaction of consumer needs, which must be the prime justification for the firm's existence.

There are many reasons and factors leading to success and failure in new product development. Analysis of these factors showed the importance of adequate marketing analysis, consumer focus and effective decision-making to assure new product success.

Chapter 3 will investigate the relationships between consumer, marketing and food new product development, assess consumer's food choice for the new products and explore how to satisfy consumers' needs for new products.
Chapter Three
Chapter 3

Literature Review (2)

The Consumer, Marketing and Food New Product Development

3.1 Introduction

It is difficult and costly to determine the likely success of a product in the marketplace, because of the complexities of the marketplace and competition (Stone, 1988). Today's competitive marketplace indicates that a comprehensive approach is needed to develop quality products that are well liked and satisfy specific consumer needs. Thus, successful NPD results from meeting consumers' needs (Johne and Snelson, 1988), and potential consumers' needs wants and specific demands should guide the firm's marketing effort (Hans, et al., 1996, Meiselman, 1994). Therefore, understanding consumer behaviour in food markets, as well as its implications to food marketing, is important in the development of successful new food products.

3.2 NPD, Marketing and Consumer

Research has shown that an outstanding market orientation leads to improved product development performance (Kahn, 2001). Market orientation comes from a consumer-focus perspective, and defining a market orientation relates to obtaining and using customer information, developing a strategic plan based on such information, and implementing the plan to respond to consumer needs (Rucket, 1992, Atuahene-Gima, 1995). Therefore, companies with stronger market positions and more effective NPD are more experienced in integrating marketing research into the NPD process, and pay
more attention to measuring consumer response to objective product attributes (e.g. product size or shape), as well as subjective measures (e.g. sensory evaluation or assessment of product nature) (Suwannaporn and Speece, 2000). Suwannaporn and Speece (2000) presented a simplified summary of marketing research’s integration into the NPD Process (Fig 3.1). This summary shows that marketing, as the NPD project develops a prototype, not only conducts more research to determine responses to an actual physical product and evaluates refinements of other product aspects, but also estimates market potential, outlines a marketing plan and forecasts sales. They pointed out that sales personnel also provide information from customers. Thus, new product ideas and information should derive from consumers inputs into R & D, sales and marketing departments (see Fig. 3.2). They developed a model for new product and process development (Fig 3.3), which indicates the strong relationship between the consumer, marketing and NPD. Clearly, in the NPD process, marketing must provide knowledge of what is happening in the marketplace, and knowledge concerning consumer’s needs can be obtained through market research. New product ideas or concepts may be created or evaluated by marketing and using this pool of knowledge, it can define concepts in more detail and develop preliminary marketing plans. R & D can then use this knowledge to create new product ideas. Accumulated knowledge can help NPD departments formulate new products to meet real consumer taste preferences and help to reduce the risk of NPD failure (Suwannaporn and Speece, 2000).
Fig 3.1 Customer interface for prototype development and market planning

(Suwannaporn and Speece, 2000: 606)
Fig 3.2 Customer information feedback for NPD process, Suwannaporn & Speece, 2000: 608

Customer

- Customer Need/Preference, Taste, Aroma, Physical Characteristics (Focus group: Sensory Evaluation)
- Customer Need/Preference, Market plan, Concept and Product test (Focus Group: Market Research)
- Customer Need/Preference, Sale date, Customer feedback, Market and Competitor information, (Direct Customer/Distribution channel Communication)

R & D

- Prototype

- Marketing

- Sales

New Product

Fig. 3.3 The continuous learning process model for NPD, Suwannaporn & Speece, 2000: 609

Customer

- Marketing (Existing Product)
  - *Market trend
  - *Customer need
  - *Competitor Activity
  - *NP idea/Concept
  - *Product Definition
  - *Market Plan

Accumulated Knowledge Pool

- NPD (New product)

- R & D (Existing Product)
  - *Customer Taste Preference
  - *Product trends

- M.R.

S.E.

- *Product/Process/Improve/Development
- *Cost reduction
- *Quality standardisation

- *New Product/process Development

Accumulated Knowledge Pool

- NPD P.M.

R & D (New product)

- Technology

- Manufacturing (Existing Product)
  - *Production
  - *Process/Improve/Development
  - *Cost reduction

- C.T.

- S.T.

Accumulated Knowledge Pool

- NPD P.M.

- Manufacturing (New product)

3.2.1. Marketing

The term marketing is frequently associated with selling and advertising. This idea may come as a result of the marketing practices used by companies in the earlier days or because these are usually the most visible marketing activities to the consumer. However, while selling and advertising are important, they are only part of the marketing concept, which encompasses many other different activities. Nowadays, all phases of marketing, foundations and practices, derive from the consumer, not from the need to sell what is being produced (Kotler, 2000).

Levitt (1960, p 50) contrasted between the selling and marketing concept:

"Selling focuses on the needs of the seller; marketing on the needs of the buyer. Selling is preoccupied with the seller's need to convert his product into cash; marketing with the idea of satisfying the needs of the customer by means of the product and the whole cluster of things associated with creating, delivering and finally consuming it."

Levitt's marketing idea rests on four pillars: target market, customer needs, integrated marketing and profitability. It is suitable for industries that tend to be product oriented. Witcher (1985) described such industries as tending to be preoccupied with distribution of the product, to an extent where the basic need, which the product satisfies, is lost sight of. The result is a failure of competitiveness as rival products, improved products or substitutes (perhaps from a totally different industry), erode markets. "The myopia of product oriented companies prevents them from seeing market changes until it is too late to do anything about it." (Witcher, 1985, p14)

Marketing has been defined in many ways which often appear to conflict (Witcher, 1985, Levitt, 1960, Hans, et al., 1996). However, the most widely accepted definition is
that proposed by Kotler: “Marketing is a social and managerial process by which individuals and groups obtain what they need and want through creating, offering and exchanging products of value with others.” (Kotler, 1991, p4)

Therefore, marketing as a management control skill, rather than as a strategic one, is more about creating needs and meeting needs. Marketing is a kind of exchange process with at least two parties being involved (in this exchange process). Each of these two parties has specific needs and wants and something of value to offer that may contribute to the realisation of the other party’s objectives (Houston and Gassenheimer, 1987). Both parties come into an exchange process with specific objectives (profit making and/or need satisfaction) and offer something of value to the achievement of the other party’s objective. Therefore, a particular exchange may give benefit to both parties (Hans, et al., 1996).

Food marketing as a scientific discipline is concerned with the exchange processes that occur between a food company or organisation, which offers food products or service to the market, and the target group(s) of potential buyers in its environment. This includes the policies and strategies which companies adopt to meet the target groups’ needs and wants more effectively and efficiently than their competitors do (Hans, et al., 1996).

3.2.2 Marketing Mix

Marketing contains more than advertising and sales. It involves all business functions that connect the producer to consumer. Marketing planning therefore encompasses issues of pricing, product design and performance to the extent that successful products must anticipate and meet consumers needs; physical distribution to the extent that the
marketer must deliver products to the consumers where and when they want them; and promotion, which includes advertising and sales among other forms of marketing communication. Thus, effective marketing planning must integrate all above elements, called the **marketing mix** (Garber Jr, et al., 2003).

The marketing mix is the set of marketing tools that a firm uses to pursue its marketing objectives in the target market (Kotler, 1991). Kotler (1991) popularised a four-factor classification of these tools called the four Ps: Product, Price, Promotion and Place. McIlveen (1994, P29) applied them in relation to the product development function:

1) **Product** attributes need to be defined and prioritised in terms of their contribution to the success or failure of the product in the marketplace (for example, consumer needs met, a competitive advantage and perceived quality level attained). Increasingly, products must also be designed to accommodate the needs of retailers and so ensure that they will actually be put on the shelf. Different product's level of inclusiveness, ranging from core product, which determines what the product functionally does for the consumer, to the product as marketed, which consists of the physical product augmented with all the marketing efforts associated with it (e.g. brand, packaging, additional services, and guarantees) need to be considered by marketers (Hans, et al., 1996). Product quality is the key issue for NPD in satisfying the consumer's needs. In the food context, quality attributes include sensory and hygienic quality (Hans, et al., 1996). It is also extremely important to develop and maintain a positive brand image, as consumer's choice behaviour is based on routine. A brand is not only a name or symbol, but also provides the consumer with a guarantee of specific product benefits (Aaker, 1990). For example,
new product introduction under the umbrella of established brand (Hans, et al., 1996).

2) **Place** includes the shelf position and influence that a product has over its competitors. Product developers should be their own best critics, and consider the potential for future competition. A product’s success is not only measured by its lifespan, but also by the project’s objectives, whether it is a long-term, large investment product or a quick-in quick-out version, with minimal investment and a short lifespan. The latter may have been designed to be processed on existing equipment lines and may also justify the use of lower cost/quality ingredients as opposed to products which are designed to generate repeat purchases and establish brand loyalty (McIlveen, 1994). On the other hand, a good distribution channel shortens the time, distance, and ownership gap between manufacturers and consumers and a distributive decision is concerned with getting the product to a particular place at a specific time (Hans, et al., 1996).

3) **Price and value**: Price is not the most important factor in competition but still is considered as one of the most important competitive factors in attracting consumers (www.smenet.com.vn/training/marketing-NPD.htm). Price should therefore reflect perceived value or competitive advantage whether it be a high-price, low-volume generic or a private label item (McIlveen, 1994). Based on a products’ perceived quality (value for money), the consumers evaluate prices and the prices of competitive substitute products. They also use price as an indicator for quality, while considering price as a financial sacrifice to obtain the product (Gabor and Granger, 1966).

4) **Promotion**: An R & D contribution should be to identify and focus on concepts that lend themselves to promotion, for example interesting shapes, colours or
sounds for products targeted at children, or in extending the ever-increasing range of "natural products" (McIlveen, 1994). Promotion in today's market is an essential tool to create brand awareness, and brand recognition as well as to communicate the product's benefits (image development) and to stimulate demand (Hans, et al., 1996).

In addition, the development of food products and food policy that underpin such developments should consider a fifth "P" - perspective and a sixth 'P' - people or perhaps more importantly perception (McIlveen, 1994). Thus, the perception that consumers have of food and particularly new food products is an important problem that many researchers seek to understand.

'Product' is the most basic marketing mix tool. It is the firm's tangible offer to the market, which includes the product quality, design, features, branding and packaging (Kotler, 1991). However, marketing strategy is based on the notion that product performance alone is not the only determinant of consumer preference and choice, but that all elements of the entire marketing mix interact to influence consumer preference and choice (Gaber, et al., 2003). Understanding consumer needs and behaviour is the prerequisite of planning of marketing management and the best way to earn competitive advantage.

### 3.2.3 Consumer Orientation in the NPD Marketing Context

According to Kotler (1991), marketing management has the task of influencing the level, timing and composition of demand in a way that will help companies achieve their objectives. Hence, marketing stresses the need for business managers to know who their customers are and why they choose their products rather than others. Successful
management depends more than ever on matching every aspect of the business strategy to the satisfaction of consumer needs, wants and interests. Indeed, as Foxall (1980) argued, in a competitive economic system the survival and growth of firms requires accurate knowledge about consumers: how they buy, why they buy and where they buy, as well as what they buy. Assael (1998) also suggested that managers must recognise their responsibilities to the consumer and to society when they pursue their profit maximising business strategies, products and services. Emphasis should be focused on product safety and product information. The better marketers understand factors influencing consumer behaviour the better they are able to develop strategies that meet consumer needs.

Although marketers try to adjust to consumers and their specific needs by means of marketing programs, which are expressed by the marketing mix, marketing processes are embedded in an environmental context, which includes such diverse factors as the economic environment, the cultural and social environment, the political and legal environment, the competitive environment and the technological environment (Fig. 3.4). Factors in each of these domains influence either the structure of customers’ demands or the marketing manager’s freedom in his decisions with respect to the marketing mix elements. Therefore, they may exert an influence on the marketing management process and marketing. Consumer behaviour research therefore serves as an important input for marketing (Hans, et al., 1996).
Fig. 3.4 The Marketing management approach in its environment (after McCarthy and Perreault, 1993)

(Hans, et. al, 1996:277)
3.3 Consumer Behaviour

'The consumer is the centre of all marketing activity, there is no question as to the importance of understanding how consumers are motivated, how they shop and how they use the products purchased.' (Vignali, et al., 2001, p463)

The term consumer behaviour is defined as the behaviour that consumers display in searching for, purchasing, using, evaluating, and disposing of products and services that they expect will satisfy their needs. The study of consumer behaviour is the study of how individuals make decisions to spend their available resources (money and effort) on consumption-related items. It includes the study of what they buy; why they buy; how and when they buy ...(Schiffman and Kanuk, 1991).

Solomon (1992) gave a similar definition:

"The process involved when individuals or groups select, purchase, use, or dispose of products, service, ideas, or experience to satisfy needs and desires." (Solomon, 1992 in Hans, et al., 1996, p278)

These definitions highlight that consumer behaviour comprises a very wide range of activities, involving consumer perception and consumer choice.

3.3.1 Perception

Consumer perception is a formal market-research measurement of how customers perceive products that compete in the market being studied (Griffin and Hauser, 1991).
According to Foxall (1980, p29), consumer perception is ‘the process whereby stimuli are received and interpreted by the individual and translated into a response.’ Similarly, consumers’ perception has been described as ‘the process by which consumers select, organise and interpret stimuli to make sense of them.’ (Assael, 1992, p44) Consumer perception has also been described as one of the processes of knowing (Markin, 1969), a subjective assessment based on an individual’s beliefs and attitudes which have been shaped by the sum of their life experiences. Using a very specific meaning of perception, Mullins (1993) explained ‘perception’ as the mental function giving significance to sensory stimuli like taste, sounds and feeling, leading to individual behavioural responses to a particular situation. Perception, therefore, is a personal interpretation regarding the information about a specific stimulus or product that has successfully attained a stage of significance in the mind of a consumer (Kuanesof. et al., 1999).

Various factors influence consumers’ perception, such as their background, personality, motivation, learning, previous experience, attitudes and current beliefs (Ongvisit & Shaw, 1989; Mullins, 1993). These factors vary from person to person, as different social (e.g. family or friends), cultural (e.g. beliefs and religion) and economic influences (e.g. image, price and quality) affect consumers’ perceptions (Assael, 1992).

An understanding of consumers’ perceptions is very useful for a food company when designing new products, as it plays a significant role in consumer behaviour and buying decisions.
3.3.2 Food Choices

'Choice is important to consumers-and when it comes to food, it could be argued that U.K. consumers now have more choice than ever before... Any single decision about choosing or eating food is the result of a whole jigsaw of conscious and subconscious influences, no one of which can be said to be the over riding influence.' (National Consumer Council, 1992, p1)

Food choice has been defined as a set of conscious and subconscious decisions made at any, or at all, of the stages in the food acquisition and provision process (Johnston, 1999). It is a complex phenomenon (Shepherd, 1988), influenced by many different factors, as consumers make their daily food choice within social, economic, cultural, environmental, nutritional, historical and market constraints, with none of these constraints existing in isolation from others.

3.3.2.1 Models of Food Choices

A model is an abstract conception of reality, a simplification of complex variables (Vignali, et al., 2001). In another words, it is a blue print which shows the essential elements of a larger system (Karmack, 1983). Models therefore act as a useful tool to understand consumer's behaviour and to aid marketing decisions. They normally have two basic uses for researchers: 1) they describe in simplified terms the market parameters or characteristics affecting purchase of certain types of goods or services. 2) they allow predictions to be made of the likely outcomes of specific marketing strategies. These two aims of description and prediction will include quantitative and
qualitative assessments, so that a fuller understanding (both present and prospective) of consumers is achieved (Vignali, et al., 2001).

Choice is present at every stage of the food provision process (Marshall, 1995, p3), the 'buying, preparing, cooking, eating and disposing of food.' Because choices are made at a multifactorial level, if any attempt is to be made to persuade people to make alternative food choices, for example, the adoption of a new food product, then expecting one discipline to successfully implement those changes would be shortsighted and unrewarding (Johnston, 1999). Various descriptive and predictive models of food choice have attempted to obtain a better understanding of the multifactorial influences on food choice. Amongst the most widely used and discussed are those of Randall and Sanjur' (1981), Shepherd' (1989), Wheeler' (1992) and Ajzen and Fishbein' (1980). These models show compatibility in the many factors of food choice incorporated, but frequently, there is difference in emphasis and approach. Examples of food choice models are shown in Fig 3.5-8. (the models proposed by Randall and Sanjur (1981) (Fig. 3.5), Shepherd (1989) (Fig. 3.6), Wheeler (1992) (Fig.3.7) and Ajzen and Fishbein (1980) ( Fig 3.8). ) These models will be discussed in greater detail and Ajzen and Fishbein model is also used as a method within this research.

- The Randall and Sanjur Model

Three main groups 'characteristics of the food', 'characteristics of the individual' and 'characteristics of the environment', make up the core of this model (Fig. 3.5). Most inter-related variables within these three sections (e.g. age or sex in 'characteristics of the individual'; taste or appearance in 'characteristics of the food'; and season or employment in 'characteristics of the environment') exert their influence on food
Fig. 3.5 Factors influencing food preferences. Randall and Sanjur, 1981: 151

Food Consumption

Food Preference

Characteristics of The Individual
- age
- sex
- education
- income
- nutrition knowledge
- cooking skill /creativity
- attitude to health and the role of food to it

Characteristics of The Food
- taste
- appearance
- texture
- cost
- food type
- method of preparation
- form
- seasoning
- food combinations

Characteristics of The environment
- season
- employment
- mobility
- degree of urbanisation
- size of household
- stage of family

Fig. 3.6 Some factors affecting food choice and intake. (Shepherd's 1985 Model) (Shepherd and Raats, 1996: 34)

Food
- Physical/chemical properties
- Nutrient content
- Physiological effects
  - e.g., satiety, hunger
  - thirsty, appetite

Person
- Perception of sensory attributes
  - e.g., aroma, appearance, taste, texture
- Psychological factors
  - e.g., personality
  - experience, mood, beliefs

Economic/Social
- Price
- Availability
- Brand
- Social cultural
- Attitudes
  - e.g., sensory properties
  - health / nutrition, price/ value

Food Choice

Food Intake
consumption by the intermediate influence of food preference. This model focuses on human food choice, and describes the main determinants for food selection, as ‘food requirements, preferences, selectivity and food availability’ (Randall & Sanjur, 1981, p151-152). It is based on Ellis, Wiens, Rodel and Anyway (1976)’s Model, which provided a framework for the food selection process of the whole animal world including humans. The three characteristics mentioned above, those of the food, the individual, and the environment in this model, influence each determinant. Each independent variable within each ‘characteristic’ box is random, and not based on any weighting (Randall & Sanjur, 1981). Randall & Sanjur (1981) concluded that the model as applied in their research (investigating vegetable consumption based on choice for nutrient content and preference), clearly showed strengths in associations, but they would prefer the model to show a stronger relationship between preference and consumption.

- The Shepherd Model

Shepherd’s model (Fig. 3.6) describes three main factors acting on food choice (and ultimately food intake): the food, the person, and the external economic and social environment, these factors being similar to the core elements of Randall & Sanjur’s model. There are subsidiary factors within each of these three groups, some of which have a direct influence on food choice whilst others are more indirect (Shepherd, 1989). (For instance, as consumers will not necessarily be aware of a link between chemical property of a food and a food’s sensory characteristics and their subsequent preference of food, chemical property of a food as a factor cannot directly effect food choice. However, variations between concentration levels will potentially have a major impact on sensory characteristics, making the food either become more or less acceptable.)
Both Shepherd’s model (Shepherd, 1989) and Randall & Sanjur’s model (Randall and Sanjur, 1981) examined the personal, socio-economic and food related factors. They share some common features, which include the identification of culture and socio-economic factors, personal characteristics (e.g. age and gender), and factors involved with the food itself (e.g. appearance or taste). However, Randall & Sanjur’s (1981) model emphasised the impact of these factors on food preferences; Shepherd’s (1989) model focused on their influences on food choice and resultant food intake. He more distinctly suggested that the act of choosing (food choice) results from a combination of food, person or socio-economic factors.

- The Wheeler Model

The two models above, are catalogues of the likely influences on food choices and intakes (like the identification of cultural and socio-economic factors, personal or individual characteristics, factors included with the food itself and the way it has been promoted) (Bareham, 1995; Shepherd, 1996). Emphasising the multi-factorial nature of the food choice, Wheeler (1992) devised her model to include what she believed to be missing from other models. She suggested that food choice could be described as a hierarchy of constraints (Fig 3.7), such as ‘culture’, ‘availability’ and ‘costs’, which are beyond the control of the individual. Each constraint can be analysed at different levels of detail. Some of them may over ride others and the different factors, do not carry equal weight. For example, two levels of constraint in Wheeler’s model, availability and affordability are at a more conscious level when dealing with food choice. Generally speaking, availability is determined by the capabilities of the agricultural, manufacturing and retailing industries; affordability relates to both the individual’s or the household’s entitlement to produce food, income being the most obvious and common example, as well as land ownership.
Fig. 3.7 A hierarchical model of food choice, Wheeler, 1992
(Wheeler, 1992 : 66)

Fig. 3.8 Schematic representation of the components of the Ajzen and Fishbein model, 1980
(Shepherd, 1989: 13)
The Ajzen and Fishbein Model

The three models above describe the multi-factorial nature of the food choice rather than being predictive. They indicate that food choice is influenced by many inter-relating factors, but seldom emphasise that attitude and beliefs will influence food choice. However, norms, beliefs, knowledge and attitudes are prime determinants of food choice (Rozin, 1996). Attitude and beliefs may prove useful concepts in attempting to integrate the different inter-relating factors that influence food choice (Shepherd, 1988). It is necessary to investigate the relationships in a clear conceptual framework, in order to draw a picture of the role of attitude and beliefs on food choice. The attitudes model of Ajzen and Fishbein (1980) (belief, attitude, intention and behaviour), has been suggested for food choice studies by a number of researchers (Johnston, 1999; Shepherd, 1988; Meiselman & Macfie, 1996). It is useful for integrating diverse influences on food choice. The model was first presented as the Theory of Reasoned Action by Fishbein and Ajzen in 1975. It is a model linking beliefs, attitudes and behavioural intentions (TRA) (Fig 3.8). This model predicts behaviour by measuring intention to perform the behaviour. It has been applied extensively to food studies and has been shown to have good predictive power (Saegent and Young, 1983; Shepherd and Stockley, 1985; Matheny, et al., 1987; Tourila, et al., 1988; Toweler & Shepherd, 1992). Thus, it will be used in this research to test the relationship between consumer’s attitudes and intentions to try new food products.

Ajzen and Fishbein (1980) argued that beliefs and attitudes should be assessed as directed towards behaviour rather than as directed towards an object (Fig 3.8). Two components determine a person's intention to perform a behaviour, such as eating a specific food. One is a person's own attitude (whether that person sees eating that food
as good or bad); the other is perceived social pressure to behave in that way (whether she /he believes that other people see the eating of that food as good or bad), called the subjective norm. ‘Behavioural beliefs’ are an individual’s own beliefs about the expected outcome of the behaviour in question and are predictive of attitude. They are weighted by a person’s ‘evaluation’ of the expected outcomes as good or bad. Normative beliefs, which relate to the person’s beliefs that specific individuals or groups think he/she should or should not perform the behaviour in question, are predictive of the subjective norm. The person’s ‘motivation to comply’ with the perceived social pressures of specific groups or individuals weights the normative belief.

The Ajzen and Fishbein model has been applied to food choice, as it can indicate key beliefs and attitudes that are part of the food selection process. These key factors may inform education or promotion intended to implement changes in behaviour (Ajzen and Fishbein, 1980; Shepherd, 1989; Johnston, 1999).

### 3.3.2.2 Factors Influencing Consumer’s Food Choice

In predicting consumers’ food choice for new products, it is important to understand the factors influencing their food choice. Many researchers have studied decision-making for food choice in the discipline of consumer behaviour. Food-related acceptance, choice and preference are driven by many factors (Section 3.3.2.1), which may be classified as internal or external. Internally, consumers vary according to their personalities, values, beliefs and experiences, which influence their attitudes and purchasing behaviour. Externally, many factors may also influence the decision to buy one new food product over another, from the socio-economic milieu of the individual, to the immediate buying or consumption environment.
An alternative categorisation of the many factors influencing food choice is into economic and non-economic factors:

1. economic factors: food prices and consumer's income
2. non-economic factors: all other factors which have a bearing on consumers’ beliefs and attitude, e.g. convenience, marketing, technology and new product development, the media and other communication (e.g. promotion, advertising and healthy eating messages) (IGD, 1998).

The relative importance of the above factors changes from consumer to consumer (e.g. different stage of life: young or old).

- Economic Factors

Prices and incomes gradually assumed a dominant role and availability became less of a constraint following the Second World War. Diets changed from a reliance on cheaper staple foods, such as bread, to include an increased proportion of more expensive animal products and to foods which were easily prepared (Wheelock, 1986). The IGD (1998) has suggested that price and income were the most important factors influencing food choice.

Price

The price of food is important to consumers, as it affects their ability to exercise choice in the market place. According to the National Consumer Council (NCC) 1992, every family in Britain spends above 10% of its income on food and it seems that food price trends have a major impact on everyone’s standard of living. For low income families, price becomes more important, as they spend a larger proportion of their income on
food. There is a substantial amount of evidence provided by IGD to suggest that when the price of a food increases, the amount which consumers buy tends to decrease (IGD, 1998). However, the National Food Survey (MAFF, 1998) showed that the extent to which food purchases fall as a result of price increases varies from product to product (Table 3.1). This illustrates the relationship between the price and consumption, known as "price elasticity of demand". Therefore, price influences consumer buying behaviour.

In recent years, it has become clear that the influence of price on the demand for any particular food group has been diminishing (MAFF, 2000). A survey conducted by Harris Marketing International (Anon, 1985) showed that 55% of respondents considered price as the most important reason for choosing a store compared with 30% for "convenience" in 1980. By 1985, 'price' had dropped to 35%, suggesting price to be of diminishing importance. The IDG (1998) has suggested that food choice in the 1970's was strongly influenced by price and incomes, but that since the 1980's, it has increasingly been influenced by consumer's attitudes.

**Table 3.1 Effect of a 10% Price Increase on Consumption**

<table>
<thead>
<tr>
<th>Product</th>
<th>% Fall in Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef and Veal</td>
<td>7</td>
</tr>
<tr>
<td>All Fruit</td>
<td>5</td>
</tr>
<tr>
<td>Milk &amp; Cream</td>
<td>4</td>
</tr>
<tr>
<td>Cheese</td>
<td>3</td>
</tr>
<tr>
<td>All vegetables</td>
<td>2</td>
</tr>
<tr>
<td>Eggs</td>
<td>1</td>
</tr>
<tr>
<td>All Bread</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: MAFF, 1998
Consumers’ income

Both to National Food Survey (MAFF, 2000) and The Dietary and Nutritional Survey of British Adults (Gregory et al., 1990) indicate that food intake varies by income. The IGD (1998) illustrated the typical relationship between a consumer’s income and the consumption of a food: food consumption rises as income rises, but at a diminishing rate. Thus, even if income increases considerably, there is a limit to how much food a household can consume (IGD, 1998). People on a low income spend proportionally more of their income on food than those on a high income. Skipping meals becomes a common coping strategy when money is tight (Keane and Willetts, 1994). Notably, people on low incomes consume less fresh fruit and vegetables, fruit juice, low fat milk, wholemeal bread, and fish and more meat products, whole milk, white bread, sugar and potatoes compared to more economically advantaged consumers. A decreased income has been linked to a change in the variety or quantity of food intake. Income has also been found to directly affect access to a healthy diet (Department of Health, 1996). Food choice in lower income households reflects a complex interaction between economic circumstance, limited access to a wide variety of reasonably priced foods and cultural norms and expectations (Forsyth, et al., 1994). Therefore, a change in income has a destabilising effect on food choice.

Ritson and Hutchinson’s (1995) investigation showed that consumers switched from staple foods to more luxurious, convenience and added-value foods, as their incomes rose and this trend is still evident today. Thus, income changes directly affect food habits and food choice, and the reason for this change would also indirectly affect food choice (Anderson & Morris, 2000).
Non-economic Factors

It is difficult to generalise when analysing the non-economic factors which influence food choice, as all consumers are different and each has slightly different needs. However, in order to produce and market suitable products for different segments of the market, retailers and manufacturers still have to group consumers together in meaningful ways and study the factors which influence consumer buying behaviour (IGD, 1998).

Social factors

As the personal and social values of consumers and their deeply held feelings of what is important in life influence both consumer attitudes and behaviours, marketers, consumer psychologists, and public policy makers have an interest in these social factors. Homer and Kahle's (1988) study showed that in reflecting desired end states or ways of living, values may in part represent some of the fundamental motives that drive and direct consumer behaviour. Therefore, uncovering associations between abstract, general values and more specific product attitudes and behaviours provides some explanation for differences across consumers for these variables. Many researchers (Delamont, 1995; Hartly, 1979; Kuznesof, et al., 1999; Prescott, 1998; Berard and Marchenay, 1995; Kim, et al., 2002; Blades, 2001) found strong evidence that both socio-cultural factors and social-pressure were main factors influencing consumer’s food choices.

1. Socio-cultural Factors

Culture plays a central role in shaping people’s attitudes to food, eating and nutrition (Sobal, 1998). Both Delamont (1995) and Hartley (1979) state that food consumption
habits are shaped by socio-cultural factors and available local natural resources. According to Berard and Marchenay (1995), food products are land-based by nature, and therefore they are of regional, geographic origin. Thus, consumer's food preferences and perceptions are shaped by the geographical and historical aspects of a culture. For instance, some countries, such as Britain, have been comparatively isolated. Some countries, such as China, cover vast areas and display great regional diversity (Wright, et al., 2001). Divergence in culture (including religion and tastes) can be seen between Britain and China. In Britain, because of reasons of geography, food was rarely of good quality and often in short supply, to the extent that many working class women in Victorian Britain subsisted on a diet of mainly bread and tea (Roberts, 1990; Tressaill, 1993). In China, a strong family culture appeared more significant than in more industrialised countries (e.g. Britain) because of the greater emphasis within such communities on the inclusion of the extended family and the importance placed on food. The Chinese have different food preferences and habits from the westerners (Wright, et al., 2001). Confucianism is strong in its support of obedience to authority and the importance of good family relationships so that the principle of whom you know in China has a philosophical basis, although China has liberalised its trade with the outside world during the past two decades. With this hierarchical system, China is 'still an very much an economy of planning and control where notions of indigenous culture and food tastes have very strong roots ......' (Wright, et al., 2001, p351).

Cross-cultural differences in liking for different aspects of food products, as well as in indicators of perceived quality, and place of purchase, have also been found in cross-cultural studies (Grunert, 1997). Prescott's studies (1998), comparing taste and food perceptions and preferences of Australian, and Japanese, and other east and south-east
Asian cultures, such as Taiwanese and Korean also indicated that the different cultures influenced people’s food perceptions and preferences. For example, the Japanese were believed to be highly sensitive to variations in tastes and food smells compared to their western counterparts. Thus, he concluded that there were reasons to believe that cultures might differ in perceptions of sensory qualities, which could underlie differences in taste or food preferences. Understanding cross-cultural differences therefore is clearly important in trying to predict consumers’ responses, especially as consumers’ food choice for new products. Other research has demonstrated multiple sources of cross-cultural differences in responses to food sensory stimuli. These include different attitudes, especially towards foods labelled as healthy or low fat (Aaron, et al., 1994; Solheim and Lawless, 1996; Stafleu et al., 1994); differential responses to novel foods as a function of both personality factors (Pliner and Pelchat, 1991) and attitudes towards nutrition (McFarlane and Pliner, 1997); and responsiveness to sensory cues (Tepper, 1992).

However, these cross-cultural differences have been eroded, as the links between food and territory have diminished over time by various means, including changes in food production and transportation technologies, urbanisation, and consumer exposure to non-local experiences through travel and the media. ‘Delocalisation’ of the food system has led to a similarity of lifestyles and habits across regions such that food consumption patterns within a region no longer necessarily reflect the production patterns (or constraints) of that region (Kuznesof, et al., 1999, p199).

On the other hand, popular media from BBC2’s Rhodes Around Britain or Radio 4’s The Food Programme showed that there has been a renewed interest in foods strongly
identified with a place or region of origin (Berard and Marchenay, 1995; Montanari, 1994).

The development of tourism has promoted an increasing number of people to experience other food cultures and liking for different foods has caused an increased demand for ethnic foods. For example, in Britain, immigrants from the Asian subcontinent and west Indies have also established a demand for their own foods and these became available in the market place where they can be reached by sectors of any community seeking new experiences and enjoy trying new foods (van Stryp, 1994).

2. Social Pressure Factors

A huge literature has demonstrated the substantial effects of social influences on choice outside of the domain of food (e.g., Kim, et al., 2002; Wu, 1995; Anderson and He, 1998).

Health professionals (e.g. doctors and nurses), educators (e.g. teachers and health promotion officers), as well as caterers and food suppliers affect food choice (Blades, 2001). Birch (1987) stated that teachers and peers’ choice deeply influence children’s food choices. This is because the family remains the major agency of socialisation from infancy to adolescence (Giddens, 1993). Warwick, et al.’s (1999) research has confirmed that the family and peers affects food choice.

These influences can be regarded as ‘information and explanations’ influence and ‘social pressure’ influence, and have been explained using Ajzen and Fishbein’s Model (TRA) (Shepherd, 1989). Information on the health consequences of consuming
different foods, and the preparation of foods, has been intentionally provided and
popularised for the public by professionals, food providers and parents. Some of this
information is highly personalised, as it attempts to fit a person’s preferences with what
is considered a healthy diet, other information affects food intake and food choice, for
instance, when healthiness of a particular food is talked about while someone present is
eating it (Rozin, 1996).

**Convenience**

The importance of convenience to consumers when choosing food depends on how
consumers spend their time (IGD, 1998). The Henley Centre survey (1998, source:
IGD, 1998) revealed that most consumers spend about 8.5 hours per week eating food
on average and consumers in employment spend about 40% less time cooking than
those who do not have a job (IGD, 1998). Therefore, there has been a significant shift in
demand from the basic commodities, which require substantial preparation to foods
such as chilled foods and frozen foods, which can be cooked quickly with a minimum
of time and effort (Wheelock, 1986). This trend was also associated with the growth in
the proportion of married women at work, which had increased from about 20% in the
1950s to over 70% in the 1980s (Wheelock, 1986). Families with two adults at work
have less time at home to prepare meals, but the two incomes can provide the household
with the resources to buy the relatively expensive convenience foods. Similarly such
households can afford modern types of food preparation equipment, such as food
processors and microwave ovens (Wheelock, 1986). However, Gofton (1995) suggested
that convenience foods are not just for time and labour saving. A tendency towards
much less structured, and more individualistic eating, may well illustrate changes in the
ways in which household relations are articulated. For example, sharing entertainment,
or participating in the consumption of information, is replacing food consumption as a form of sociality. “Food has moved from being the focus of household ritual to being an adjunct, or an embellishment, to other kinds of household activities.” (Gofton, 1995,p175) Warde (1999) summarised Gofton’s conclusions as:

1) Gender divisions of labour are little altered.
2) Food habits have changed with the increased use of convenience foods.
3) Convenience foods are not just about time and labour saving.
4) The symbolic significance of meals has changed because they represent a new set of gender and family codes of behaviour.

Thus, the existence of “convenience foods” symbolises a new stage in the development of space-time ordering. This is not just a function of people wanting or liking it, but is a response to a special configuration of the problem of temporal organisation of daily life. Many consumers are constrained in the face of more pressing social obligations to eat convenience foods as a provisional response to transient problems of scheduling in a de-routinised society (Warde, 1999).

The IGD (1998) divided consumers into three types: the meal assembler, the grazer and the restaurateur. The first group—employed consumers, place a higher value on their free time and therefore prefer to buy foods which take less time to prepare and cook. A need that is satisfied by the convenience foods that have been introduced into the market. A successful example is “Tesco’s finest range”, which offers consumers a ‘restaurant eating experience at home,’ through a range of fresh and chilled premium quality foods. ‘Grazers’ are being catered for by a widening range of new products which can be easily consumed on the move, but which represent constituents of a meal,
such as, cheese dippers, ready-made sandwiches, hot drinks in a can and breakfast cereal bars. The last group is a result of the increasing popularity of eating away from home. ASDA is a good example of a retailer that has quickly introduced take-away food into the retail market (IGD, 1998).

**Attitudes to Health and Safety**

A COMA report (1998) has shown a significant rise in levels of concern and avoidance of foods that the consumer regarded as unhealthy. There has also been increasing awareness that the household’s diet could be improved (Armistead, 1998). Attention to both the NACNE (1998) and COMA (1998) reports has served to raise public awareness of the relationship between food and health (Department of Health, 1998). In the UK, as the government’s strategy—‘Our Healthier Nation’ has been promoted and more and more health messages have been accepted by consumers, more and more consumers want to try more healthy foods (IDG, 1998).

A survey conducted by the Food Policy Research Unit at the University of Bradford in 1986 found that 94% of respondents agreed that “Everyone’s a bit more conscious of health these day”; and 95% agreed that “People are becoming a lot more conscious of what they eat nowadays” when asked specifically about food. Sales data from a major supermarket chain in 1986 showed that food consumption patterns were in line with recommendations, such as a growth in demand for high fibre, polyunsaturated, low-fat, low sugar food products (Wheelock, 1986).

While consumer concerns about healthy food and healthy eating are relatively recent, concerns about the safety of food have long been major influences on food purchasing
Li Cheng

Chapter 3 Consumer, Marketing and Food New Product Development

(Southgate, 1996), as consumers want to be confident that the food that they buy and eat is safe. They are concerned about the use of additives, veterinary drug residues, pesticide residues and the incidence of microbiological contamination (NCC, 1992). These concerns pertain to many different types of health risks related to food and eating, and are produced by the techno-economic changes in industry and agriculture (Wandel, 1994). Recently, food safety has become a major issue of public concern in the U.K, encouraging the government and the food industry to take steps to rebuild consumer confidence, as bacterial outbreaks, BSE, and alleged risks associated with genetically modified food have reduced consumer confidence in the healthiness of food products (Ruth, et al., 2001). Food choice is often influenced by the psychological interpretation of product properties (Rozin, et al., 1986). Perception of food safety risk compared with actual risk is one such psychological interpretation which influences the consumers’ attitudes and behaviour with respect to the purchase of food products. Perception of food safety risk has consequences for both consumers and producer welfare, and the overall effectiveness and efficiency of the food supply chain (Ruth, et al., 2001).

Quality

Consumers expect their food to be of a high quality. The variety, content, composition, nutritional value, taste, freshness and appearance should be based on consumers’ demands (NCC, 1992). Quality means different things to different people, therefore it is necessary to consider the range of characteristics which contribute to quality (Wheelock, 1986).

Imram’s research (1999) revealed that many factors such as taste, odour, information from labelling and images, packaging, prestige, nutritional content, health belief,
familiarity and brand loyalty affected consumers’ perception of the quality of a food product. 

Imram also noted that consumers have strong preferences for an appealing appearance and that products on the supermarket or service shelf can only be affected by anticipatory attributes, which are visual cues. Blades (2001) similarly reported that food quality in relation to, for instance, flavour, appearance, texture and odour has an effect on food choice, and that presentation of food has an increasing influence in western society.

*Promotion (Advertising and Marketing)*

For most foods, promotion is used to inform consumers about a product, persuade them to buy it or tell them of the food product’s existence and benefits. The IGD report concluded the following:

- “advertising and marketing are used to raise product awareness and communicate the potential benefits of a product to the consumer (informing, persuading and reminding)

- advertising and marketing can be used to influence consumer attitudes.” (IGD, 1998:203)

### 3.4 Important Consumers’ Issues on New Products and NPD

In Buzzell and Nourse’s study (1967), the most important potential value of new products for consumers were increased choice (variety), reductions in preparation and purchasing time (convenience), improvement in flavours (quality) and improvement in nutrition (health concerns). Thirty years later, Amitstead (1998) also reported that
healthy eating, price, children’s and other adult’s preferences and ease of preparation play a major role in NPD.

Consumer attitudes towards health and food change relatively slowly over time, as the consumer in their choice of food has a whole plethora of other aspects which impact on the priority which health concerns have on their agenda (Amitstead, 1998).

There have been great shifts over the past 10 years with a more relaxed macro view emerging in the 1990s following more micro concerns with specific ingredients in the 1980s. For example, media coverage of major issues has affected the consumer in relation to the BSE issue. Therefore, food safety is another consumer concern. Consumers must be satisfied that any new product and process is safe, especially for food (NCC, 1992). Some new food products such as irradiated foods and genetically modified foods are still little understood by the most consumers and are perceived as potentially dangerous (NCC, 1992).

People are now taking a serious interest in the way food is produced and it is probable that there are a number of different factors driving this including:

- "Concern about the incorporation of chemicals such as pesticides that may be harmful.

- Beliefs that food produced by low intensity methods is more wholesome than food produced by high intensity methods.

- Objections to high intensity methods because of concern for animal welfare and for the environment. Modern methods of grain production are associated with the
removal of hedges and the cultivation of established pasture in National Parks.”

(Wheelock, 1986, p42)

In general, consumer concerns such as variety, convenience, health and safety, quality and price should be considered by the manufacturers during their new product development process and market introductions. The change of consumers’ concerns results in dietary changes, which can be created by a wide range of factors, many of which are interrelated. Fig 3.9 shows how some of the many factors interact with one another (Southgate, 1996). Understanding this integration is central to understanding consumers’ food choice and dietary change, and is especially vital to achieving a successful new food product.
Fig 3.9 Interrelationships between the factors involved in dietary change. Some interactions have been omitted in the interests of clarity. Southgate, 1996 (Southgate, 1996: 387)

Changing societal norms, attitudes and beliefs

Economic factors

Immigration, travel

Novel foods

Food Purchases

Appropriate foods, meal patterns

Methods of preparation

Food availability

Increased variety

Retailing

Greater efficiency

Processing methods

Improved yields

New varieties

Changes in animal breeds and husbandry

Food Production

Introduction of New Products

Advertising

Seasonal supply

Controlled atmosphere

Refrigeration

Food storage

Food technology

Food safety

Concerns about health

Nutrition

Leisure activities

Official dietary advice

Changing role of women in society

Economic factors

Working patterns

Cultural factors

Economic factors

Immigration, travel
3.5 How to Satisfy Consumers' Needs for a Successful NPD

In the IGD investigation, there were about 4,600 new product launches in 1995, but many of them failed to be introduced into the market, because many of them failed to meet consumers' needs (IGD, 1998). Thus, understanding consumers' demands is the most important aspect of the new product development process.

The importance of consumer satisfaction to the NPD success of a business is widely acknowledged. However, many companies, including those in British and Chinese food sector, struggle to satisfy their customers. Responsibility lies partly with a failure to fully understand the basic building-blocks of consumer satisfaction as a concept. Research conducted by Leatherhead Food RA, investigated a group of British food industry managers, and then identified six key drivers of consumer satisfaction which may be applied to all types of organisation, including those out-side the food industry. The six key drivers are described as follows (Adebanjo, 2001):

1) Refine and understand the consumer: Understanding who the consumer is and what his/her specific needs are is fundamental to consumer satisfaction. This might be easier for companies that service other companies rather than those that serve the general public, as they are likely to have a smaller customer base and are readily able to identify who their key consumers are and therefore provide a tailored service.

2) People: Satisfying the consumer will depend largely on having a consumer-focused culture, as most consumer contact is with the people.
3) Organisation: Organisation must be centred on delivering the needs of the consumer. This might include: a) a focus on consumers in the company mission; b) the supplier strategies being aligned to deliver the mission; c) processes being compatible with consumer needs and expectations; d) ongoing self-assessment to ensure that the processes and strategies are still relevant and effective; e) flexibility and a readiness to change when required; and f) as much as possible, suppliers working in partnership with their consumers.

4) Communication: Effective communication is essential to ensure clarity of direction and to monitor progress towards NPD success.

5) The offering: The offering means that part of the actual product or service that is the subject of the transaction between supplier and customers. In addition to product issues (i.e. availability, quality, presentation, functionality), other factors to be considered in the offering include the environment and service level.

6) Agents of dissatisfaction, such as:

- Poor labelling or non-identification of GM foods, and a lack of organically growth alternatives.

- Non-identification of products containing nuts could have serious results where there are allergic consumers.

- Consumers and the public in general are becoming increasingly environmentally aware and friendly. A perception that an organisation is not environment-friendly could lead to dissatisfaction, even if other satisfaction drivers are present.
A similar reasoning applies where consumers have ethical concerns. This applies to a whole range of sectors including the food industry, and may include issues concerning how organisations develop, test, source, manufacture or market their products or even the economies in which they operate. Some retailers should be noted as well (Adebanjo, 2001).

It can be concluded that satisfying consumer needs is the most important focus of a marketing strategy. A consumer need is a description, in the consumer’s own words, of the benefit to be fulfilled by the product or service (Griffin and Hauser, 1991). Two hundred to 400 consumer needs have been identified by discussions with consumers. These include basic needs (what a consumer will tell you that he/she or they want a product to do) and exciting needs (those needs which if they are fulfilled, would delight and surprise the consumers). Some consumer needs have higher priorities for customers than do other needs (Griffin and Hauser, 1991). To meet consumers’ needs has been proven to be one of the keys to the success of NPD, as practice in the food industry showed the importance applied to perceived consumer’s needs rather than product features or engineering solutions.

It can be strongly argued that consumers will not continue purchasing a new product unless it satisfies a particular consumer need. This does not mean that all new technologies, processes and products are developed to satisfy consumers’ needs. However, for food companies to be successful in the market, they must bring added benefits to the consumer. These benefits do not necessarily have to be rational, logical or understandable to everyone. All consumers buy products for different reasons, as they satisfy different needs (IGD, 1998). These benefits might include prestige, trust,
perceived better taste, or perceived better consistency. Some consumers will be willing to pay more for these additional benefits. From the industry's perspective, the food manufacturer and retailer have combined to offer the consumer added benefits. In many cases they will have done this by setting out to understand what the consumer wants and developing the product accordingly (IGD, 1998).

All in all, consumer attitudes are the most important factor in food product innovation, as getting it wrong may threaten company survival. If consumers do not want the product, no amount of technology will help. Therefore, competitiveness is all about how to meet consumers' demands profitably (Mcllveen, 1994). Mcllveen noted (1994) that only a combination of changes in people, their approach and appropriate use of tools, techniques and systems makes improvements realised; and its potential in giving the right approach towards a clear, measurable and continuous process of managing change. Therefore, in order to reduce the risks involved and to improve the effectiveness of product generation, sufficient attention must be paid to analysing, assessing and in many cases revitalising the new product development (NPD) process.

Simultaneously, as the consumers become more demanding and they are less predictable in their buying behaviour, and their eating habits, and are more concerned about health related issues, there is a continuous need for new products and a more differentiated food product assortment (Linnemann, et al., 1999). For new products to be successful in the market, they must bring added value to the consumers.
3.6 Conclusion

It is clear that the relationship between market changes, consumer behaviour and product development is strong. In order to succeed in the market, new product development must meet consumers’ demands. However, satisfying the consumers’ demands is not a simple job of putting the new product in the front of them. A number of factors need to be considered. Understanding the bases of consumers’ food choice is a most important issue for food companies. Food choice is influenced by a multitude of factors, which relate to wider cultural, social, and economic constraints. It is impossible and naïve to expect to explain food choice by one factor alone. Several models attempt to explore the multi-factors of food choice. The Ajzen and Fishbein model has been described as one of the most useful tools to explore the relationship between food choice and attitude and beliefs. Using this model as a blue print, the basis of consumers’ food choice can be discussed with respect to their attitude and beliefs. Chapter 4 and Chapter 5 will test this model, explore the research question, and describe the methodology chosen to explore NPD based on both the food industry and the consumer’s perspective in Britain and China.
Chapter Four
Chapter 4

Methodology (1) Methodological Theories

4.1 Introduction

Chapter 2 and Chapter 3 explored the literature on NPD in the food industry and consumer’s food choices, particularly in relation to new products. This chapter discusses the research process and the formulation of the conceptual framework and theoretical theories behind the research. Both a quantitative approach and qualitative approach were used in this research. A description of the quantitative and qualitative research position is given, with discussion of their validity and reliability. Finally, an account of how the sample of respondents was defined is given. Therefore, fundamentals of research design, and the sampling and methodological theories adopted in this study of new food product development, are discussed in this chapter.

4.2 Research Process

‘The research process is the overall scheme of activities in which scientists engage in order to produce knowledge; it is the paradigm of scientific inquiry.’

(Frankfort-Nachmias and Nachmias, 1996:20)

The research process is a continuous one, which has been illustrated in a model developed by Frankfort-Nachmias and Nachmias (1996). The model consists of seven main stages: problem, hypothesis, research design, measurement, data collection, data analysis, and generalisation (see Fig 4.1). Each stage is affected by theory and it, in turn, affects theory as well. The model provides a schematic description of the interactive relationship between the theory and the process, which
Fig. 4.1 Research Process: Chava Frankfort-Nachmias & David Nachmias's Model

Research Process

Problem

Generalisation

Analysis

Data Collection

Theory

Hypothesis

Research Design

Measurement

Source: Chava Frankfort-Nachmias & David Nachmias's: 1996:

Fig. 4.2. A General Conceptual Framework of This Research (for the whole research)

INPUT → Consumers' Demand → Environment (e.g. competition) Decisions Food Industry Actions NP OUTPUT

Feed back

Based on David Easton's Model (1979)

Note: NP: New Products
begins with the development of a research problem definition, and ends with a tentative empirical generalisation. As the generalisation finishing one cycle is the beginning of the next cycle, most of the characteristic features of the research process have a cyclical nature. This cyclic process reflects the progress of a scientific discipline. As scientific method requires strict adherence to the rules of logic and observation, and scientific knowledge can be validated by both reason and evidence of the senses, the research process is also a self-correcting process. Tentative generalisations, or hypotheses, about research problems are tested by researchers during this process.

This research will mainly follow this process, and starts with research questions — 'Is it important or necessary for the Chinese and British food industry to develop new products to meet consumers’ needs?' and 'How does the food industry in both countries develop a successful new product to fulfil consumers’ demands for new products?' based on the theories of NPD in the food industry and factors affecting consumers’ food choices. Decisions can be made on the role of the researcher and strategies for research design, choosing measurement, data collection and results from data analysis, leading on to tentative empirical generalisations which will in turn be the beginning of the next cycle.

4.3 Theoretical Framework of the Research

A conceptual framework creates a structure or skeleton of the research. It is systematically placed in a broad structure of explicit positions, statements of relationships between more than one empirical property, to be accepted or not (Frankfort-Nachmias and Nachmias, 1996).
All methods in this research aim to answer the research questions—'Is it important or necessary for the Chinese and British food industry to develop new products to meet consumers' needs?' and 'How does the food industry in both countries develop a successful new product to fulfill consumers' demands for new products?' Before it was possible to investigate this question, it was necessary to understand the consumers' needs for new products and then it was necessary to establish what the actual consumers' food choice is. This research is based on two areas of investigation. One is from the consumers' side to explore the factors influencing consumers' food choices for new products, the other addresses the food industry to investigate how it can develop new products to fulfill consumers' needs. In order to combine these two areas of study, the research is based on Easton's model (1979), which has been shown as a fruitful example of a conceptual framework by social researchers. Concepts such as 'inputs', 'outputs', 'environment', and 'feedback' have been used in this model to describe and explain empirical observations (Fig. 4.2). These concepts are interrelated, with 'feedback' performing the functions of continuity or change. A variety of propositions to explain how 'inputs' (differentiated into 'consumer demand' etc.) perform is generated. This model also explains how decision makers (in this research, the food industry) react to 'inputs', how the 'environment' affects 'inputs' and decision makers, and how 'input' differentiated into 'decisions' and 'actions' (such as those involved the NPD process), through 'feedback', change or preserve the nature of 'inputs' (Easton, 1979) (further refined in section 4.3.1).

It has been shown that the food industry is likely to obtain information about consumer's demand or food choice for new product development (as discussed in Chapter 3) and use a NPD process (Chapter 2) to develop new products to meet
consumer's demand. Meanwhile, new products also affect consumer's food choice and create new demands. Therefore, food manufacturers sometimes guide consumer's choices through their new products.

4.3.1 NPD in the Food Industry

It is very important for the food industry to develop new products to survive in the current competitive marketplace (Chapter 3) (Imram, 1999, Mcllveen, 1994). In order to make successful new products to meet consumers' needs, the food industry needs to take the correct actions for developing new products, in particular the correct NPD process. Some of the NPD processes described in the literature, such as the Contingency model, Holt's model, and Booze, Allen and Hamilton's model for the food industry (Holt, 1977, Shrivastana and Souder, 1987, Booze, Allen and Hamilton, 1982) were discussed in Chapter 2. Many models are available and they attempt to draw a process picture from a new product concept or idea to new product launch.

The Booze, Allen and Hamilton model (1982) is widely used by both researchers and industries, and will be used in this study to examine the NPD process in the food industry. Seven stages in the NPD process have been summarised from the literature (Booze, Allen and Hamilton, 1982):

a. **New product strategy development**: outline goals for new products and define boundaries within which new product can be developed.

b. **Idea generation**: search for new-product ideas that are consistent with the organisation's objectives.

c. **Screening and evaluation**: reduce those ideas to an attractive, practicable few through screening

d. **Business analysis**: The surviving ideas are evaluated according to the firm's requirements for sales, market share, profits and return on investment.
e. **Development**: e.g. build a prototype to achieve a design release for the new product.

f. **Testing**: concern with the use of research techniques to: provide information to reduce risk and improve the odds of success; facilitate the new product introduction process.

g. **Commercialisation**: launch the new product

Therefore, based on the literature review and the former general framework (Fig. 4.2), a framework has been developed for this stage of the research (Fig. 4.3). From Fig. 4.3, it can be seen that ‘consumers’ needs’, ‘Competition’ and ‘others’ (e.g. NPD challenge) have been taken as ‘input’ to the food industry. The food industry gets information from ‘inputs’, it makes decisions, and then takes actions (including a proper NPD process) to develop a new product, which has been regarded as an ‘output’. The ‘outputs’ may be treated as a feedback to effect the ‘inputs’.

**4.3.2. Consumers’ Food Choice for New Products**

Consumer research is used to assess consumer’s demand for NPD. This demand for new food product is related to consumer food choices, which are influenced by a multitude of factors (Southgate, 1996; Shepherd, 1989; Wheeler, 1992; Randall & Sanjur, 1981). The Ajzen-Fishbein Model (Fig. 4.4) has been widely used in studies of food choice (Saegent and Young, 1983; Shepherd and Stockley, 1985; Matheny, et al., 1987; Tourila, et al., 1988; Toweler & Shepherd, 1992), and has the advantage of being a predictive model (Chapter 3). This model is used in the current study to assess consumer food choice in relation to new products. It is quantitative and has been shown to be extremely good at predicting and understanding consumer’s attitudes and behaviours (Meiselman & Macfie, 1996). In this research, the beliefs that influence consumer’s attitudes and subjective norms to new products have been grouped into four categories (see Fig. 4.5):
Fig. 4.3. Based on the Easton’s Model (1979)-- General framework, the developed framework of the study

![Diagram showing competition, decisions, inputs, outputs, and feedback]

Fig. 4.4 A Schematic Representation of the Theory of Reasoned Action

Source: Ajzen and Fishbein Model (1980)

Beliefs

Evaluation

Normative beliefs

Motivation to comply

→ Attitude

→ Intention → Behaviour

→ Subjective norm
Fig 4.5 Adaptation of Ajzen and Fishbein's Model (1980) for Study of British and Chinese Consumers' Food Choice for New Products:

BB: Beliefs about New Products such as Quality, Appearance, Packaging, Healthiness, convenience, price and variety

EB: Evaluation of new products advantages/disadvantages (good or bad)

NB: Beliefs about Significant others (such as family, friends, doctors and producers) thoughts of new products

MC: Motivation to comply Influence of significant others

Attitude to New Products

Subjective Norm to New Products

Intention Towards New Products

Buying Behaviour Towards New Products
1) Behavioural beliefs (BB) and 2) Evaluation beliefs (EB): relate to consumers’ beliefs about new product advantages/disadvantages (such as quality, healthiness, appearance, packaging, convenience, variety, price and taste.) and their evaluation of these (good /bad).

3) Normative beliefs (NB) and 4) Motivation to comply (MC): relating to the influence of significant others such as, family, friends and other significant people.

Consumers’ intentions to buy new products were influenced by their attitudes and subjective norms (Ajzen-fishbein, 1980).

All of these factors, which have been drawn from the literature discussion (Chapter 3), may affect consumer’s choice of new food products. However, the Ajzen-Fishbein model has its own limitations, as it can not offer a complete picture. It can not bring together all factors, but has been said to not sufficiently capture the pleasurable aspects of eating or to take account of the liking for sensory attributes of particular samples of a food (Shepherd, 1989). This limitation will discussed in the research limitation section.

4.4 Research Strategies

Research design guides the investigator as data are collected, analysed, and interpreted. It allows the researcher to draw inferences concerning causal relations among the variables under investigation, and defines the domain of generalisability. (Frankfort-Nachmisas & Nachmias, 1996)
Chisnall (1992) noted that a suitable research design should include the most effective methods of investigation, the nature of the research instruments, the sampling plan and the types of data (quantitative, qualitative or both). Therefore, the research design has an important role in the research elements and focus the ‘blueprint’ that enables researchers to find solutions to some fundamental problems and guides them in the various stages of the research (Frankfort-Nachmisas & Nachmias, 1996).

4.4.1 Research Types

Chisnall (1992) divided research design into three main types: exploratory design, descriptive studies and causal studies. An exploratory design is usually concerned with identifying the real nature of research problems and some materials for formulating relevant hypotheses for later tests. A descriptive study is the result of substantial prior knowledge of variables. These variables should relate to some specific kinds of information that have been secured by the research question. A causal study identifies the relevant factors underlying market behaviour and evaluates their relationships and interactions. Each of the three types of research plays a different complementary role in many studies (Aaker, et al., 1995). In this study, data collection methods were based upon a combination of exploratory and descriptive research designs, as new product development research is concerned with the evaluation of design, development and testing of new products, the improvement of existing products, and the forecasting of likely trends in consumers’ preferences related to styling product performance, and quality of materials. This research also comprised consumer research, covering investigations into buyer behaviour. It studied the social, economic, and psychological influences affecting purchase decisions, whether these are taken at the consumer level, or industry level (Chisnall, 1992).
Consumer research is frequently planned so that a useful crosscheck can be made of the attitudes towards the products (Chisnall, 1992). Because the research aimed to identify the factors influencing and underlying product innovation and to evaluate their relationships and interactions, both causal and non-causal designs were used in this study. Therefore, a two-stage research design including examining product innovation in the food industry (non-causal) and assessing consumer demand for food product innovation in the food industry (causal) was used.

1) Stage 1: Assessing consumer demand for innovation in the food industry
Both exploratory and descriptive research were used to assess consumers’ attitudes to new product development. Firstly, secondary data from previous studies on consumer behaviour and product innovation were collected. Secondly, a questionnaire was chosen as the method by which to collect primary data.

2) Stage 2: Examining product innovation in the food industry
This stage was mainly conducted through exploratory research, based on secondary data collection, followed by in-depth interviews with food manufacturers in both China and Britain. Existing literature was used to build up insights on the subject area – food product innovation in food manufacture – with key issues then being incorporated into the interview schedule. The results of the literature review helped to answer the research objectives – to investigate the importance of product innovations in the food industry and the importance of NPD in relation to marketing and the consumer, and to identify the organisational process underlying successful product innovation in the food industry. It also helped to build up priorities among the research questions. The secondary data were collected from books, journals, newspapers, magazines, theses, electronic resource and official publications.
4.4.2 Quantitative and Qualitative Paradigms

The quantitative method and the qualitative method have roots in 20th-century philosophical thinking (Creswell, 1994), and the quantitative and qualitative paradigms are discussed widely in the literature (e.g. Philip, 1987; Reichardt & Cook, 1979; Webb, Beals & White, 1986).

4.4.2.1 Qualitative Research

A qualitative study is consistent with the assumptions of a qualitative paradigm and is defined as an inquiry process of understanding a social or human problem, based on creating a complex, holistic picture, formed with words, reporting detailed informants' opinions, and conducted in a natural setting (Creswell, 1994). Thus, the qualitative paradigm can be described as the interpretative approach (Smith, 1983), the constructivist approach or naturalistic (Lincoln & Guba, 1985), or the post-positivist or post-modern perspective (Quartz, 1992). For qualitative researchers, the individuals involved in the research constructs the only reality; therefore, researchers need to report faithfully these realities and to rely on the voices and interpretations of informants (Creswell, 1994). In another words, qualitative research is looking for meanings, concepts and symbols, as they are understood by the informants. Thus, understanding the thinking and behaviours of individuals and groups in specific situations is most important for qualitative research. This approach can direct attention to the differences and particularities in human affairs and prompts the researcher to discover what people think, what happened, and why (Arksey & Knight, 1999). Based on the rich variety of strategies and techniques, Mason (1996) gave a more detailed definition of qualitative research:
Grounded in a philosophical position which is broadly 'interpretivist' in the sense that it is concerned with how the complex, possibly multi-layered social world is interpreted, understood, experienced or produced.

Based on methods of data generation which are flexible and sensitive to the social context in which data are produced.

Based on methods of analysis and explanation building which involve understandings of complexity, detail and context, using 'holistic' forms of analysis and explanation.

Qualitative research has some strength, such as being flexible, fluid, preferring naturally occurring data, non-hypothesis testing, avoiding concepts and theories at preliminary stages and putting meaning and actions in their context (Silverman, 1993). It does, however, tend to concentrate on a smaller sample, which is considered by the critics to be unrepresentative and consequently can not allow generalisation to be made (Mason, 1996). Qualitative method was used in the food industry studies in this research to obtain more detailed and in-depth information about NPD in the food industry from R&D personnel’s viewpoints.

4.4.2.2 Quantitative Research

Quantitative research, consistent with the quantitative paradigm, is an inquiry into a social or human problem, based on 'testing a theory composed of variables, measured with numbers and analysed with statistical procedure, in order to determine whether the predictive generalisations of the theory hold true.' (Creswell, 1994, p2) It is the traditional, the positivist, the experimental, or the empiricist paradigm, as the quantitative thinking comes from an empiricist tradition (Smith, 1983). The researchers view reality as 'objective', or 'out there' independent of themselves, and
often use a questionnaire or an instrument to measure something objectively (Creswell, 1994). Quantitative research is designed to test theories or hypotheses, by using a large sample, representative of a wider population, and seeking correlations between variables. Other methods of quantitative research include experiments, secondary source or structured observation. Therefore, using the highly structured nature of quantitative methods can maximise control over the data gathering and lead to uniformity in the application of the techniques in order to achieve some notion of objectivity and replicability (Blaikie, 2000). Thus, this quantitative method was used in this research to explore consumers’ perceptions, preferences and expectations of new products in both China and Britain.

4.4.2.3 Comparison of Qualitative and Quantitative Method

The qualitative/quantitative comparison is always denigrated to that of opposition or dichotomy by considering the differences of these two methods in definition, adopting tactics, and position (Blaikie, 2000). Creswell (1994) generalised the differences of the two paradigms, based on ontological, epistemological, axiological, rhetorical and methodological approaches (see Table 4.1), and also displayed the reason for selecting a paradigm (see Table. 4.2). Overall, the qualitative approach is less structured than quantitative methods. It involves more in-depth investigation, for instance, participant observation, in-depth interviewing, fieldwork and ethnographic study, depending on the nature of the research. Quantitative research is designed with aims and theories in minds, it seeks to demonstrate causality between two variables, their relationship and the degree of them. This approach may include precise defining of variables. Qualitative approaches may have initially unspecified concepts, but then seek to find inter-relationship between emerging patterns (Brannen, 1992).
<table>
<thead>
<tr>
<th>Assumption</th>
<th>Question</th>
<th>Quantitative</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ontological Assumption</td>
<td>What is the nature of reality?</td>
<td>Reality is objective and singular, apart from the researcher.</td>
<td>Reality is subjective and multiple</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>As seen by participants in a study.</td>
</tr>
<tr>
<td>Epistemological Assumption</td>
<td>What is the relationship of the researcher to that researched?</td>
<td>Researcher is independent from that being researched.</td>
<td>Researcher interacts with that being researched.</td>
</tr>
<tr>
<td>Axiological Assumption</td>
<td>What is the rule of values?</td>
<td>Value-free and unbiased</td>
<td>Value-laden and biased</td>
</tr>
<tr>
<td>Rhetorical Assumption</td>
<td>What is the language of research?</td>
<td>Formal</td>
<td>Informal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Based on set of definitions</td>
<td>Evolving decisions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Impersonal voice</td>
<td>Personal voice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Used of accepted quantitative words</td>
<td>Accepted qualitative words</td>
</tr>
<tr>
<td>Methodological Assumption</td>
<td>What is the process of research?</td>
<td>Deductive process</td>
<td>Inductive process</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cause and effect</td>
<td>Mutual simultaneous shaping</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Static design-categories isolated before study</td>
<td>of factors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Context-free</td>
<td>Emerging design-categories identified during research process</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Generalisations leading to prediction, Explanation, and understanding</td>
<td>Context-bound</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Accurate and reliable through validity and reliability</td>
<td>Patterns, theories developed for understanding</td>
</tr>
</tbody>
</table>

Source: Creswell, 1994, p5
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Quantitative Paradigm</th>
<th>Qualitative Paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researcher’s Worldview</td>
<td>A researcher’s comfort with the ontological, Epistemological, axiological, rhetorical, and Methodological assumptions of the Quantitative paradigm.</td>
<td>A researcher’s comfort with the ontological, epistemological, axiological, rhetorical, and methodological assumptions of the Qualitative paradigm.</td>
</tr>
<tr>
<td>Training and Experience of the Researcher</td>
<td>Technical writing skills; computer statistical skills; library skills</td>
<td>Literary writing skills; computer text-analysis skills; library skills</td>
</tr>
<tr>
<td>Researcher’s Psychological Attitudes</td>
<td>Comfort with rules and guidelines for conducting research; low tolerance for Ambiguity; time for a study of short duration</td>
<td>Comfort with lack of specific rules and procedures for conducting research; high tolerance for ambiguity; time for lengthy Study</td>
</tr>
<tr>
<td>Nature of the problem</td>
<td>Previously studied by other researchers so that body of literature exists; known variables; existing theories</td>
<td>Exploratory research; variables unknown; context important; may lack theory base for study</td>
</tr>
<tr>
<td>Audience for the study (e.g., journal editors and readers, graduate committees)</td>
<td>Individuals accustomed to /supportive of quantitative studies</td>
<td>Individuals accustomed to /supportive of qualitative studies</td>
</tr>
</tbody>
</table>

Source: Creswell, 1994, p9
Though, these two methods are different, they also complement each other (Jick, 1979, Veal, 1997, Neuman, 2000). The difference between qualitative and quantitative methods is not completely clear cut, as neither of the methods are the unified bodies of method, philosophy and technique, and sometimes it seems that qualitative research should not be shown as necessarily in opposition to and uncomplementary to quantitative research (Mason, 1996).

### 4.4.3 Triangulation

Normally, there are four major forms of data collection: observation method, survey research, secondary data analyses and qualitative research (Frankfort-Nachimas & Nachimas, 1996). Each of these data collection methods has certain advantages and some inherent limitations, as there is a certain degree of 'method specificity' in each form of data collection. Consequently, researchers find that they can use one or more methods of data collection to test hypotheses and measure variables to minimise the degree of specificity of certain methods to particular bodies of knowledge. This is termed by Denzin (1978, p291) as 'triangulation'. For example, a structured questionnaire could be supplemented with in-depth interviewing. Triangulation, as a research strategy, has the benefit of avoiding the personal biases that stem from single methodologies, and can partially overcome the deficiencies that flow from employing one investigator or one method (Jick, 1979; Denzin, 1989).

#### 4.4.3.1 Purpose of Triangulation

Creswell (1994) examined the purposes of combining methods by reference to studies from former researchers (Greene, Caracell and Graham, 1989; Mathison, 1988; Swanson, 1992) and found five purposes as follows:
1. seeking convergence of results;
2. complimentary, in that overlapping and different facets of a phenomenon may emerge;
3. developmental, wherein the first method is used sequentially to help inform the second method;
4. Initiation, wherein contradictions and fresh perspectives emerge;
5. Expansion, wherein the mixed methods adds scope and breadth to a study.

4.4.3.2 Type of Triangulation

Denzin (1978) describes four types of triangulation as data triangulation, investigator triangulation, theory triangulation and methodological triangulation.

- Data triangulation is data collected at a variety of times, in different locations and from a range of persons.
- Theoretical triangulation uses more than one kind of approach to generate the categories of analysis.
- Methodological triangulation, includes within-method and between method. Within-method is using a variety of techniques within one single method to collect and interpret data, for an example, a questionnaire, which combines attitude scales and open-ended questions. Between-method is using various research methods to measure the same phenomenon.
- Investigator triangulation is using more than one observers of the same object.

4.4.3.3 Criticisms of Triangulation

Triangulation can avoid methodological narrowness, and allow for the attainment of a better overall view of reality, as strengths of different techniques can be drawn upon
Much literature has illustrated (Jick, 1979; Bryman, 1988; Jary & Jary, 1991; Bramen, 1992; Davison, 1995) that triangulation can increase the validity of the results, as it captures a more complete, holistic and contextual portrayal of the unit(s) under study (Jick, 1979), not relying too much on any single data source or method (Patton, 1990).

However, triangulation has some limitations. Blakie (2000) raised issues with triangulation, suggesting that it may be a distortion in its adaptation from surveying and navigation, vague in the manner in which it has been formulated, naive with respect to differences on ontological assumptions, tend to impose a single, absolutist ontology on multiple socially constructed realities, and problematic in interpretation of convergent and divergent results (Table 4.3 shows the advantages and limitations of triangulation).

**Table 4.3 Advantages and Limitations of Triangulation**

Sources: Arkey and Knight (1999:25)

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Can increase confidence in results.</td>
<td>1. Might be time-consuming with resource implications.</td>
</tr>
<tr>
<td>2. Can strengthen the completeness of a study.</td>
<td>2. Undertaking replication and comparative studies can be difficult.</td>
</tr>
<tr>
<td>3. Can address different but complementary Questions within a single study</td>
<td>3. Researchers may not be technically competent in particular methods.</td>
</tr>
<tr>
<td>4. Enhances interpretability: one set of data gives a handle to understanding another set.</td>
<td>4. Researchers might be tempted to make an inconsistent data set artificially compatible in order to produce a more coherent account.</td>
</tr>
<tr>
<td>5. Divergences can uncover new issues or processes that can result in turn in the development of new theories, or the modification of existing ones.</td>
<td></td>
</tr>
<tr>
<td>6. The researcher is closer to the research situation, contributing to a more nuanced understanding of focus of study.</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.3 summarises the advantages and limitations of triangulation given by Arkey and Knight (1999, p25).

4.4.3.4 Triangulation in This Research

This research used the model of combined designs as a two-phase design approach: a quantitative phase and a separate qualitative phase. The quantitative study assesses consumer's demand for new products in both China and Britain and a separate qualitative study investigates NPD in the both Chinese and British food industries. This approach has its unique advantage: as the two paradigms are clearly separate, it enables the researcher to present thoroughly the paradigm assumptions behind each phase.

In this study, triangulation was used to reach the five purposes (Section 4.4.3.1). It helps to find the convergence of results for NPD from different viewpoints and get more initiation and expansion of the study by using a quantitative method (consumer survey) and a qualitative method (food industry interviews). The information from the quantitative study (consumer survey) helps to inform the qualitative study (food industry personnel interview constructs were based on the literature review and the information from the consumer study), simultaneously, the qualitative study also supports the quantitative study.

4.4.4 Reliability and Validity

Both validity and reliability are of central concern to researchers, regardless of the quantitative or qualitative approach, because the measuring instruments they employ are rarely completely valid. Validity relates to whether researchers are measuring
what they think they are measuring.’ (Frankfort-Nachmias and Nachmias, 1996, p174) Traditionally, there are three basic types of validity, each of which is concerned with a different aspect of the measurement situation: content validity, empirical validity and construct validity. Researchers need to seek information geared to each of these three types to validate a certain measuring instrument in their research.

- **Content validity** is how much a measure covers the range of meanings of the research. It is assessed by the researcher’s subjective assessment of the instrument’s appropriateness, *face validity*, and the degree to which the statements, questions, or indicators constituting the instrument adequately represent the qualities measured, *sampling validity* (Frankfort-Nachmias and Nachmias, 1996). (Chapter 5 will explain the detailed methods applied in the field, research questions and the analysis methods, which would generate some relevant data to explain the research findings and show the validity of this research.)

- **Empirical validity** relates the relationship between a measuring instrument and the measurement outcomes. Comparisons with measurements made by other instruments can support empirical validity. (Frankfort-Nachmias and Nachmias, 1996). In this research, the final research outcomes will be discussed in relation to relevant literature.

- **Construct validity** links to a general theoretical framework and whether the instrument is tied to the concepts and theoretical assumptions employed (Frankfort-Nachmias and Nachmias, 1996). Relating the measuring instrument to a general theoretical framework creates the ‘construct validity’. Section (4.2) has shown the relationship between the theoretical framework and the literature.
This research uses 'triangulation' to increase validity, by using a multi-method approach (Denzin, 1970).

In many cases, researchers have to evaluate the measuring instrument with respect to other characteristics and assume its validity. Such a method used by researchers for evaluating an instrument is its degree of reliability. Hair et al. (1998, p8, and p583) defined reliability as:

'the degree to which the observed variable measures the true value and is error free; thus, it is the opposite of measurement error...The indicators of highly reliable constructs are highly intercorrelated, indicating that they all are measuring the same latent construct. As reliability decreases, the indicators become less consistent and thus are poorer indicators of the latent construct.'

Reliability demonstrates the extent to which research findings would be the same if the research was to be repeated at a later stage or with a different sample of subjects (Veal, 1997). Neuman (2000) suggested several ways to improve the reliability of the measures. These improvements include developing unambiguous, clear theoretical definitions, using as precise a level of measurement as possible, using multiple indicators and pre-tests and pilot studies. In this research, firstly a two-phase-design is used to increase the reliability. Secondly, a five point Likert scale is used, as to use as precise a level of measurement as possible can increase reliability (Sekaran, 2003). Thirdly, pre-tests and pilot studies were applied in this research and will be discussed in Chapter 5. Finally, Cronbach’s alpha was used to examine equivalence reliability with multiple indicators. It checks for internal consistency of attitude questionnaires, and scales such as rating and Likert (Black, 1999). Cronbach’s alpha is a reliability
coefficient, which shows how well the items in a set are positively correlated to one another, and is computed in terms of the average intercorrelations among the items measuring the concept. "The closer Cronbach’s alpha is to 1, the higher the internal consistency reliability." (Sekaran, 2003, p307)

In the qualitative study, an interview protocol and a short questionnaire were used to aid reliability, as the reliability of data generation and analysis can be demonstrated through careful and honest explanations and consistent collection procedures (Mason, 1996). (Issues on qualitative analysis including its reliability will be discussed in Section 5.4.2.)

4.4.5 Data Collection Methods

Data can be collected from primary or secondary sources. Primary data are obtained firsthand by the researcher on the variables of interest for the specific purpose of the study. Sources of primary data include individuals, focus groups, and panels of respondents. Secondary data relate to information collected from sources already existing, such as a literature review (Sekaran, 2003).

There are many data collection methods available to social science researchers. Some commonly used methods and some specific methods to this research using both primary and secondary sources will be discussed in this section.

4.4.5.1 Primary Source Research

Primary data can be collected in a variety of ways, including interviews, questionnaires, and observation of individuals and events (Sekaran, 2003).
• Interviews

Interviews directly involve respondents to obtain information on the issues of interest (Sekaran, 2003). Interviews can be structured, semi-structured or unstructured. They may be individual or can be conducted as 'focus' or 'group' interviews. They can be conducted either face to face or by telephone or online (May, 1993; Sekaran, 2003). A structured interview depends on a questionnaire as its data collection instrument with the protocol of uniformity and replication (May, 1993), and a semi-structured or an unstructured interview explores and probes into the factors in the situation that might be central to the broad problem area (Sekaran, 2003). Reviewing the relationship between structured and unstructured interviews, Sekaran (2003) concluded that conducting unstructured interviews with many people may identify several critical factors in the situation, which could then be pursued further, using structured interviews to more in-depth information. A tentative theory of the factors contributing to the problem may then be conceptualised on the basis of the information obtained from the interviews. Table 4.4. (a) shows the strengths and weaknesses of interviews.

• Questionnaire

Questionnaires are efficient data collection methods, which are either personally administered, sent through the mail, or electronically administered (Sekaran, 2003). The objective of questionnaires is to examine the general characteristics of a population; examine attitudes; establish a relationship between two variables; test theories and assess knowledge (Jary and Jary, 1991).
### Table 4.4 (a) Advantages and disadvantages of interviews

<table>
<thead>
<tr>
<th>Mode of Data Collection</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal or face to face Interviews</td>
<td>Can establish rapport and motivate respondents.</td>
<td>Takes personal time.</td>
</tr>
<tr>
<td></td>
<td>Can clarify the questions, clear Doubts, add new questions, Can read nonverbal cues.</td>
<td>Cost more when a wide geographic region is covered.</td>
</tr>
<tr>
<td></td>
<td>Can use visual aids to clarify points. Rich data can be obtained. CAPI can be used and responses Entered in a portable computer.</td>
<td>Respondents may be concerned about Confidentiality of information given.</td>
</tr>
<tr>
<td>Telephone interviews</td>
<td>Less costly and speedier than Personal interviews Can reach a wide geographic area. Greater anonymity than personal Interviews. Can be done using CATI.</td>
<td>Nonverbal cues can not be read Interviews will have to be kept short. Obsolete telephone numbers could be contacted, and unlisted ones omitted From the sample.</td>
</tr>
</tbody>
</table>

Source: Sekaran, 2003:251

### Table 4.4 (b) Advantages and disadvantages of questionnaires

<table>
<thead>
<tr>
<th>Mode of Data Collection</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personally administrated Questionnaire</td>
<td>Can establish rapport and motivate respondent. Doubts can be clarified. Less expensive when administered To groups of respondents. Almost 100% response rate ensured. Anonymity of respondent is high.</td>
<td>Organisations may be reluctant to give Up company time for the survey With groups of employees assembled for the purpose</td>
</tr>
<tr>
<td>Mail questionnaires</td>
<td>Anonymity is high. Wide geographic regions can be reach. Token gifts can be enclosed to Seek compliance. Respondent can take more time to respond at convenience. Can be administered electronically, if desired.</td>
<td>Response rate is almost always low. A 30% rate is quite acceptable. Cannot clarify questions. Follow-up procedures for nonresponses are necessary.</td>
</tr>
<tr>
<td>Electronic questionnaires</td>
<td>Easy to administer Can reach globally. Very inexpensive Fast delivery. Respondents can answer at their convenience like the mail questionnaire.</td>
<td>Computer literacy is must. Respondents must have access to the facility. Respondent must be willing to complete the survey.</td>
</tr>
</tbody>
</table>

Source: Sekaran, 2003:251
A questionnaire has to engage the interest of respondents, encouraging their cooperation, and eliciting answers as close as possible to the truth. A good questionnaire, which needs to be clear, unambiguous and uniformly workable, has to be designed specifically to suit the study’s aims and the nature of the respondents. Its design must minimise potential errors from respondents, interviewers and coders (Hoinville & Jowell, 1987). Table 4.4 (b) shows advantages and disadvantages of different ways of administering questionnaires (Sekaran, 2003:251). In addition to the administration methods listed in table 4.4 (b), dropping off questionnaires (and later picking up) is another useful method of administration. This was used in some parts of this research, as it has the advantages:

- ‘The interviewer can explain the study, answer questions, and designate a household respondent, in contrast to using the mail.

- Response rates tend to be like those of personal interview studies.

- There is more opportunity to give thoughtful answers and consult records or other family members than in personal or telephone interview survey.’ (Fowler, 1993, p67)

The method has two major limitations as it costs about as much as personal interviews and field staff are required (Fowler, 1993, p67).

- Observation

Researchers use this method to observe people in their natural work environment, or in a simulated setting, noting and recording their activities and behaviours or other items of interest. It has unique advantages, such as being easy to note the effects of environmental influences on specific outcomes. However, it is not used in this
research, because of its limitations such as being slow, tedious and expensive (Sekaran, 2003).

4.4.5.2 Secondary Source Research

Secondary data is the information gathered by someone other than the researcher studying the current study. Secondary data comes from, for instance, books and periodicals, government publications, census data, statistical abstracts, database, the media, annual reports of companies. Case studies can also be a source of secondary data.

The drawback of secondary data can become obsolete, and not meet the specific needs of the particular situation or setting. Its advantage is savings in time and costs of acquiring information. (Sekaran, 2003) Therefore, a literature review of NPD in the food industry and consumer’s demands for new products is given in Chapter 2 and 3.

4.4.5.3 Data Collection Methods Used in the Current Research.

In the quantitative stage of this research, a survey combining a ‘mail’ and ‘drop-off’ questionnaire was used to identify consumer’s demand for new food products in specific locations in both China and Britain. This method benefits from low cost, avoidance of interviewer bias, comparably high response rate and the ability to reach respondents over widely different regions. In this quantitative study, a structured questionnaire based around the TRA with a series of Likert scales was used as wanted to quantify relationship between various factors influencing selecting new products and likelihood of trying these, because this method and model have been successfully
applied to food studies previously (Jary & Jary, 1991; Shepherd & Stockley, 1985; Eves, Kipps & Noble, 1994).

In the qualitative stage, an exploratory interview was used to examine NPD in the food industry in both countries, as a qualitative study. After an initial e-mail or telephone contact, (sometimes, followed by a semi-structured questionnaire) appointments were made to conduct in-depth interviews with NPD personnel in the food industry in these two countries. The interview explored new products in relation to the new product concept, the NPD process, success and NPD trends. These in-depth interviews were conducted either face to face with the researcher or by telephone. Interviewer bias was minimised by using a standardised interview protocol. In order to focus on the topic of NPD in the food area and discover any hidden agendas, several prompts were provided to help to make the interview more spontaneous and flexible. A semi-structured questionnaire was sent to the respondent in advance to give the respondent more detailed information on this research, and to give them an indication of the areas to be covered in the interview.

All the secondary sources for this study came from books, National Statistics, periodicals, working papers and other articles, which could be obtained from libraries, CD-ROM searches, and web sites.

4.5 Sampling

Marketing researchers use the preferences expressed by a small subset of households to target new products to millions of customers (Frankfort-Nachiams & Nachiams, 1996). Therefore, based on a relatively small number of elements, researchers can
draw precise inferences on all the elements, when the element accurately represents the relevant attributes of the whole set. The process of selecting a sufficient number of elements from the population, which reflects the entire group of people, events or things of interest, and making it possible to generalise the properties or characteristics of the sample to the population elements, is called sampling (Sekaran, 2003).

- **Representativeness of Samples**

It is impossible for researchers to collect data from the entire population, because of the limitations of time, costs and other human resources. Investigating an appropriately drawn sample, instead of the whole population, will also produce reliable results. Therefore, choosing the right sample for research can not be overemphasised. In this two-phase study, it was important to construct a representative sample of cases from the population for the consumer study (a quantitative approach). Whilst, in the second study, which uses a qualitative approach to produce a deeper understanding of what R&D personnel believe about NPD in the food industry, sampling should centre on the elements that will enhance the understanding about the process in a specific context (Neuman, 2000).

- **Sampling Design**

To be as representative as possible of the population from which it is drawn is the essential requirement of any sample, if results are to be generalisable (Frankfort-Nachmias & Nachmias, 1996, p183)

De Vaus (1985) proposes two types of samples: probability and non-probability. The elements in the population have some known chance or probability of being selected as sample subjects in probability sampling. When the representativeness of the sample is important in the interests of wider generalisability, probabilility sampling designs
Table 4.5 Probability and Nonprobability Sampling Designs  (source: Sekaran: 2003, p280)

<table>
<thead>
<tr>
<th>Sampling Design</th>
<th>Description</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probability Sampling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. simple random sampling</td>
<td>All elements in the population are considered and each element has an equal chance of being chosen as the subject</td>
<td>High generalisability of findings</td>
<td>Not as efficient as stratified sampling</td>
</tr>
<tr>
<td>2. Systematic sampling</td>
<td>Every nth element in the population is chosen starting from a random point in the population frame.</td>
<td>Easy to use if population frame is available.</td>
<td>Systematic biases are possible.</td>
</tr>
<tr>
<td>3. Stratified random sampling</td>
<td>Population is first divide into meaningful segments; thereafter subjects are drawn. in proportion to their original numbers in the population.</td>
<td>most efficient among all probability Designs</td>
<td>Stratification must be meaningful.</td>
</tr>
<tr>
<td>(Str. R.S.)</td>
<td></td>
<td>All groups are adequately sampled And comparison among groups. Are possible.</td>
<td>More time consuming than simple random sampling or systematic Sampling.</td>
</tr>
<tr>
<td>Proportionate Str. R.S.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disproportionate Str. R.S</td>
<td>Based on criteria other than their original</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Cluster sampling</td>
<td>Groups that have heterogeneous members are first identified, then some are chosen at random, all the members in each of the randomly chosen groups are studied.</td>
<td>In geographic clusters, costs of data collection are low.</td>
<td></td>
</tr>
<tr>
<td>5. Area sampling</td>
<td>Cluster sampling within a particular area or locality.</td>
<td>cost-effective. Useful for decisions relating to particular location.</td>
<td>All probability sampling designs since subsets of cluster are more Homogeneous then heterogeneous. Takes time to collect data from an area.</td>
</tr>
<tr>
<td>6. Double sampling</td>
<td>The same sample or subset of the sample is studied twice.</td>
<td>Offers more detailed information On the topic of study.</td>
<td>Original biases, if any, will be carried over.. Individuals may not be happy Responding a second time.</td>
</tr>
<tr>
<td>Nonprobability Sampling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Convenience sampling</td>
<td>The most easily accessible members are Chosen as subjects.</td>
<td>Quick, convenient, less expensive.</td>
<td>Not generalisable at all.</td>
</tr>
<tr>
<td>8. Judgement sampling</td>
<td>Subjects selected on the basis of their expertise in subject investigated.</td>
<td>Sometimes, the only meaningful Way to investigate.</td>
<td>Generalisability is questionable; not generalisable to entire population.</td>
</tr>
<tr>
<td>9. Quota sampling</td>
<td>Subjects are conveniently chosen from targeted groups according to some predetermined number of quota</td>
<td>Very useful where minority participation in a study is critical.</td>
<td>Not easily generalisable.</td>
</tr>
</tbody>
</table>
are used. They include simple random sampling, systematic sampling, stratified random sampling, cluster sampling, area sampling and double sampling. When the elements in the sampling design do not have a known or predetermined chance of being selected as a subject, the sampling design is called non-probability sampling. This includes convenience sampling, judgement sampling and quota sampling. Table 4.5 summarises the description, advantages and disadvantages of each type of sampling design (Sekaran, 2003, p280).

Matched samples in different countries are used in cross-cultural research both for instrument development and data collection. For instance, whether subjects are from rural or urban areas, their level of education or involvement in an activity should be similar in different countries, so that researchers could get the true comparisons (Sekaran, 2003). Similarly, the similar types of organisation used for organisational studies. In this research, both consumer groups in China and Britain were from urban areas and having relatively similar social economic status. All interviewees were involved in R&D in the food industry in both countries.

- Sample size

Sample size is important to establish the representativeness of the sample for generalisability (Sekaran, 2003). The determination of a sample size directly relies on the value of the standard error and on the width of the confidence interval that is set by the researcher. If the researcher is willing to run a large risk of being wrong, the confidence interval can be extremely wide. If he or she opts to run a negligible risk, the confidence interval needs to be made very narrow (Frankfort-Nachmias, Nachmias, 1996).
Sekaran (2003, p295) generalised Roscoe’s (1975) findings and suggested the following rules for determining sample size (for quantitative method):

1. Sample sizes larger than 30 and less than 500 are appropriate for most research.
2. Where samples are to be broken into subsamples (male/female, juniors/seniors, etc.); a minimum sample size of 30 for each category is necessary.
3. In multivariate research (including multiple regression analyses), the sample size should be several times (preferably 10 times or more) as large as the number of variables in the study.
4. For simple experimental research with tight experimental controls (matched pairs, etc.), successful research is possible with samples as small as 10 to 20 in size.

Therefore, a sample size of around 400 has been drawn for each country in the consumer studies in this research.

Qualitative studies use small sample sizes due to their intensive nature. If the purpose of the study is merely to explore and try to understand phenomena, the sampling design will be convenience sampling (Sekaran, 2003). Therefore, in this research, for the qualitative study, with consideration of the financial costs and time constraints, the number of food manufacturers for this research was a minimum of 10 to 15 in each country.

- Ethical Issues

The names of the participating food companies are presented as codes and cannot be used to identify food companies specifically. All the participants of both quantitative and qualitative studies in both countries were anonymously recorded for data analysis and the information gathered treated as strictly confidential. Respondents in both parts of the study were under no obligation to take part and could withdraw at anytime.
• Sampling in this Research

As proposed in the theoretical framework, a two-phase research design was used and each phase was divided into two studies, one of which was conducted in Britain and one in China. Thus there were four groups: Chinese food consumers, British food consumers, R&D personnel from the Chinese food industry and R&D personnel from the British food industry (precise details of sampling are given in Chapter 5). The first phase was a quantitative study. Owing to consideration of limitations of time and financial cost, a non-probability sampling method was used in this stage. Because this study is a cross-cultural comparison, matched samples in China and Britain were used. As the biggest population of food consumers, consuming processed food from food manufacturers, is mainly from urban areas, this study chose food consumers from three areas around Beijing and six areas around London and the south east of England. Consumers from these areas in each country have relatively similar consumption levels for food products, and the consumers have relatively similar economic status in these areas in each country (Defra, 2001; Cai & Wang, 2002). About 800 consumers were recruited from those areas (around 400 consumers from each country) using convenience sampling.

Convenience sampling was also used in the second phase of the research, as the current qualitative studies are undertaken for exploratory purposes. The second phase was a qualitative study in China and Britain, involving interviews with thirteen ‘elite’ food industry R&D personnel from each country. ‘Elite interviewing’ is ‘a specialised case of interviewing that focuses on a particular type of interviewee, who is considered to be the influential, the prominent, and well-informed people in an organisation or community and are selected for interviews on the basis of their
expertise in areas relevant to the research.’ (Marshall & Rossman, 1995, p83) The ‘elite’ interviewees can provide more relevant information than others can; they not only can give the research an overview of an organisation and its relationship to other organisations, but also can report on an organisation’s policies, past histories, and future plans from a particular perspective (Marshall & Rossman, 1995). Therefore, R&D personnel from food manufacturers were selected in this research, for their knowledge of new food products, and as they could give more clear and detailed information on the new product concept, process, success and trends than others could. However, ‘elite’ samples tend to be busy with their work and difficult to arrange appointments with. A well-prepared interview protocol can moderate this effect (Marshall & Rossman, 1995).

4.6 Conclusion

This chapter has discussed theories of methodology that are widely used in research, and the specific methods, applied in this research. The research process was described, and then, based on the literature review, a theoretical framework was proposed for this research. The methods used in this research are based on this framework. A two-phase research design was built to answer the research question, a consumer study and a study of the food industry. The consumer study was a quantitative study and a qualitative study was applied in the study of the food industry. Reliability and validity have been addressed in this research. Based on the secondary data, research was supported by the literature review. The overall scope of data collection methods and sampling design was discussed. The most suitable sampling has been chosen for this research (non-probability sample (convenience) in the consumer study, and ‘elite’ samples in the study of the food industry).
This chapter has established the theoretical skeleton for this research methodology and provided general theories and reasons to support each phase of the research. The following chapter explains the details of the procedures of the data collection in this research, including questionnaire design and development, and the interview process. The data analysis techniques and other methods, used in this research, are also discussed.
Chapter Five
Chapter 5

Methodology (II) Methods and Techniques

5.1 Introduction

Chapter 4 explained the methodological theories and a conceptual framework for this research based on these theories. This chapter presents an overview of the detailed methods and techniques that were applied in this research. It focuses on how the methodology that was developed sought to explore the research question. This chapter intends to detail the methodological process, the development of the data collection methods, and the techniques of data analysis. These stages include both a qualitative interview protocol and development of a quantitative questionnaire. The data analysis procedures will be discussed sequentially, which essentially reflects the development of the research design.

5.2 Consumer Study Methods

A quantitative consumer study was conducted in specified locations in China and Britain to explore consumer's demand for new food products. Based on the literature review, discussion with food consumers recruited from the University of Surrey campus, and discussion with Ph.D. supervisors, a questionnaire was designed around five areas. These five areas are 'the new product concept', 'the reason for product change', 'the main factors influencing a consumer's decision to buy new products', 'the consumer's willingness to try new products', and 'new product trends in the next 10 years'. In addition, a section of the questionnaire was designed around the TRA
(Ajzen and Fishbein, 1980) to determine the factors influencing consumer’s intention to purchase new products.

5.2.1 Questionnaire Design

The questionnaires are shown in Appendix 5.1 (English) and 5.2 (Chinese). They comprised a combination of structured and semi-structured questions. The majority of responses were prespecified and standardised, in order to ease comparison of the consumers. The questionnaire was designed to be as easy as possible for the interviewer to administer, in order to maintain the cooperation of the respondent. General and easy questions were put at the beginning to avoid a difficult start.

5.2.1.1 Format of Questionnaire

The majority of questions were closed-ended questions, as they are easier and quicker to answer. Respondents can perform the task of answering the question more reliably when response alternatives are given (Sekaran, 2003). Simultaneously, the researcher can perform the task of interpreting the meaning of answering more reliably when the alternatives were given to the respondents. As they are straightforward, they also make the cross-tabulation and the analysis process easier. For the close-ended questions, a five-point Likert scale was used in each question, as it is designed to examine how strongly subjects agree or disagree with statements (Sekaran, 2003). The rating is from ‘strongly disagree’ to ‘strongly agree’, ‘extremely unnecessary’ to ‘extremely necessary’, ‘very unlikely’ to ‘very likely’ and ‘very bad’ to ‘very good’. (In question I, IIb, and III, the end points were from ‘strongly disagree’ to ‘strongly agree’, for IV, V, and VI, the end points were from ‘very unlikely’ to ‘very likely’. In question IIa, the end points were from ‘extremely unnecessary’ to ‘extremely
necessary'. Some questions of TRA model, the end points were from 'very bad' to 'very good'.

5.2.1.2 Structure of Questionnaire

The questionnaire was divided into two parts (Appendix 5.1 and 5.2). Part 1 explored the respondents' perception and behaviour toward product innovation and what they thought trends in food product development would be. Part 2 collected personal data from respondents concerning their age, sex and average yearly income. It aimed to build the consumer profile. One open-ended question was included to investigate how much the consumers spend on their weekly food shopping (excluding alcohol, non-food stuffs and eating-out).

Part one questions covered the following six areas (discussed in chapter 3 and 2):

1. New product concept: what is a 'new product'?
2. The reason for products to change
3. The main factors influencing consumer's decision to buy new products
4. The consumer's willingness to try different kinds of new products
5. Trends for new food products in the next 10 years.
6. Consumer's attitude to new food products—Ajzen-Fishbein Model

I. What is a 'new product'? 

Respondents were asked to give their opinion of the concept of 'new product' from the eight groups of concepts, such as 'new appearance', 'improved quality', 'price changed', 'improved safety', 'improved convenience', 'new brand', 'new to the company' and 'completely new product' (these concepts were identified via literature review). An 'others' option was included, where consumers were asked to specify
what this was. Five-point Likert scales from ‘strongly disagree’ to ‘strongly agree’ were used for response. This question aimed to indicate whether consumers’ thoughts about new products were similar to those of the food manufacturers interviewed (Chapter 8 and 9) and to those identified in the literature (Chapter 2). Responses would also illustrate the most predominant concept of new products as perceived by consumers.

II. The Reason for Product Change

There were two questions in this section. The first one tested how necessary consumers believed it was to introduce new food products into the market (a five-point Likert Scale from ‘extremely unnecessary’ to ‘extremely necessary’). If the respondent thought it was necessary, they then completed a further question, which included a series of statements of reasons for change (‘Lack of demand’, ‘To improve convenience’, ‘To improve ‘health’’, ‘People become bored with existing food’, ‘Desire to try something new’, ‘Lack of variety’, ‘Poor quality of current foods’, ‘Bad taste of some current foods’, ‘High price of current foods’ and ‘Others’). This question aimed to get an indication of consumer dissatisfaction with current products.

III. The main factors influencing consumer’s decision to buy new products?

This question investigated the main factors influencing the consumer’s purchase decision toward new products, based on the discussion with food consumers recruited from the University of Surrey. Several factors (product quality, family or friend suggestion, price, doctor recommendation, product variety, media, appearance, promotion, beliefs and others) were given to respondents to rate on five-point- Likert scales, from ‘strongly disagree’ to ‘strongly agree’.
IV. The Consumers' willingness to Try New Products

Three questions were presented in this section. The first question asked respondents to indicate their degree of willingness to try new products in general. In the second and the third question, consumers were asked about their likelihood of trying new food products grouped into different categories based on the literature review.

Group A: Ethnic foods, Natural foods, Convenience foods, and Functional foods

Group B: New brand of a product you currently use, New packaging, Improved quality, Price reduction, Healthy version, and Change of flavour

All scales rated as 5-point Likert scale from 'very unlikely' to 'very likely'.

V. Consumer's attitude to New Product – Ajzen and Fishbein Model

This section was based on Ajzen and Fishbein Model -- Theory of Reasoned Action (TRA) (discussed in Chapter 3). According to Ajzen and Fishbein (1980), behavioural intention predicts behaviour, while two factors predict behavioural intention directly--the individual's attitude as to whether the particular behaviour is viewed as good or bad, and the individual's perception that those most socially influential upon him /her think he /she should or should not undertake the behaviour (subjective norm). These two factors in turn are influenced by two further elements- behavioural beliefs and normative beliefs respectively. Fig 5.1 illustrates the Ajzen-Fishbein Model of TRA, and includes examples of questions, which are typical of those in the questionnaire.

The behaviours selected in this study reflect the literature relating to types of new products (Chapter 3): 'new food products', 'new healthy foods', 'new convenience foods' and 'new ethnic foods'. An elicitation questionnaire (Appendix 5.3 & 5.4) based on these foods groups was administered to ten people who were considered to
Fig. 5.1 The Theory of Reasoned Action with Examples of Associated Questions
Source: Ajzen-fishbein, 1980

Beliefs
Providing new healthy foods means consumer can make more healthy choice

Evaluation
To enable consumers to choose more healthy foods is

Normative Beliefs
My family thinks I should buy new healthy foods

Motivation to comply
Generally speaking, I want to do what my family thinks I should do

Attitude
trying new healthy foods is

weighted by

relative importance

Intention
during the next 4 weeks, I will try new Healthy foods

Behaviour

Subjective Norm
Most people who important to me Think I should try new healthy foods

Weighted by

relative importance
be representative of the main study sample. In order to get the information from a range of age groups, four people aged 34 years or below, three people aged 35-54 years and three senior residents (55 years or above) were chosen. They were from different careers: student, lecturer, housewife, retired people, technician and a government officer. All respondents were asked to identify the advantages and disadvantages of buying food from each food group and also to indicate the people or groups who would approve or disapprove of their buying that kind of food. These lists were respectively each consumer’s ‘salient beliefs’ and ‘salient referents’, with respect to buying the different food groups.

A list of ‘modal salient beliefs’ reflecting the most generally held beliefs (from 75% or greater of all beliefs emitted), formed the rationalised list of ‘salient beliefs’ for each food type. These salient beliefs were phrased in relation to each group of foods for inclusion in the questionnaire (refer to Fig. 5.2).

Four important referents were identified by the respondents. In order of descending frequency: family members, doctors, friends and producers (but doctors were not important referents for new ethnic foods). The list of ‘salient referents’ was small enough to be self evident.

To check that elicited items were also appropriate to the Chinese (as the questionnaire was also to be administered in China) the elicitation questionnaire was also completed by ten Chinese people, who are working or studying at the University but recently came from China. Coincidently, the same set of beliefs and referents were identified by the Chinese group members. Lee and Green (1991) previously demonstrated
equivalence in salient beliefs for the purchase of sneakers in their study of American and Korean subjects.

The questions for this section were then prepared (examples of the statements are shown in Fig 5.1 and 5.2 in the suitable component groups). Responses were made on five-point Likert scales with end points affected by question type (Fig. 5.2). A score was allocated to each respondent for each of the seven TRA components within each food type (general new food products, new healthy foods, new convenience foods, and new ethnic foods). For every component listed in Fig. 5.2, each respondent thus had a separate score. Each belief response (B) was multiplied by the appropriate evaluation score (E) and the outcomes were summed (ΣBiEi); normative belief responses (NB) were multiplied by the corresponding motivation to comply response scores (MC) and the outcomes were summed (ΣNjMj). This is because TRA model predicts that attitude towards the behaviour is predicted by salient beliefs about the outcome of a behaviour, weighted by the subject’s estimation of the likelihood that performing that behaviour will result in a given outcome; and subjective norm is determined by normative beliefs about what salient referents would suggest, modified by respondents’ motivation to comply with the suggestion of those referents (Thompson, et al., 1994). Simple correlation (Pearson correlation Section 5.4.1.3) was used to assess the degree of association between the components (ΣBiEi and attitude, ΣNjMj and subjective norm, attitude and intention, subjective norm and intention). Multiple regression was used to test the strength relationship between attitude/subjective norm and intention (Section 5.4.1.3) and thus of which was most influential on intention (Ajzen-Fishbein, 1980).
Fig. 5.2 Seven components of the TRA (Theory of Reasoned Action) with examples of statements and rating scales (in brackets), Ajzen and Fishbein, 1980

1. Belief (very unlikely to very likely)

Providing new food products means consumers can make more healthy choices.

Providing new food products means consumers can get quality improved foods.

Providing new food products means consumers may not be sure of new food’s reliability.

Providing new healthy foods means consumers can make more healthy choices.

Providing new healthy foods means consumers may lack clear product knowledge.

Providing new healthy foods means more expense for consumers

2. Evaluation (very bad to very good)

To enable consumers to choose more healthy food is

To enable consumers to choose quality improved foods is

To enable consumers to choose foods that they may not be sure of the reliability is

To enable consumers to choose foods that they may lack clear product knowledge of is

To enable consumers to choose expensive foods is

3. Normative Beliefs (very unlikely to very likely)

Most of my family members think I should try new food products

Most of my friends think I should try new healthy food products

4. Motivation to Comply (very unlikely to very likely)

Generally speaking, I want to do what my family thinks I should do.

Generally speaking, I want to do what my doctor thinks I should do.
5. Subjective Norm (very unlikely to very likely)

Most people who are important to me think I should try new food products

Most people who are important to me think I should try new healthy food products.

6. Attitude (very bad to very good)

Trying new food products is

Trying new healthy food products is

7. Behavioural Intention (very unlikely to very likely)

During the next four weeks I will try new food products

During the next four weeks I will try new healthy food products

VI. Trends in New Food Products in the Next Ten Years.

This question aimed to explore whether anticipated new product trends from the consumer's view point were similar to the views from food manufacturers and the literature. Two groups of different types of new foods (Group A product characteristics; Group B types of products) were presented for respondents to indicate how likely these were to be trends in food product development in the next ten years (Five-point- Likert scale from 'very unlikely' to 'very likely').

In general, the choice of measurement scales was based on the literature review, and the pilot study.

A Chinese version of the questionnaire was produced through translation by the current researcher (a Chinese national) and revised by a Chinese lecturer who is
teaching English and a Chinese student whose major is English Literature. Back translation was used by the researcher to ensure retention of meaning.

5.2.1.3 Wording

The wording of the particular question can have a huge influence on how a respondent answers the question, and even a small change in wording can shift the respondent’s answer (Aaker and Day, 1990). Therefore, it is very important to make the questions clear and simple to respondents. In this study, the questions used simple, direct and familiar words as far as possible to allow all respondents regardless of age and education to understand (A pilot study in both Britain and China was used to improve wording. Section 5.2.1.4).

Additionally, it is important to avoid biased words, as they may lead to an automatic feeling of approval or disapproval or indicate the researcher’s own point of view. Instructions for completion of each question were also given as concisely and clearly as possible.

5.2.1.4 Pilot Study

Piloting plays a vital part in questionnaire development, as simply using a questionnaire will reveal the most obvious ambiguities and incomprehension. Questionnaires require adaptation and development to ensure they truly achieve the project objectives (Oppenheim, 1992).
Therefore, a pilot study was adopted before carrying out the actual research. Twenty people, 10 from Britain and 10 from China were interviewed using the pilot questionnaire to check the time taken, the layout, the clearness of the wording and the sequence of the questions. Ten English respondents were interviewed in person. The Chinese respondents were recruited through the Internet, and the questionnaires administered electronically. During the pilot study, those questions which respondents found difficult to understand or answer were reworded (Appendix 5.5). Based on the feedback from the pilot study, the draft was adjusted and modified. The time needed to complete the questionnaire was also determined from the pilot study (30-45 minutes). Owing to the time involved, it was felt necessary to use a pre-paid mail interview to conduct this study, as many shoppers (Section 5.2.2) were likely to be in a hurry and unwilling to stop to complete the questionnaire at the time. In order to encourage the respondents to complete and return the questionnaire, a £25-prize draw was instigated for these returning completed questionnaires.

5.2.2 Sample

The planned sample size was set to be around 200 consumers in each country. To achieve this, 420 questionnaires were distributed in Britain and 390 questionnaires were distributed in China. As this study focused on food consumers, respondents were recruited from food supermarkets when they were shopping, or from residential areas. Six areas around London and Southeast England (Guildford, Woking, Burpham, Worplesdon, Wimbledon and Brighton) and three areas around Beijing (North, Northeast, and West) were chosen to distribute the questionnaires. Questionnaire was to be completed by person considered to be responsible for most of food shopping.
Ultimately, 222 valid questionnaires were returned from London and the Southeast areas. Fig. 5.3 shows the response rate in each area, and 139 responses were received from the three areas around Beijing (North, Northeast, and West).

**Fig 5.3 Consumer Survey Response Rate**

**I. British Consumer Survey Response Rate**

<table>
<thead>
<tr>
<th>Area</th>
<th>GF</th>
<th>WK</th>
<th>BP</th>
<th>BR</th>
<th>WB</th>
<th>WP</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributed</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>420</td>
</tr>
<tr>
<td>Valid returns</td>
<td>56</td>
<td>14</td>
<td>51</td>
<td>50</td>
<td>21</td>
<td>30</td>
<td>222</td>
</tr>
<tr>
<td>Response rate</td>
<td>80%</td>
<td>20%</td>
<td>73%</td>
<td>71%</td>
<td>30%</td>
<td>43%</td>
<td>53%</td>
</tr>
</tbody>
</table>


**II. Chinese Consumer Survey Response Rate**

<table>
<thead>
<tr>
<th>Area</th>
<th>West Beijing</th>
<th>North Beijing</th>
<th>Northeast Beijing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributed</td>
<td>150</td>
<td>90</td>
<td>150</td>
<td>390</td>
</tr>
<tr>
<td>Valid returns</td>
<td>77</td>
<td>12</td>
<td>50</td>
<td>139</td>
</tr>
<tr>
<td>Response rate</td>
<td>51%</td>
<td>13%</td>
<td>33%</td>
<td>36%</td>
</tr>
</tbody>
</table>

5.2.3 Field Work

In Britain, the sample was a convenience sample from the population of people who purchase food products. An introductory letter explaining the study and emphasising the confidential nature of the research (Appendix 5.6), was sent with a copy of the
questionnaire to the store manager of major retailers around London and the Southeast to ask permission to distribute the questionnaires to their customers in the food store. Permission was received from three stores. After obtaining permission, customers were approached as they were leaving the food supermarket and were asked if they would take part in the study. If they agreed, respondents were asked to complete the questionnaire and send it back in a pre-paid envelope. A cover letter (see Appendix 5.7), which explained the aims of the study and promised confidentiality was also given, along with the prize draw entry form. The questionnaire was also distributed in retail areas. Questionnaire distribution was conducted over a period of one month. In order to obtain a variety of respondents, the questionnaire distributions were conducted in different areas and on different days. Most responses arrived during the following month.

In the Chinese study, the researcher contacted three residential communities around West, Northeast and North Beijing and used the drop-off (later picked-up by the researcher) questionnaire technique (Chapter 4, Section 4.4.5.1) at household level to approach the sample. (This method was used, as it proved difficult to get permission to distribute the questionnaires in local supermarkets in Beijing.) It took three months from contacting the community to getting 139 responses back.

5.3. Qualitative Study Methods

In order to obtain more information about food NPD from those working in the food industry, face to face interviews with personnel working in R&D in both Chinese and British food manufacturers were used to provide the primary data on NPD in the food industry (elite interviews). The aim of this study was to examine the NPD process in
the food industry, to identify new product concepts and success factors, to determine predicted NPD trends from the industry, and to establish degree of commonality between consumer’s demands and manufacturers’ activities. The interview protocol mainly focused on the company background, new product concept, NPD process, success and trends. As noted previously, one of the fundamental aims of the study was to produce a cross-national analysis of food manufacturers in China and Britain. Few cross-national studies have been carried out which have focused on food NPD. With this in mind, semi-structured interviews, and a short structured questionnaire follow-up (Appendix 5.10), were carried out. This method allowed the interviewee to give more information on the subjects and issues that they felt were most important and knew most about. Although the interviews were semi-structured, they were linked with the conceptual themes that ran through the construction of the consumer study’s questionnaire to allow comparison with consumer data (the Interview questions and short questionnaire are shown in Appendix 5.8, 5.9 and 5.10).

5.3.1 Pilot Interview

Once the semi-structured interview schedule had been constructed, a pilot study was used to test it and to discover if the meanings of the questions were clearly apparent, if the sequence of questions was logical, and to ensure there were no unnecessary repetitions of issues in this study. It was decided not to pilot the interviews on the selected sample of respondents, as this would limit the number of respondents for the actual interviews, because of the nature of the target sample. Instead, the interviews were piloted on another set of respondents (previous colleagues and classmates now working in the food industry or related work areas in Britain and China.). All had knowledge of NPD, although some of them were not in a position to give ‘real’
answers to the questions. However, the pilot survey did at least offer the opportunity to clarify the wording of some questions, enrich some prompts to others where necessary, and change or cut some questions, which were thought not to be appropriate.

5.3.2 Sample

The aim was to interview R&D personnel in food companies in China and Britain. This objective dictated that only food companies should be in the sample, and the interviewees should be R&D personnel or somebody related to R&D in food companies (e.g. marketing director or operations manager). This was because the study was focused on the views of food R&D personnel towards the process of NPD. Most companies in this study had a NPD section or R&D group, and the R&D personnel in these companies were selected for interview. However, some companies did not have such an independent section, in which case either the marketing or technical personnel (e.g. food technologist) were targeted. The R&D personnel from 13 food companies in each country were interviewed.

5.3.3 Establishing the Interview in Britain and China

Letters (see Appendix 5.11 and 5.12 (a, b)) both from the researcher and the School of Management of University of Surrey were sent to the R&D managers, or relevant people, employed by British food manufactures by e-mail, selecting companies from the ‘efsis’ (www.efsis.com) food company list. The letter from the researcher requested the opportunity of an interview with them, and the chance to discuss their views about NPD (Appendix 5.11). (The letter shown in Appendix 5.12 (a, b) confirmed that the
researcher is conducting her doctoral project as a Ph.D. student at University of Surrey.)

The aim of these letters was to help persuade targets to accept an interview. Firstly, the letter explained the objectives of the research. Secondly, it emphasised that all findings would be strictly confidential and that no individual or company would be referred to specifically. Food R&D personnel or relevant personnel (for instance, marketing director or food technical manager) from 13 food companies in Britain, which included both large multi-nationals and smaller companies, accepted the interviews. A list of the respondents is not given to ensure confidentiality. After their acceptance, an appointment for the interview was scheduled, then a personal interview either face to face or by telephone or e-mail was conducted. In most cases, after the conversation, a short closed-ended questionnaire (see Appendix 5.10) was provided to the participants either by e-mail or in person (For two cases, the questions in this questionnaire had been included in the conversation). After respondents gave their permission for tape-recording, all conversations were recorded with a tape recorder for later transcription. Notes were also taken. The length of the interviews ranged from 30 minutes to one hour.

In the Chinese study, after consultation with colleagues working in the Chinese food industry, R & D personnel from 13 Chinese food companies accepted an interview. A telephone contact to R&D personnel in these companies explained the interview objective and arranged for the interview. Then, a personal interview followed. All interviews took place face to face in the respondents' office or meeting rooms and were recorded on paper. For the reason of confidentiality, participants' names are not
given. Multi-nationals and small companies were also involved in the Chinese food industry interviews.

5.3.4 The Interview

The structure of interview questions is given in Appendix 5.9 and 5.8. Five main issues were included in the interview agenda, although interviewees were prompted to expand the set agenda wherever it was relevant. Issues for discussion were derived from a review of the literature or from information from consumer survey.

The first part of interview explored the company’s background and the second part obtained a description of the new product concept from the respondents’ view. The third part explored the NPD process in the food industry. A discussion of NPD success in the food industry followed. The last part aimed to predict new food trends in the next ten years.

5.4 Data Analysis

The two consumer studies from China and Britain, from the questionnaires, were analysed quantitatively. Descriptive statistics were used to provide a picture of the responses and following on from this correlation coefficients were calculated to evaluate to what extent relationships existed between particular variables. For the industry studies in both countries, all data from interviews were analysed qualitatively. All the information from interviews was transcribed verbatim and content analysed.
5.4.1 Quantitative Analysis

Statistics texts often draw a distinction between exploratory data analysis or descriptive statistics, used to summarise or display quantitative data, and confirmatory data analysis or inferential statistics used to make conclusions about a complete population, based on the responses of the sample (Hussey & Hussey, 1997). This section will discuss the common quantitative analyses methods and the specific analysis that were applied in this research. Statistical Package for the Social Sciences (SPSS) 11.0 was used to analyse the quantitative data.

5.4.1.1 Type of Variables

Three kinds of scales or levels of measurement (nominal, ordinal and interval/ratio), have been widely used by researchers. Bryman and Cramer (1999) developed these into five categorises shown in Table 5.1. Five-point-Likert scales were used in the main part of the quantitative studies in this research, thus most variables in this research are interval variables.

Table 5.1 Type of variables

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal</td>
<td>A classification of objects (people, firms, nations, etc.) into discrete categories.</td>
</tr>
<tr>
<td>Ordinal</td>
<td>The categories associated with a variable can be rank-ordered, Objects can be ordered in terms of a criterion from highest to lowest.</td>
</tr>
<tr>
<td>Interval (a)</td>
<td>With ‘true’ interval variables, categories associated with a variable can be rank-ordered, as with an ordinal variable, but the distances between categories are equal.</td>
</tr>
<tr>
<td>Interval (b)</td>
<td>Variables which strictly speaking are ordinal, but which have a large number of categories, such as multiple-item questionnaire measures. These variables are assumed to have similar properties to ‘true’ interval variables.</td>
</tr>
<tr>
<td>Dichotomous</td>
<td>A variable that comprise only two categories.</td>
</tr>
</tbody>
</table>

Source: Bryman & Duncan (1999: 60)
5.4.1.2 Descriptive Statistics

Descriptive statistics are used to determine how frequently certain phenomena occur (frequencies), the mean or average score of a set of data collected, and the extent of variability in the set (Sekaran, 2003).

A descriptive statistics procedure was applied in this research to draw a profile of the total sample and to show the distribution of data for each variable. First, a frequency list was made of the variables to describe the nature of the responses, for instance, demographic details from the respondents. Next, measures of central tendency (mean, median, and mode) were used in most quantitative responses of the consumer studies. The mean was chosen to represent the average response, as it was possible to compare and contrast the average opinions of consumers' thoughts relating to new food product development. Finally, measures of dispersion (which include the variance, standard deviation, standard error, range, and maximum and minimum), were calculated as a means of describing the data, as it was useful to evaluate to what extent there was a consensus view amongst respondents. Data were then compared with the overall view of consumers in relation to previous findings within the literature.

5.4.1.3 Inferential Statistics

Inferential statistics are used to investigate how variables relate to one another, and whether there are any differences between two or more groups (Sekaran, 2003). They help researchers to establish the probability that the results obtained from a sample are likely to be found in the population from which the sample has been drawn, and thus to generalise from a representative sample, where a representative sample has been
achieved (Rose & Sullivan, 1996). Inferential statistics include correlation, t-test and regression analysis (Sekaran, 2003).

Different analysis methods were applied to examine different relationships from various variables at different levels in this study. It is conventional in social research analysis to fix the level of significance at the 0.05 (or 5% level), where small samples are involved as was the case in this research (de Vaus, 1985).

- **Correlation**

Normally, there are several variables in a research project, researchers often wish to know how one variable is related to another. Correlations come from assessing the variation in one variable as another variable also varies. A Pearson correlation matrix provides information on the nature, direction, and significance of biavriate relationships of the variables used in the research, and it demonstrates the direction, strength, and significance of the biariate relationships for all the variables in the study (Sekaran, 2003). Pearson's test is used for measuring the association between interval variables (Frankfort-Nachmias, & Nachmias, 1996). Therefore, this analysis method was used in analysis of the Ajzen-Fishbein model, to ascertain the self consistency of data from the consumer study questionnaire and also to corroborate model where expect to see correlation between certain elements. Four Pearson correlations between the elements were undertaken. They were:

1. $\Sigma$ of individual beliefs $x$ evaluation $r$ attitude
2. attitude $r$ intention
3. $\Sigma$ of normative beliefs $x$ motivation to comply $r$ subjective norm
4. subjective norm $r$ intention
Regression

Regression can be used to study how consumers make decisions or form impressions and attitudes (Hair, et al., 1995). The distinction between regression and correlation is that correlation shows the strength of relationship between two variables while regression allows predictions (extrapolation and interpolation) based on a best-fit line (Black, 1999).

Multiple regression analysis is a statistical technique used to analyse the relationship between a single dependent variable and several independent variables. The aim is to predict the single dependent value, using the independent variables whose values are known. Each predictor variable is weighted, the weights indicating their relative contribution to the overall prediction (Hair, et al., 1995). Stepwise Multiple Regression was used for TRA data analysis in this study to predict the main determinant of consumers’ intentions to try new food products, as this approach is the most widely used sequential approach to variable selection and it allows the researcher to examine the contribution of each predictor variable to the regression model (Hair, et al., 1995).

t-test

A T-test determines if there are any significant differences in the means for two groups in the variable of interest (Sekaran, 2003). In this study t-tests (independent sample t-test) were applied to determine if significant differences existed between two groups in relation to scaled variables, for example, between males and females, or British and Chinese.
One-way Analysis of Variance (ANOVA) with Multiple Groups

The t-test will only test whether there is a significant difference between two groups, but when more than two groups are compared for the possibility of differential impact with the dependent variable (integer/ ratio measure), an analysis of variance (ANOVA) is used (Sekaran, 2002; Black, 1999).

Bryman & Cramer (1999) suggested that it was necessary to compute one-way ANOVA to compare the means of three or more unrelated samples. Therefore, one-way ANOVA test was used in this research to examine the relationships between factors, for instance, the consumer’s willingness to try new food products (dependent variable) and consumer’s income, education level and age (independent variable). The relationships between the factors influencing consumers’ buying behaviour and consumer’s demographic factors were also tested by this method. An F-value is computed. Where the between-groups estimated variance is considerably larger than that within-groups, the value of the F ratio will be higher, and it is unlikely that differences between means are due to chance (Bryman & Cramer, 1999).

However, there are three assumptions behind the F test, when performing One-way ANOVA:

1. The dependent variable generates interval/ratio data, and the data for each treatment group or sample are normally distributed (this test is reasonably robust to some deviation from normality).

2. There is homogeneity of variance across groups. (if not, there are ways of compensating for this deficiency.)
3. There is independence of observations. (independent random samples have been taken from each group.) (Black, 1999, p449)

If the results of the ANOVA test produce a statistically significant F-value, further multiple comparisons are computed to identify where the differences are (George and Mallery, 2000). Post hoc tests were used to identify these significant differences between specific means. Examples of post hoc tests are shown in Table 5.2. From the table, Scheffe’s test is identified the most suitable for the F-test. Scheffe’s test was selected, as it is more conservative than Tukey A, though it does allow comparison of groups of means (Black, 1999).

### Table 5.2 Some multiple comparison techniques, in order of conservativeness for the six possible post hoc tests

Source: Black (1999: 467)

<table>
<thead>
<tr>
<th>Test</th>
<th>Comparison</th>
<th>Description</th>
<th>A priori/post hoc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple pairwise</td>
<td>Standard t-test (not recommended)</td>
<td></td>
<td>Either</td>
</tr>
<tr>
<td>Duncan pairwise</td>
<td>q-statistic, where qcrit is dependent on df and an α that increase with number of steps apart, r</td>
<td>Post hoc</td>
<td></td>
</tr>
<tr>
<td>Newman pairwise</td>
<td>q-statistic, where qcrit is dependent on df and r, the number of steps in the range, α=constant</td>
<td>Post hoc</td>
<td></td>
</tr>
<tr>
<td>Keuls</td>
<td>q-statistic, where qcrit is the average of those for Tukey A and Newman-Keuls</td>
<td>Post hoc</td>
<td></td>
</tr>
<tr>
<td>Tukey B pairwise</td>
<td>q-statistic, where qcrit is constant no matter how many steps apart</td>
<td>Post hoc</td>
<td></td>
</tr>
<tr>
<td>Tukey A pairwise</td>
<td>F-statistic, where F’ crit is constant and based upon F crit</td>
<td>Post hoc</td>
<td></td>
</tr>
</tbody>
</table>

Note: the conservative from least to most is shown in the table from top to bottom.
5.4.2 Qualitative Data Analysis

Although there are number of texts detailing techniques for conducting a qualitative project, the process of data analysis remains poorly described (Morse, 1994). Researchers meet many challenges in analysis of qualitative data, and there is no clear and accepted set of conventions for analysis of qualitative data that correspond to those available for quantitative data (Robson, 1993). Three main challenges were described by Hussey & Hussey (1997): reducing the data, structuring the data and anticipatory data reduction, and detextualising the data.

1. **Reducing the data**: Data reduction is a form of analysis that sharpens, sorts, focuses, discards and reorganises the massive amount of data from interview transcripts in such a way that 'final' conclusions can be drawn and verified (Miles and Huberman, 1994). A systematic way of summarising the data, usually involves some form of coding, is usually employed.

2. **Structuring the data**: Data as collected may not be in the most suitable form for its analysis. A theoretical framework, will provide a structure and may give a priori (pre-existing) specification of categories into which data can be fitted. If there is no pre-existing structure, a suitable one may emerge during the data collection phase.

3. **Detextualising the data**: Convert the transcribed text into diagrams and illustrations for analysis and presentation.

To solve and meet these challenges, different analysis techniques in qualitative data analysis have been invented by researchers. Some approaches are to quantify the data, which turn the qualitative data into numerical data, either forming or informing for instance, content analysis. Other approaches are non-quantifying methods, which
Fig 5.4 Components of Qualitative Data Analysis: Interactive Model

Source: Miles & Huberman: 1994, p12
Li Cheng Chapter 5: Methods and Techniques

include general analytical procedure, cognitive mapping, data display, grounded theory and Quasi-judicial methods (Hussey & Hussey, 1997). Miles & Huberman’s (1994) three general analysis concepts for qualitative data analysis have been widely accepted by many researchers: data reduction, data display, and conclusion drawing/verification (see Fig 5.4). It is of note that the process is iterative.

- **Data Reduction**

Data Reduction is the process of selecting, focusing, simplifying, abstracting and transforming the data that has been shown in written-up field notes or transcriptions. Qualitative data can be transformed or reduced either by selection, summary or paraphrase, or by being subsumed in a larger pattern. Sometimes it may be helpful to convert the data into quantities (Miles & Huberman, 1994). Thus, interview data can be categorized and coded according to some meaningful classification scheme, after which frequency counts can then be taken, and other appropriate nonparametric tests done (Sekaran, 2003). In this case, for industry interviews, all tapes were transcribed and categorized based on the company background, new product concept, process, success and trends (Appendix 5.13, 5.14 and 5.15). Most data were summarized and coded based on the above five constructs. Thus, the codetree of this research was developed deductively. After data categorising, 40 attributes of the NPD in the food industry were grouped (see Appendix 5.16). (In some cases, a short questionnaire was provided to the interviewee. All information from the short questionnaire was coded and analyzed quantitatively. As the sample was small, only frequency analysis was carried out, using SPSS.) Therefore, all the coded data were quantified, and entered into computer for analysis (SPSS). All these stages followed the 14 detailed stages of 'use of computer software in qualitative studies', suggested by Miles and Huberman (1994) (see Fig 5.5). Thus, qualitative data were transformed into
quantitative data by allocating subject groups to provide possible narrative descriptive information. It was hoped that these data would provide possible explanations of the new product concept, NPD process, success and trends from an industry perspective. Some data which could not be quantified, were also categorized under the five constructs and summarized to create a workable coherent system.

Most of the questions in the consumer questionnaire were close-ended, but some of the additional individual comments were also considered, which were formalized parts of questionnaire, for example where a space marked ‘others’ had been given. These data were analysed using qualitative analysis, although the numbers of responses to such questions in the questionnaire were limited.
1. Making notes in the field
2. Writing up transcribing field notes
3. Editing: correcting, extending or revising field notes.
4. Coding: attaching key words or tags to segments of text to permit later retrieval
5. Storage: keeping text in an organised database.
6. Search and retrieval: locating relevant segments of text and making them available for inspection
7. Data 'linking': connecting relevant data segments with each other, forming categories, clusters or networks of information.
8. Memoing: writing reflective commentaries on some aspect of the data, as a basis for deeper analysis
9. Content analysis: counting frequencies, sequence or locations of words and phrases
10. Data display: placing selected or reduced data in a condensed, organised format, such as a matrix or network, for inspection
11. Conclusion drawing and verification: aiding the analyst to interpret displayed data and to test or confirm findings.
12. Theory building: developing systematic, conceptually coherent explanations of findings; testing hypotheses
13. Graphic mapping: creating diagrams that depict findings or theories
14. Preparing interim and final reports.

- Data Display

Data display is the second stage, which is an organized, compressed assembly of information that permits conclusion drawing and action (Miles & Huberman, 1994). Along with the associated analytical text, and matrices, were used to display retrieved information in this research.
Conclusion Drawing and Verification

Conclusion drawing and verification is the final stage of data analysis. Miles and Huberman (1994) generalised 13 specific tactics for drawing conclusions, including noting patterns, themes; seeing plausibility; clustering; making metaphors; counting; making contrasts/comparisons; partitioning variables; subsuming particulars into general; factoring; noting relations between variables; finding intervening variables; building a logical chain of evidence and making conceptual/theoretical coherence. These tactics were used in this research for drawing initial meaning (NPD in the food industry) from a display that involved forming patterns (e.g. text and graphs), looking at contrasts/comparisons (e.g. NPD in the Chinese and British food industry), clarifying relationships (e.g. NPD success and handicap, success and failure reasons) and building a coherent understanding of NPD in the food industry in both countries (including new product concept, the NPD process, success and trends). Verification of conclusion may involve little more than cross-checking against transcripts or may involve lengthy augmentation and review among colleagues to develop “intersubjective consensus”, or extensive efforts to replicate a finding in another data set (Miles & Huberman, 1994). The meanings emerging from the data were drawn as findings and were tested for their validity in this research. The researcher outlined a checklist and asked a colleague to help to examine the research results. The examination was focused on confirming or verifying initial conclusions. Moreover, a comparison with literature was also used to verify conclusions.
5.5 Limitations of the Methodology

Although a multiple-methods approach and different data analysis techniques were used in this research to give confidence in the validity of the results, there were still some limitations in the research methodology.

5.5.1 Secondary source Research

One of the fundamental difficulties was the lack of information. Firstly, although NPD research has been conducted for many years, and the number of studies of the process are increasing, the academic studies of new food product development are not as numerous as general NPD studies. In particular, academic studies of new food product development in China are rare. Secondly, some data were not easily accessible including data of sensitive nature (e.g. NPD marketing expenditure). Finally, cross-national data are in short supply, thus in some cases, the same of type of information was not available in both countries. This study aims to fill some of these gaps in the literature.

5.5.2 Quantitative studies

Mailed questionnaires were used in this research. The limitations of this method were discussed in Chapter 4. A fundamental disadvantage of mailed questionnaires is the lack of flexibility (Bailey, 1982), as the interviewer is not present and as such questions can not be varied to suit the particular respondent. Samples from urban areas (based on specified locations in China and Britain) may bring some bias in this study. The sample size was also small, and this may limit accuracy. The researcher is aware of the limitations of this sampling frame and generalisations cannot therefore be made with respect to the countries as a whole. Finally, a few people that were
approached were reluctant to take part in this research. Thus, they did not fully complete their questionnaires, which is another limitation of mailed questionnaires as no follow up is possible. Moreover, issues of translation of the questionnaire into Chinese are relevant, although researcher aimed to minimise errors from this, using back translation, pilot study and with assistance of ex-colleagues.

5.5.3 Qualitative Methods

Owing to the limitations of time and cost, a small number of interviews were carried out. (Most food R&D personnel interviewed reported that most of their products reached the national food market.) Additionally, translation issues may have arisen in a cross-national study, although the researcher attempted to get accurate translations of transcripts. Finally, because the interviewees were key personnel in the R&D section in the food company, most were busy. In some cases, the interviewee was unable to attend and so a junior colleague took their place. In addition, where there was no separate R&D section in the food company, a marketing director or technical manager was interviewed. In most cases, they were a source of a great deal of knowledge and the interview was a success. However, in a few cases, they were not in a position to answer some questions, for example, the NPD success rate in their companies.

5.5.4 Data Analysis

Most of the analysis is based on the average score of each question, either for the group as a whole or for sub-group of respondents, particularly national groups. Therefore, the quantitative data analysis proceeded in a straightforward manner to
produce the results. Many tables and figures are given in the results and analysis chapter.

5.5.5 Minimising the Impact of Limitations

There are inherent limitations in each stage of this research, because of the nature of the study and the methodological techniques employed. However, a data collection method is seldom a perfect match to a research objective (Aaker, 1995). Therefore, Aaker (1995) suggested that a successful method would have the greatest number of strengths and the fewest weaknesses, relative to the alternatives. Keeping this in mind, the researcher attempted to gain as much valid information as possible by using the most appropriate techniques and methods.

Firstly, this research has benefited from the strengths inherent in a multiple-method approach, incorporating both quantitative and qualitative paradigms to maximise the research. The application of quantitative analysis distilled the data into meaningful variables for interpretation and allowed further conclusions to be drawn, which provided some useful information for the qualitative study. The qualitative approach provided an opportunity to complement the explanation of the results and confirmed the importance of NPD in the food industry.

Secondly, for the data collection, a questionnaire was chosen in the quantitative study, as it is likely to be the most suitable method for collecting data and information for this research (Chapter 4, Section 4.5.1). To ensure a high response rate and a minimum of respondent's bias, a pre-paid envelope was provided for the mail questionnaire and a £25-prize draw was held to encourage respondents to complete
the questionnaire. In order to minimise the effect of different backgrounds of respondents, the samples from each country came from urban areas with a high living standard, although this in itself gives some bias.

Thirdly, to solve the problems caused by the limited scale measures, pilot studies were used to carefully pilot the instrument and data administration procedure for comprehension and discrimination before collecting the large amount of data for the main study as explained in sections 5.2.1.4 and 5.3.1.

Fourthly, with the guide and data code shown in Appendix 5.18, the researcher attempted to transcribe the text into manageable categories as clearly as possible, to gain more detailed and accurate information for data analysis.

Finally, translation issues have always been raised in cross-nation studies. Questionnaires, and interview constructs were translated from English into Chinese and revised by a Chinese lecturer who is teaching English and a Chinese student whose major is English Literature to minimise the translation bias. Back translation was also used to minimise changes in meaning caused by translation.

The research design, and the data collection and data analysis methods, were intended to develop the research in an attempt to qualify or improve the previous results.

5.6 Conclusion

This research used both quantitative and qualitative studies, with the general objective of gathering new information and providing an insight into the opinions and
perceptions of both food consumers’ and food R&D personnel in China and Britain in relation to NPD.

This Chapter focused on the methods and techniques, used in this research. Firstly, a consumer questionnaire and food R&D personnel interview were chosen as data collection methods in this research. An operational procedure including methods, sample, questionnaire development or interview guide, pilot study and field work was discussed. Secondly, the techniques used in data analysis were examined, along with the implications of using each technique. Both quantitative and qualitative data analysis techniques were used in this research to investigate NPD in the food industry in China and Britain from both consumer and food personnel’s perspective. Finally, the limitations of the methods and techniques were also discussed, as each of those two stages had its own inherent benefits and weakness. The researcher chose the most appropriate methods and techniques to minimise research error, and insure the validity of the research findings and conclusions. The following chapters will present and discuss the research findings in each study.
Chapter Six
Chapter 6

Research Findings & Discussion (I)

British Consumer Study

6.1 Introduction

One of the major reasons for product failure is inadequate marketing information, particularly with regard to new product purchase behaviour of consumers (McCarthy, et al., 1999). Therefore, understanding consumer’s needs for new food products is very important for food NPD.

This Chapter discusses the results from the British consumer study for new product development under the frameworks established in the previous chapters (Chapter 4 & 5). It focuses on assessing British consumer demands for and attitude towards new food products and examines the necessity for NPD in British consumers’ minds. Firstly, a profile of the respondents’ characteristics is given, and then results relating to consumers’ thinking on new product concepts, necessity to introduce new products and new product trends, consumer’s buying behaviour in relation to new foods, consumers' willingness to try new foods and their attitude and intention to purchase new food products are presented. Finally, results are discussed to debate ‘What British consumers think of new food products?’

6.2 Reliability of Scale

Cronbach’s coefficient alpha was used to test the internal consistency of the scale instrument. The result showed a high reliability was achieved among all the attributes
including all six parts of the questionnaire (New product concept, Necessity to introduce new products, consumer's buying behaviour, consumer's attitude and intention to new products, consumer's willingness to try new products and new product trends). An alpha value of 0.8026 was calculated, where it has been suggested that as a rule of thumb, the result should be 0.8 or above (Bryman and Duncan, 1999).

6.3 Characteristics of British Food Consumers

The recruitment questionnaire was distributed as described in Chapter 4, and the questionnaire was filled in by the person considered to be responsible for most of the food shopping. Two hundred and twenty-two completed questionnaires were returned (53% response rate). Sample characteristics are shown in Table 6.1. Young people (aged 34 years or below) were the main respondents (51.4% of all respondents). The number of respondents decreased as the age groups rose, 27.9% of respondents were in the 35-54 years group and 20.7% in the senior group (aged 55 years or above). The high percentage (68.9%) of female respondents indicated that women were the main shoppers within the family, which is consistent with the results of a Sainsbury's survey which found that women were the main shoppers in households (Sainsbury's, 1998). The education level of respondents ranged from below A level (21.8%), A Level or equivalent (26.8%), Bachelor's degree or equivalent (23.6%) to diploma or professional and postgraduate or above (15.9% and 11.8% respectively).

The income of respondents was split relatively evenly, with the largest percentage (20.8 %) in the 20001-30000 (pounds per year) group and the smallest percentage (12.2%) in the 40001-50000 (pounds per year) group. The second highest percentage (18.3 %) related to the highest income group (£50001 or above). This indicated that
there was a large proportion of high-income earners in the catchments areas, reflecting the wealth of the sample population of these areas. The lowest income group accounted for 13.5% of the whole sample, which might reflect the proximity of universities or colleges, as most respondents in this group were students.

Table 6.1 British Consumer Profile

<table>
<thead>
<tr>
<th>Age (year)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>34 or below</td>
<td>51.4</td>
</tr>
<tr>
<td>35-55</td>
<td>27.9</td>
</tr>
<tr>
<td>55 or above</td>
<td>20.7</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>68.9</td>
</tr>
<tr>
<td>Male</td>
<td>31.1</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>Below A' Level</td>
<td>21.8</td>
</tr>
<tr>
<td>A' Level or equivalent</td>
<td>26.8</td>
</tr>
<tr>
<td>Bachelor's degree or equivalent</td>
<td>23.6</td>
</tr>
<tr>
<td>Diploma or professional qualification</td>
<td>15.9</td>
</tr>
<tr>
<td>Postgraduate degree or above</td>
<td>11.8</td>
</tr>
<tr>
<td>Income (£)</td>
<td></td>
</tr>
<tr>
<td>Below 10000</td>
<td>15.2</td>
</tr>
<tr>
<td>10001-20000</td>
<td>17.8</td>
</tr>
<tr>
<td>20001-30000</td>
<td>20.8</td>
</tr>
<tr>
<td>30001-40000</td>
<td>15.7</td>
</tr>
<tr>
<td>40001-50000</td>
<td>12.2</td>
</tr>
<tr>
<td>50001 or above</td>
<td>18.3</td>
</tr>
</tbody>
</table>

The questionnaire requested details of average weekly spend on food with an open-ended question. One hundred and eighty-three respondents answered this question. The figures are shown in Fig. 6.1. The greatest proportion of households spent between £81-100 per week (36%) or between £101-120 per week (31%). A small proportion (4%) had a weekly food spend of above £120. Seventy-one percent of the sample had a weekly spend on food of £81 or above. Data from National Food Survey (NFS) for 2000 (DEFRA, 2001) showed that the average total expenditure on household food for 2000 was £45.16 per household per week. Compared with the data from the NFS, findings are higher than the national average, which is thought to be related to the socio-economic status of the sample population.
Some of the data presented in this chapter so far points to the fact that the sample cannot be regarded as representative of the population as a whole, being largely female, and with high socio-economic status. This will not then allow generalisations to be made across Britain. However, a number of variables which are regarded as influencing food choice behaviour, such as social stratification, gender, income and age (chapter 3), are obviated and other factors may emerge by dealing with a relatively homogenous sample.

6.4 New Product Concept

This section measured the consumer’s thoughts and feelings about what a new product constituted. The results of their thoughts on new product concepts are shown in Table 6.2. Strongest agreement was given to the response that a new product concept is ‘A completely new product-new to the world’ indicated by a mean of 4.56 (from 1-strongly disagree to 5-strongly agree, with 72.5% of respondents strongly agreeing). ‘New brand’ ($\bar{x} = 3.69$) yielded the second highest level of agreement.
followed by ‘new to the company’ ($\bar{x} = 3.5$). This result is similar to the definition of a new product provided by Booz, Allen and Hamilton in 1982 (Chapter 2), where new products were defined as ‘new to the world’, ‘new to the company’ and ‘new brand’. By contrast, most consumers did not think that a product with a ‘new price’ ($\bar{x} = 2.21$) or ‘new appearance’ ($\bar{x} = 2.50$) constituted a new product (32.7% and 23.7% of respondents respectively strongly disagreed).

Table 6.2 British Consumer perception of New Product Concept

Note: $n=222$ ; 1=strongly disagree; 5=strongly agree

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely New Product</td>
<td>4.56</td>
<td>0.86</td>
</tr>
<tr>
<td>New Brand</td>
<td>3.69</td>
<td>1.10</td>
</tr>
<tr>
<td>New to the Company</td>
<td>3.50</td>
<td>1.13</td>
</tr>
<tr>
<td>Improved Healthy</td>
<td>3.30</td>
<td>1.06</td>
</tr>
<tr>
<td>Taste Changed</td>
<td>3.20</td>
<td>1.04</td>
</tr>
<tr>
<td>Improved Safety</td>
<td>3.10</td>
<td>1.07</td>
</tr>
<tr>
<td>Improved Quality</td>
<td>3.05</td>
<td>1.12</td>
</tr>
<tr>
<td>New Appearance</td>
<td>2.50</td>
<td>1.23</td>
</tr>
<tr>
<td>New Price</td>
<td>2.22</td>
<td>1.15</td>
</tr>
</tbody>
</table>

6.5 Necessity to Introduce New Product into the Food Market

This section included three questions. The first measured the necessity to introduce new products into the food market, the second investigated the reason for product change and the last sought the main factors influencing consumer’s buying behaviour for a new food product.
6.5.1 Necessity to Introduce New Products into the Food Market

Most people thought that it was necessary to introduce new food products into the market (\( \bar{x} = 3.91, \text{SD. (std. Deviation)}=0.83 \)), with 54.5% of respondents indicating 'necessary' and 22.5% indicating 'extremely necessary' (Fig. 6.2).

**Fig 6.2 British Consumers' Perception of Necessity to Introduce New Foods (n=222)**

Overall older people thought it significantly (\( p=0.03 \)) less necessary to introduce new products than young people. A Scheffe test was used to test multiple comparisons. The results showed that there was a significant difference only between the 34-year or below group and the 55-year or above group (\( p=0.004 \)).

6.5.2 Reasons for Changing Current Products

Table 6.3 shows that 'to improve health' and 'try something new' were perceived to be the main reasons for product change. This indicated that most consumers cared about their health and wanted to try something new. Results are consistent with
findings from the literature review (Chapter 4) where healthy foods were identified as a main consumer demand and indicated as a food trend in future (Sloan, 2001).

**Table 6.3 Reasons for Current Product Change (British Consumer Study)**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>To Improve Health</td>
<td>4.25</td>
<td>0.74</td>
</tr>
<tr>
<td>Try Something New</td>
<td>3.91</td>
<td>0.84</td>
</tr>
<tr>
<td>Lack of demand</td>
<td>3.71</td>
<td>0.87</td>
</tr>
<tr>
<td>To Improve Convenience</td>
<td>3.58</td>
<td>0.85</td>
</tr>
<tr>
<td>High Price</td>
<td>3.58</td>
<td>0.93</td>
</tr>
<tr>
<td>Poor Quality</td>
<td>3.57</td>
<td>0.99</td>
</tr>
<tr>
<td>Bored with Existing Food</td>
<td>3.56</td>
<td>0.95</td>
</tr>
<tr>
<td>Bad Taste</td>
<td>3.55</td>
<td>0.93</td>
</tr>
<tr>
<td>Lack of Variety</td>
<td>3.50</td>
<td>0.91</td>
</tr>
</tbody>
</table>

There were no significant differences between genders. However, generally, people with higher levels of education were less likely to think that the price of current products was a reason for change (p=0.008). (except diploma or professional qualification group). Mean values for ‘lack of demand’ (p=0.038), ‘to improve convenience’ (p=0.025), and ‘try something new’ (p=0.009) showed significant differences between age groups, with mean decreasing as age increased. (Appendix 6.1 & 6.2 shows mean difference by age and education.) Significant differences were found between the 34-year or below group and the 55-year or above group. Scheffe’s tests showed significant differences between these two groups in relation to ‘lack of demand’ (p=0.039), ‘to improve convenience’ (p=0.028), ‘try something new’ (p=0.010).

Analysis of variance showed a significant difference (p=0.021) between income groups relating to the reason ‘to improve convenience’ (Appendix 6.3). However,
multiple comparison results failed to show individual differences between any of the
groups.

6.5.3 Main Factors Influencing Consumer's Buying of a New Food Product

All the factors, with one exception, were considered to influence consumer's buying
behaviour with mean values ranging from 3.20 (promotion) to 3.94 (quality) (Table
6.4). The exception was the belief factor with a mean of 2.40, which indicates British
consumers' purchase behaviours were less strongly influenced by an individual's
religions or beliefs. Quality (3.94), friends and family's suggestion (3.80) and price
(3.75) were considered to be more important in determining buying behaviour than
other factors.

Table 6.4 Main Factors Influencing British Consumer's Purchase Behaviour

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product quality</td>
<td>3.94</td>
<td>0.79</td>
</tr>
<tr>
<td>Family or friend suggestion</td>
<td>3.80</td>
<td>0.92</td>
</tr>
<tr>
<td>Price</td>
<td>3.75</td>
<td>0.96</td>
</tr>
<tr>
<td>Doctor recommendation</td>
<td>3.63</td>
<td>1.00</td>
</tr>
<tr>
<td>Variety</td>
<td>3.53</td>
<td>0.84</td>
</tr>
<tr>
<td>Media</td>
<td>3.46</td>
<td>0.98</td>
</tr>
<tr>
<td>Appearance</td>
<td>3.30</td>
<td>1.00</td>
</tr>
<tr>
<td>Promotion</td>
<td>3.20</td>
<td>1.02</td>
</tr>
<tr>
<td>Belief</td>
<td>2.40</td>
<td>1.09</td>
</tr>
</tbody>
</table>

The results showed that women were more likely to consider friends and family's
suggestions than men, when they were making decision to buy a new product
(p=0.015) (Appendix 6.4).
Responses to six of the factors were influenced by age. Younger people tended to be influenced by 'price' (p=0.038) and 'promotion' (p=0.000) when they were buying a new product, and their decisions were also affected by 'product's variety' (p=0.022), 'appearance' (p=0.001) and friends and family's suggestion (p=0.000). Older people were more likely to indicate that their belief was one of the reasons for their purchase of a new food product than young people (p=0.028) (Appendix 6.5). Additionally, multiple comparisons showed that there were significant differences between some specific groups: between the 34-year or below group and the 55-year or above group, for the factors of 'price' (p=0.046), 'variety' (p=0.025), 'promotion' (p=0.000), 'appearance' (p=0.001) and 'suggestion' (p=0.000); between the 34-year or below group and the 35-54 year group for the 'suggestion' factor (p=0.004); and differences between the 35-54 year group and the 55-year or above group for the 'promotion' factor (p=0.002).

People with a higher education level were more likely to report that their beliefs were important (p=0.016) (Appendix 6.6), when making a decision about buying a new product, particularly between the A Level or below group and the postgraduate degree or above group (p=0.041). Lower-income groups tended to consider the price to be more important than the higher income groups (p=0.021) (Appendix 6.7). However, results from multiple-comparison showed that there was no significant difference between each group (p>0.05).
6.6 Consumer’s willingness to Try New Products in General

A large percentage of respondents (81.6%) were likely to try new products with 61.3% indicating it as ‘likely’ and 20.3% rating it as ‘very likely’. The mean of 3.96 for consumer’s willingness to try new products is closer to the ‘likely’ rating of 4. This would appear to indicate that new products do have a potential market. Fig. 6.3 shows that only 4.5% of respondents were unlikely (including unlikely and extremely unlikely) to try new products, possibly reflecting that some consumers prefer to buy goods that they are familiar with. Male and female respondents exhibited similar willingness to try a new product, as did people with different incomes and educational backgrounds (no significant difference between each group). Younger consumers, however, showed greater willingness to try new products (p=0.004; with mean of 4.10 (34 years or below), 3.91(35 years to 54 years) and 3.67 (55 years or above) respectively). Multiple-comparison results showed there was a significant difference between the 34 years’ old or below group and the 55 years’ old or above group (p=0.004).
### Table 6.5 British Consumer’s willingness to try different kinds of new foods

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group A</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnic Food</td>
<td>3.41</td>
<td>1.09</td>
</tr>
<tr>
<td>Natural Food</td>
<td>3.82</td>
<td>0.90</td>
</tr>
<tr>
<td>Convenience Food</td>
<td>3.25</td>
<td>1.07</td>
</tr>
<tr>
<td>Functional Food</td>
<td>3.37</td>
<td>1.02</td>
</tr>
<tr>
<td><strong>Group B</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Brand</td>
<td>3.60</td>
<td>0.93</td>
</tr>
<tr>
<td>New Package</td>
<td>2.65</td>
<td>0.89</td>
</tr>
<tr>
<td>Quality Improved</td>
<td>3.84</td>
<td>0.77</td>
</tr>
<tr>
<td>Reduced Price</td>
<td>3.98</td>
<td>0.91</td>
</tr>
<tr>
<td>Healthy Version</td>
<td>4.17</td>
<td>3.47</td>
</tr>
<tr>
<td>New Taste</td>
<td>3.35</td>
<td>0.88</td>
</tr>
</tbody>
</table>

Two groups of products were presented to test the consumer’s willingness to try new products. The first group (A) focused on the kind of new products, which included ethnic food, natural food, convenience food, and functional food. The second group (B) focused on changes in product characteristics, such as brand, packaging, quality, healthy version, new taste and reduced price. Of group A, ‘natural food’ was the type of product that consumers were most likely to try (\( \bar{x} = 3.82 \)), closely followed by ethnic food (\( \bar{x} =3.40 \)) and functional food (\( \bar{x} =3.37 \)). Though ‘convenience food’ received the lowest score, it still showed a positive willingness. It seems that most people care about their health and want to get more variety, therefore being most willing to try natural food, ethnic food or functional food rather than convenience food. This might also be the reason that ‘healthy version’ of food was given the highest score (\( \bar{x} = 4.17 \)) amongst the group B (Table 6.5).
'Healthy version' was followed by 'reduced price' ($\bar{x} = 3.98$) and 'improved quality' ($\bar{x} = 3.84$). It thus seems that consumers want a new product with real value, that is a product of good quality at a reasonable price. New packaging was less likely to prompt consumers to try a new product (mean is 2.65, lower than 3 (neutral)). None of these variables showed a statistically significant difference between gender or income groups. However, people with different education levels indicated a different willingness to try ethnic foods ($p=0.003$). Those with a higher education level appeared to exhibit distinctively more willingness to try new ethnic food products than others (Appendix 6.8), with those with a postgraduate degree or above significantly more willing to try ethnic foods than those in the A Level or below group ($p=0.008$). Different aged respondents also expressed different willingness to try the different kinds of new foods (new ethnic foods ($p=0.003$), new convenience foods ($p=0.003$), new brand ($p=0.003$), new packaging ($p=0.008$), new price ($p=0.035$) and new flavour ($p=0.000$)) (Appendix 6.9). Their willingness to try these kinds of foods decreased with a rise in age ($p<0.05$). Significant differences between pairs of groups are shown below:

**Between the 34-year or below group and the 55-year or above group:** ethnic food ($p=0.000$), convenience foods ($p=0.004$), new brand ($p=0.003$), new taste ($p=0.000$)

**Between the 34-year or below group and the 35-54 year group:** new package ($p=0.031$)

**Between the 55-year or above group and the 35-54 year group:** ethnic foods ($p=0.005$), new package ($p=0.049$).
There was no significant differences between age groups and their willingness to try
natural foods and functional foods, or a new product with a good quality or a healthy
version.

6.7 Consumer's attitude and Intention to Try New Food Products—

TRA Model Application

Attitudes to new food products were measured using the Theory of Reasoned Action
(TRA) (Chapter 5, Section 5.2.1.2). The TRA examines the attitudes and beliefs that
influence an individual to perform a behaviour. Mathematically, it is

\[ \text{Beh} - I = W_1A + W_2SN \]

Where

\( \text{Beh} \) is the behaviour (or target behaviour)

\( I \) is the intention to perform the target behaviour

\( A \) is the attitude toward performing the target behaviour

\( SN \) is the subjective norm or an individual's perception of social pressure
to perform the target behaviour and

\( W_1 \) and \( W_2 \) are empirically determined weights which indicate the relative influence
of attitudes and subjective norms on behavioural intentions (Chan & Lau, 1998).

Additionally, a person's attitude toward a specific behaviour is proposed to be a
function of the perceived consequences of performing the behaviour (B) and of his or
her evaluation of those consequences (E). Likewise, \( SN \) is viewed as a function of a
person's perception of what specific important referents think he or she should do
Li Cheng Chapter 6: British Consumer Study

(NB or N), and of his or her motivation to comply with these referents (MC or M) (Chan & Lau, 1998). This can be presented by mathematical equation:

\[ A \propto \sum B_i E_i \]

\( B: \) Behavioural beliefs

\( E: \) Evaluative beliefs

\[ SN \propto \sum J_i M_j \]

\( B: \) Normative beliefs

\( M: \) Motivation to comply (Ajzen, 1988)

The following section reports the findings of the analysis of British consumer’s attitudes/subjective norms to new food products, using the TRA. Four intentions were examined to determine the effects of attitudes/subjective norms on respondent’s intentions to try new food products. First, mean values to attitude and subjective norm were related to likelihood of trying different new products within four weeks (four intentions). Then, a multiple regression was used to determine which of attitudes or subjective norm was the most influential on intentions.

The four intentions examined were:

1. Trying new food products
2. Trying new healthy foods
3. Trying new convenience foods
4. Trying new ethnic foods
Mean values for un-weighted beliefs and normative beliefs, evaluation beliefs and motivation to comply were also examined within above food groups (new food products, new healthy foods, new convenience foods and new ethnic foods).

Additionally, a Pearson correlation test was used to test the relationships between $\Sigma B i E i$ and attitude, and between $\Sigma N j M j$ and subjective norms within each intention and also between attitudes and intention and between subjective norm and intention.

### 6.7.1 Trying New Food Products

More than half respondents (54.5%) stated that they would be likely to try new food products within four weeks (likely: 43.7%, very likely 10.8%). The majority of respondents (77.4%) had a positive attitude to trying new food products, 62% considered it was good to try new food products and 15.4% thought it was very good. They believed that providing new food products means they can make more healthy choices ($\bar{x} = 3.58$), and get quality improved foods ($\bar{x} = 3.60$). They thought both of them (more healthy choice $\bar{x} = 4.44$, and improved quality $\bar{x} = 4.25$) were good. However, they still worried about the reliability of new foods ($\bar{x} = 3.31$), because they thought 'to enable consumers to choose foods that they may be not sure of the reliability' was bad ($\bar{x} = 2.34$). Subjective norm produced the least positive response ($\bar{x} = 3.03$) indicating that the opinion of significant others was not as important to this group as their personal beliefs. British consumers believed most producers ($\bar{x} = 4.02$) thought they should try new foods, but they would not follow their suggestion ($\bar{x} = 1.98$). They more likely to take some suggestions from doctors ($\bar{x} = 3.40$) or their
family numbers ($\bar{x} = 3.06$). Table 6.6.a shows the mean responses (and standard deviations) for each question with the intention of trying new food products.

**Table 6.6.a Mean Values to Attitude Questions regarding Trying a New Food Product within Four Weeks (British Consumer Study) n=222**

<table>
<thead>
<tr>
<th>Attitude Measure</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>3.92</td>
<td>0.63</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>3.03</td>
<td>0.98</td>
</tr>
<tr>
<td>Intention</td>
<td>3.42</td>
<td>0.99</td>
</tr>
</tbody>
</table>

The standard deviations in Table 6.6.a demonstrate a degree of variation around the means, which represent the more positive or negative responses noted in the frequency data.

In order to determine whether attitude or subjective norm was most influential on the respondent's intention to try new food products, a stepwise multiple regression technique was used. The results are shown in Table 6.6.b. Both attitude and subjective norm variables, as having a probability of F being <0.05, were selected for inclusion in the regression equation and were found to significantly influence respondent's intentions to try a new food product. This calculation acknowledges and eliminates the potential for multicolinearity between independent variables (attitude/subjective norm) within a behaviour measure, such as where the variables may be interrelated.

The F test is a test for overall significance to determine whether the slope of the relationship equals 0. The stepwise regression calculation was used to determine
whether the addition of each variable in turn had an influence on both the correlation between intention and attitude/subjective norm, and the slope of that relationship. The R Square of 0.256 suggested that these two variables (attitude and subjective norm) account for 25.6% in the variation of intention to try new food products.

Table 6.6.b Regression Results on Attitude/subjective Norm and Intention to Try New Food Products (British Consumer Study) n=222

<table>
<thead>
<tr>
<th></th>
<th>R square</th>
<th>Adjusted R square</th>
<th>F</th>
<th>p</th>
<th>t</th>
<th>p</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>0.256</td>
<td>0.249</td>
<td>37.488</td>
<td>0.000</td>
<td>7.589</td>
<td>0.000</td>
<td>0.450</td>
</tr>
<tr>
<td>Subjective Norm</td>
<td></td>
<td></td>
<td>2.864</td>
<td>0.005</td>
<td>0.170</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

An Analysis of Variance (ANOVA) was used to examine if the slope of the relationship between the independent variables (x) and the dependent variable (y) equalled 0. An F value of 37.5 (p=0.000) showed that the variables were related. Attitude (p=0.000) and subjective norm (p=0.005) were found to have a statistically significant relationship with the intention to try new food products.

The strength of the variables in influencing behavioural intention is shown by the Beta weight. Attitude has the higher Beta weight (0.450) than subjective norm (0.170). This suggested that both attitude and subjective norm were contributing factors in influencing British consumer’s intention to try a new food product, but attitude was the main driving factor.

Additionally, according to TRA Model, ‘the attitude towards the behaviour is determined by the person’s evaluation of the outcomes associated with the behaviour and by the strength of these associations’. (Ajzen and Fishbein, 1988, p120) By
Behavioural Beliefs

*Providing new food products means:*

- More healthy choice
- Quality improved
- Not sure reliability

Evaluation Beliefs

*To enable consumers to choose*

- More healthy choice is good/bad
- Quality improved foods is good/bad
- Not sure reliability is good/bad

Normative Beliefs

*Most ....think I should try new food products*

- Family members
- Friends
- Doctors
- Producers

Motivation to Comply

*Generally speaking, I want to do what ....think I should do*

- Family members
- Friends
- Doctors
- Producers
multiplying belief strength/weakness and outcome evaluation, and summing the resulting products, an estimate (ΣBiEi) has been obtained. A Pearson correlation test was used to test the relationship between ΣBiEi and attitude in this study. Similarly, an estimate of ΣNjMj has been created to test the relationship between beliefs and subjective norms, as subjective norms are also assumed to be a function of beliefs that specific individuals or groups approve or disapprove of performing the behaviour. (Ajzen and Fishbein, 1988) Table 6.6.c shows the significant correlations between each variable (p=0.000).

6.7.2 Trying New Healthy Foods

Of the 222 respondents interviewed, 59.4% stated that they would like to try new healthy foods within four weeks, with 28 respondents giving a negative response stating that they probably do not intend to follow this behaviour. Results showed that British consumers believed that providing new healthy foods means that they can get more healthy choices (x̄ =4.13), which they thought was good (x̄ =4.44), but they thought that they may lack clear product knowledge (x̄ =3.50) and that new healthy foods means more expense for consumers (x̄ =3.72). Although they did not think 'lack clear product knowledge (x̄ =2.25)' and 'expensive foods (x̄ =2.75)' were good for them, ninety-two percent of respondents stated that they thought it is good /very good to try new healthy foods (52% good, 39.8% very good). The mean and standard deviation of responses for subjective norms (x̄ =3.48) (Table 6.7.a) demonstrate the less positive responses to this factor than their attitude (x̄ =4.31). It indicates that respondents thought that the opinion of significant others to try new healthy foods was less important than their personal beliefs. Although they believed that their family...
members (\( \bar{x} = 3.45 \)), friends (\( \bar{x} = 3.20 \)), doctors (\( \bar{x} = 3.56 \)) and producers (\( \bar{x} = 3.53 \)) would think that they should try new healthy foods, they would not strongly follow their suggestions (\( \bar{x} \text{ producer} = 1.98 \), \( \bar{x} \text{ friends} = 2.70 \), \( \bar{x} \text{ family} = 3.06 \), and \( \bar{x} \text{ doctors} = 3.40 \)).

Table 6.7.a Mean Values to Attitude Questions regarding Trying New Healthy Foods within Four Weeks (British Consumer Study) n=222

<table>
<thead>
<tr>
<th>Attitude Measure</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>4.31</td>
<td>0.64</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>3.48</td>
<td>1.00</td>
</tr>
<tr>
<td>Intention</td>
<td>3.58</td>
<td>0.93</td>
</tr>
</tbody>
</table>

Table 6.7.b Regression Results on Attitude/subjective Norm and Intention to Try New Healthy Food Products (British Consumer Study) n=222

<table>
<thead>
<tr>
<th></th>
<th>R square</th>
<th>Adjusted R square</th>
<th>F</th>
<th>p</th>
<th>t</th>
<th>p</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>0.179</td>
<td>0.171</td>
<td>23.695</td>
<td>0.000</td>
<td>3.999</td>
<td>0.000</td>
<td>0.263</td>
</tr>
<tr>
<td>Subjective norms</td>
<td></td>
<td></td>
<td>3.802</td>
<td>0.000</td>
<td></td>
<td>0.250</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.7.b presents the result of a multiple regression analysis to determine the most influential predictors of respondent’s intention to try new healthy foods. With the intention to try new healthy foods, the regression calculation produced an adjusted R square which suggests a relationship between the attitude/subjective norm and
**Behavioural Beliefs**

*Providing new healthy foods means:*

More healthy choice  
Lack of product knowledge  
more expense

**Evaluation Beliefs**

*To enable consumers to choose*

More healthy choice is good/bad  
lack of knowledge foods is good/bad  
expensive foods is good/bad

**Normative Beliefs**

*Most ....think I should try new food products*

Family members  
Friends  
Doctors  
Producers

**Motivation to Comply**

*Generally speaking, I want to do what ....think I should do*

Family members  
Friends  
Doctors  
Producers
intentions (0.171). ANOVA confirmed the relationship between attitudes/subjective norms and intention, producing a significant F statistic (F=23.695, p=0.000). A t-test confirmed that the x and y variables in these models were linearly related (p=0.000 for each factor). The Beta weights show that both attitude and subjective norm had similar influences on behavioural intention to try new healthy foods.

Results from Table 6.7.c indicated that subjective norm was strongly driven by a function of normative beliefs and motivation to comply (r=0.634, p=0.000). A significant correlation between attitude and $\Sigma B_iE_i$ was also found (r= 0.251, p=0.000).

### 6.7.3 Trying New Convenience Foods

In contrast to the previous intentions examined, the frequency and descriptive information suggests that this intention was met with a less positive response. The mean responses to the attitude/subjective norms regarding the intention to try new convenience foods are presented in Table 6.8.a

**Table 6.8.a Mean Values to Attitude Questions regarding Trying New Convenience Foods within Four Weeks (British Consumer Study) n=222**

<table>
<thead>
<tr>
<th>Attitude Measure</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>3.10</td>
<td>0.87</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>2.51</td>
<td>0.93</td>
</tr>
<tr>
<td>Intention</td>
<td>2.84</td>
<td>1.13</td>
</tr>
</tbody>
</table>
Only 32.9% respondents showed an interest in trying new convenience foods in the next four weeks (27% likely, and 5.9% very likely). Respondents believed that providing new convenience foods means that they can cook foods easily and quickly (\( \bar{x} = 4.08 \)), which they thought was good (\( \bar{x} = 3.50 \)). However, they believed that convenience foods may be less healthy (\( \bar{x} = 3.87 \)), which was not good for them (\( \bar{x} = 2.18 \)). Sixty-six of 222 respondents (29.8%) demonstrated a positive attitude to new convenience foods by stating having new convenience foods is good/very good (good: n=56, very good: n=10). Forty-two percent of respondents did not intend to try new convenience foods in the next four weeks. The results of mean responses to subjective norms and intention to try new convenience foods were negative (Less than 3, not likely to try). Respondents thought that their family (\( \bar{x} = 2.62 \)), friends (\( \bar{x} = 2.53 \)) and doctors (\( \bar{x} = 2.53 \)) would not suggest that they should try new convenience foods, except producers (\( \bar{x} = 3.86 \)), whose suggestion they did not want to take (\( \bar{x} = 1.98 \)).

As shown in Table 6.8. b, both attitude and subjective norm could be considered as predictors of intention to try new convenience foods.

**Table 6.8. b Regression Results on Attitude/subjective Norm and Intention to Try New Convenience Food Products (British Consumer Study) n=222**

<table>
<thead>
<tr>
<th></th>
<th>R square</th>
<th>Adjusted R square</th>
<th>F</th>
<th>p</th>
<th>t</th>
<th>p</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>0.441</td>
<td>0.436</td>
<td>85.900</td>
<td>0.000</td>
<td>9.099</td>
<td>0.000</td>
<td>0.517</td>
</tr>
<tr>
<td>Subjective norms</td>
<td></td>
<td></td>
<td>4.272</td>
<td>0.000</td>
<td></td>
<td>0.243</td>
<td></td>
</tr>
</tbody>
</table>

Compared with previous intentions, a higher adjusted R square value (0.436) requires some consideration with regard to the intention to try new convenience foods,
**Behavioural Beliefs**

*Providing new convenience foods means:*

- Easy to cook
- Less healthy

**Evaluation Beliefs**

*To enable consumers to choose*

- Easy to cook foods is good/bad
- Less healthy foods is good/bad

**Normative Beliefs**

*Most ....think I should try new food products*

- Family members
- Friends
- Doctors
- Producers

**Motivation to Comply**

*Generally speaking, I want to do what ....think I should do*

- Family members
- Friends
- Doctors
- Producers
accounting for 43.6% of variance in the equation. The model produced a highly significant F value (F=85.9, p=0.000) indicating a relationship between subjective norm/attitude and intention. In addition, t-tests to test for individual relationship between subjective norm/attitude and intention also proved significant (ta=9.099, p=0.000, tsn=4.272, p=0.000). This implies that whilst attitude is the dominant predictor of respondent’s intention to try new convenience foods, subjective norms also play a significant role. The Beta weighting calculated for each model supports these findings (Ba-1=0.517, Bsn-1=0.243).

Table 6.8.c shows significant correlations between ΣBiEi and attitude and between ΣNjMj and subjective norms (p=0.000 for each).

6.7.4 Trying New Ethnic Foods

Forty-one percent of respondents reported that they would like to try new ethnic foods within four weeks (very likely, 5%, likely, 36%). Fifty-eight percent of respondents reported that having new ethnic foods is good or very good (good: 44.8%, very good: 13.1%). Respondents believed that they could get more food choice from being given new ethnic foods (\(\bar{x}=4.12\)), which they believed that was good (\(\bar{x}=3.82\)), but they thought that new ethnic foods may not be to every consumer’s taste (\(\bar{x}=3.92\)), which they did not think was good (\(\bar{x}=2.86\)). With previous intentions measured (intentions to try new (general) food products and new healthy foods), subjective norms proved to be less positive in terms of responses given than attitude (Table 6.9.a). This may be because they were not sure if their family (\(\bar{x}=2.96\)) and friends (\(\bar{x}=3.00\)) would suggest that they tried new ethnic foods.
Table 6.9.a. Mean Values to Attitude Questions regarding Trying New Ethnic Foods within Four Weeks (British Consumer Study) n=222

<table>
<thead>
<tr>
<th>Attitude Measure</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>3.65</td>
<td>0.80</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>2.89</td>
<td>0.96</td>
</tr>
<tr>
<td>Intention</td>
<td>2.84</td>
<td>1.13</td>
</tr>
</tbody>
</table>

In addition, a larger number of individuals responded with a ‘not sure’ answer (n=67) than in previous intentions.

Table 6.9.b Regression Results on Attitude/subjective Norm and Intention to Try New Ethnic Food Products (British Consumer Study) n=222

<table>
<thead>
<tr>
<th>R square</th>
<th>Adjusted R square</th>
<th>F</th>
<th>p</th>
<th>t</th>
<th>p</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>0.537</td>
<td>0.533</td>
<td>126.311</td>
<td>0.000</td>
<td>8.906</td>
<td>0.000</td>
</tr>
<tr>
<td>Subjective norms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.9.b shows the results of a stepwise multiple regression for the intention to try new ethnic foods. Both attitude and subjective norms to new ethnic foods were selected for inclusion in the regression equation having been found to be associated with respondent’s intention to try new ethnic foods within four weeks. The R square for the regression (0.537) indicates a positive relationship between attitude/subjective norms and intention to try new ethnic foods. An F value proved highly significant (F=126.311, p=0.000) confirming that there was a significant positive relationship.
**Behavioural Beliefs**

*Providing new ethnic foods means:*

More choice  
Not suit for everyone’s taste

**Evaluation Beliefs**

*To enable consumers to choose*

more choice is good/bad  
not suit for everyone’s taste foods is good/bad

**Normative Beliefs**

*Most ....think I should try new food products*

Family members  
Friends  
Producers

**Motivation to Comply**

*Generally speaking, I want to do what ....think I should do*

Family members  
Friends  
Producers
between stated behavioural intention and attitude/subjective norms. The t-test proved significant (p=0.000), indicating that multicolinearity was not a complication in this instance. Attitude was found to be the main influential variable in predicting intention with regard to trying new ethnic foods (B=0.465). Subjective norm was slightly less influential (B=0.388).

Table 6.9.c indicated that the multibelief function significantly drove the respondent's attitude to ethnic foods (r=0.286, p=0.000). Whilst, subjective norm was significantly influenced by the multi-function of normative beliefs and motivation to comply (r=0.503, p=0.000).

6.7.5 Conclusion

In conclusion, the analysis of the four intentions demonstrated that the Theory of Reasoned Action can be used to test intentions to try new food products in this study. Although the most influential factor for each intention depended greatly on the respondent's attitude and knowledge of the intention, all of these intentions were driven by both respondent's attitude/subjective norm. In general, when consumers were going to try a new food product, whatever it was (healthy, convenience or ethnic food), their buying intentions to try it were significantly influenced by their attitude to this kind of food and the subjective norm to this product. Furthermore, their attitudes, which were affected by their beliefs, might be dominant in driving their buying intentions. Simultaneously, respondent's beliefs (both behavioural beliefs and evaluation beliefs) influenced their attitude to the new food products, and subjective norms, are proved to be a function of beliefs that specific individuals or groups approve or disapprove of performing the behaviour.
Overall a respondent’s beliefs which include his/her evaluative beliefs, behavioural beliefs, normative beliefs and motivation to comply, were consistently important and influential indicators of behavioural intention.

6.8 New Product Development Trends

This part of questionnaire explored consumer’s predictions for the main trends in new product development. Two groups of New Product Development factors were given as the possible trends that might develop in the next 10 years. Group A focused on changes in product characteristics, such as brand, packaging, taste, quality, appearance, variety and price. Group B focused on the kind of new products, which included ethnic food, natural food, ready or convenience food, healthy food and functional food.

A consistent trend was found in the main perceived trends of food product development in the next 10 years. Frequency statistics show that the majority regarded that the trends in both Group A (except price reduction) and Group B were likely to occur during the next 10 years.

Table 6.10 gives a clear order of perceived main trends in new product development from ‘most likely’ to ‘least likely’. In Group A (product characteristics), the main anticipated trend was ‘new packaging’ ($\bar{x} = 4.29$), followed by ‘variety’ ($\bar{x} = 4.10$), ‘attractive appearance’ ($\bar{x} = 4.09$), ‘new brand’ ($\bar{x} = 3.98$), ‘improved quality’ ($\bar{x} = 3.87$) and ‘changed taste’ ($\bar{x} = 3.55$) and finally ‘lower price’ ($\bar{x} = 2.97$). Convenience foods ($\bar{x} = 4.26$) were perceived to be most likely main trend in Group B.
(type of product), although many people expressed little willingness to try them when they were asked, followed by natural foods and healthy foods (\(\bar{x}=4.23\)), functional foods (\(\bar{x}=4.03\)) and ethnic foods (\(\bar{x}=3.95\)).

### Table 6.10 British Consumers’ Expectation of NPD Trends

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group A</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New packaging trend</td>
<td>4.29</td>
<td>0.81</td>
</tr>
<tr>
<td>Variety trend</td>
<td>4.10</td>
<td>0.74</td>
</tr>
<tr>
<td>Attractive appearance</td>
<td>4.09</td>
<td>0.76</td>
</tr>
<tr>
<td>New brand trend</td>
<td>3.98</td>
<td>0.86</td>
</tr>
<tr>
<td>Quality trend</td>
<td>3.87</td>
<td>0.87</td>
</tr>
<tr>
<td>Flavour trend</td>
<td>3.56</td>
<td>0.84</td>
</tr>
<tr>
<td>Price reduction</td>
<td>2.97</td>
<td>1.17</td>
</tr>
<tr>
<td><strong>Group B</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convenience foods</td>
<td>4.26</td>
<td>0.84</td>
</tr>
<tr>
<td>Natural foods</td>
<td>4.23</td>
<td>0.76</td>
</tr>
<tr>
<td>Healthy foods</td>
<td>4.23</td>
<td>0.75</td>
</tr>
<tr>
<td>Functional foods</td>
<td>4.03</td>
<td>0.81</td>
</tr>
<tr>
<td>Ethnic foods</td>
<td>3.95</td>
<td>0.90</td>
</tr>
</tbody>
</table>

**Group A:**

*New Packaging, Variety and New Appearance:* New packaging, more variety and new appearance were the top 3 trends amongst Group A. Compared with other trends
in Group A, new packaging was anticipated to be the biggest main trend in new product development in the future, with 86% of consumers thinking that new packaging would be likely to develop in the next 10 years (47.5% respondents indicating ‘very likely’ and 38.5% of them indicating ‘likely’).

**New Brand:** Assael (1992) said that brand creates expectations in a consumer’s mind and consumers develop a set of expectations based on the degree to which a brand satisfies the benefits they seek. Therefore consumers will rate a brand as most preferred if it comes to meet their desired benefits and new brand development may be regarded as a top trend to meet consumers’ demands. New brand development was anticipated as a NPD trend following the top three main trends (*New Packing, Variety and New Appearance*) in new product development in the future, by 79.6% of consumers.

**Quality Improved:** ‘Quality Improved’ (70.6% of respondents ‘agreed’) as a main trend in the future was just behind ‘new brand’ (79.6% of respondents ‘agreed’); 24.0% of consumers agreed that food quality was ‘very likely’ to improve and 46.6% of them thought it was ‘likely’.

**New Taste:** Over half of the consumers (57.5%) considered that new taste or taste changed products were likely to be introduced into the market.

**Lower Price:** Twenty-two percent of the respondents were not sure if this trend would occur. Thirty-five percent of them thought lower price was likely, 23.1% indicating ‘likely’ and 12.2% indicating ‘very likely’.
Group B

Ready/Convenience Food: The majority of respondents (82.4%) believed that ready/convenience food would be a main trend during the following ten-year's food product development, making it the top trend in Group B ($\bar{x}=4.26$). (35.3% considered it ‘very likely’ and 47.1% regarded it as ‘likely’.)

Healthy Food and Natural Food: In this survey, healthy food and natural food received the same mean score ($\bar{x}=4.23$) and were perceived to be new food product development trends, with most consumers considering that the development of these two kinds of foods would be the main trends in the future food market. Eighty-five percent of the respondents rated healthy food as a likely trend, with 39.4% indicating ‘very likely’ and 49.7% indicating ‘likely’ to occur during the next 10 years. Eighty-five percent of respondents ranked likely (‘very likely’ (39.8%) or ‘likely’ (45.7%)) in relation to natural food as a main food development trend.

Functional Food: Although many people regarded health and natural as important trends, only 75.6% of people rated functional foods as a likely trend (‘very likely’ (30.8%) or ‘likely’ (44.8%). This may be because many people still do not know what functional food means.

Ethnic Food: Ethnic food was also perceived as a likely food trend (very likely (38.5%) or likely (47.1%)) in food product development.

Men and women had similar expectations of the main trends in new food development ($p>0.05$). Younger people had different opinions about food trends from the older people (Appendix 6.10). They thought new packaging ($p=0.038$), ethnic foods ($p=0.001$), convenience foods ($p=0.003$) and low prices ($p=0.033$) were more likely to
be trends than the older people. For new packaging, young people (34-year or below) showed significantly different thoughts to older people (55-year or above) (p=0.048). Significant differences between these two groups were also found between opinions on ‘price’ trend (p=0.004), ‘ethnic food’ trend (p=0.004) and ‘convenience food’ trend (p=0.009). People in the middle age group (35-54 years) also indicated significantly different thoughts to the older people on the ethnic food trends (p=0.003) and convenience food trends (p=0.009). Different income and education groups had some different opinions on NPD trends (Appendix 6.11 and 6.12). The mean results showed that in general an increase is seen in consumer’s opinion on new food trends in new packaging and convenience food from the lower-income group (below £10000, mean of new packaging =3.83, mean of convenience food = 3.93) to the high-income group (£50001 or above, mean of new packaging =4.29, mean of convenience food=4.28). A Scheffe test calculated a significant difference between the below £10000 group and the £30001-40000 group on new packaging trends (p=0.049). A general decrease is shown (p<0.05) in consumer’s thoughts about food trends in quality change from below A level (\( \bar{x} = 4.02 \)) to Postgraduate or above (\( \bar{x} = 3.65 \)). However, no significant difference was found between each education group (p> 0.05).

### 6.9 Discussion

In general, this study’s results confirm the usefulness of consumer demand research in understanding interactions within the context of new product development and describing the consumers’ perceptions, preferences and expectations of new products.
and the importance of new product development in the consumer's view. Several results are worth noting.

6.9.1 New Product Concept

Preceding outcomes in the literature review (Chapter 2) on 'New Product' concept were confirmed in this survey. There are numerous definitions of 'new product' (Earle, 1997), and different consumers have different understandings about the concept of a 'New Product'. However, 'A completely new product-new to the world', 'new to the company' and 'new brand' were the main concepts of new product which are widely accepted by consumers in this survey. These results agree with the classification of new products of Booz, Allen and Hamilton (1982), which has been broadly used by many manufacturers.

6.9.2 The Necessity of NPD

In this survey, most consumers (77%) thought that it was necessary to introduce new products into the market. The main reasons they desired new products were to improve health and to try something new. Eighty-two percent of respondents were likely to try new products. Among these consumers, younger people were more interested in trying new products than older people, especially people in the age group below 34 years. Women were more likely to try new products than men. As the young consumers will become the main consumers in the market during the next ten years and women consumers are main shoppers in the food supermarket now (Sainsbury's, 1998), it may be assumed that it is very important to develop new products to meet these consumers' demands.
6.9.3 Main Factors Affecting Consumers’ buying Decisions

The results show that ‘quality’, ‘family and friends’ suggestion’ and ‘price’ were the major factors influencing consumers’ decision to try new products. For most (60%) low-income consumers (yearly income: £10,000), the product price was the most important factor influencing their buying decision. These results supported Assael’s theory on consumers’ perception (1992, p28): ‘consumers’ perceptions can be influenced by marketing stimuli which are social (e.g. family), cultural (e.g. beliefs, religion) and economic influences (e.g. image, price, quality, etc.).’

6.9.4 Consumer’s willingness to Try Different Kinds of New Food Products

In relation to type of new products, natural food was the kind of new product that consumers were most likely to try ($\bar{x} = 3.82$). Ethnic foods ($\bar{x} = 3.40$), functional foods ($\bar{x} = 3.37$) and convenience foods ($\bar{x} = 3.25$) followed natural food. In relation to product characteristics, consumers were most likely to try ‘healthy version’ ($\bar{x} = 4.17$), ‘price reduction’ ($\bar{x} = 3.98$) and ‘improved quality’ ($\bar{x} = 3.84$) foods. Therefore, food manufacturers and retailers should try to improve their product quality, reduce the cost and develop more healthy food to meet consumers’ needs.

It is interesting to find that more senior people identified natural food as their preference and that women (slightly different from men) and young people expressed that convenience food was more likely to be tried. It seems that women and young people have similar determinants on food choice. Whether men or women, young or old, people showed great agreement in their willingness to try any kind of healthy food. Thus, it may also show that more and more people, especially older people, care about their health and therefore choose natural foods, functional foods and healthy
versions of food products. With the modern life style changing, people are more likely to expect more and more convenience food to suit their busy life (Question VI). On the other hand, quite a few people wanted to try ethnic foods, may be because of their inquisitiveness, personal preference and their need for variety (Question II, III, IV and VI).

6.9.5 Consumers' attitude and Intention to Try New Food Products

Attitude and Intention play a major role in shaping consumer behaviour, because consumers will form beliefs (whether positive or negative) about a product, then they will develop an emotional response, which will be either good or bad. This affective response will make them behave in a particular way-to try or not to try a new food product. From this study, it has been found that when consumers make a decision to try a new food product, whatever it is (healthy, ethnic or convenience food), both consumers' attitude to this kind of food and subjective norm to this food affected their intention to try it. In most cases, attitude was a stronger driver than subjective norm. Thus, when consumers decide whether to try new food products, they not only consider the advantages and disadvantages of new products, but also consider the opinion of others (e.g. friends and family members, doctors and producers) about the new products, and they behave in a manner that they believe to be consistent with the most rewarding set of outcomes. Results thus indicate that the best way to influence consumers is through giving them more product knowledge (creating beliefs), and promotion through others (family, friends, or doctors). (Their suggestion always has a positive effect)
6.9.6 Consumer’s expectation on New Product Trends

Most respondents predicted that *New Packaging, Variety and New Appearance* would be the main product development trends in the next ten years.

Ethnic food, natural food, ready/convenience food, functional food and healthy food were all seen as likely trends in new product development during the next ten years. The reasons for this may include:

1. Busy life-styles mean that today’s people, spend less time on cooking and eating than before (Tansey & Worsley, 1995, Sloan, 2001);

2. Awareness of healthy eating has increased (Wu, 1995, Tansey & Worsley, 1995);

3. The demand for variety has increased, as the development of technology, improved transportation and transport cost fall, meaning consumers get more information and different food from around the world (Tansey & Worsley, 1995).

6.9.7 Four Important Consumer Issues on NPD

Chapter 3 discussed the main factors influencing consumers buying behaviour and consumers’ thoughts on New Product Development. In this study, the findings identified that four important consumer issues – ‘health’, ‘quality’, ‘price’ and ‘convenience’ need to be carefully considered by food manufacturers and retailers during the new product development process, confirming the previous findings discussed in Chapter 3 (IDG, 1998; Goften, 1995; Warde, 1999; Kwak and Jukes, 2001; Wheelock, 1986).
A. Health

Most respondents in this research made their choices of new products for health reasons, for example, they wanted a new product introduced to improve health (QIIb); they regarded a healthier product as a new product (QI); they desired to try more natural food and functional food (QVI). These findings suggest an increased awareness of nutritional needs and health, and that this should be reflected in food product processing, as more and more health information has been accepted by consumers (Pound, et al., 2000). Thus, development of more healthy foods is a crucial element in new product development.

B. Quality

‘Improved quality’ of food was also one of the most important elements in new product development. Referring to the responses from the survey (QI, QII (b), QIII, QIV(c) and QVI), it can be deduced that respondents were aware of the importance of quality, because consumers want their food to be of a high quality. In previous studies, ‘quality’ has been accepted as a strategic element of marketing that assists in sustaining or improving the position of an actor in the food supply chain (Earle, 1997, Chapter 2). The ‘quality’ aspect is also viewed as a promising tool that can generate more value-added for a new product (Skuras and Vakrou, 2003). Therefore, food quality has many attributes such as variety, taste, appearance and packaging. In this survey, New Packing, Variety and New Appearance have been proposed as the top three product characteristic change trends in food new product development during the next 10 years. These insights from consumers reflect that they will need more value-added in a new food product to meet their demand for food quality. As a response to this new challenge and opportunity, food producers may need to move
from a product orientated marketing approach towards an approach that focuses on the satisfaction of consumers' needs and perceptions, relating them to special attributes of the offered products, which can be revealed through certification, association, specification and attraction (Libery and Kneafsey, 1998). Therefore, food companies should be aware that the variety, content, composition, nutritional value, taste, freshness and appearance should be based on consumers' demand (NCC, 1992), when they design a new product.

C. Convenience

In QII (b), QIV(b) and QVI, a few consumers regarded 'convenience' as the suitable answer. The convenience values are those things that save time and effort for the consumers. More and more consumers use 'convenience' products to adapt their busy life. Moreover, in recent years, three factors have encouraged convenience food development:

1. People's food habits have been changed with the increase of the use of convenience foods;
2. Emergence of a sophisticated socio-technological system implicates and connects food retailers and domestic kitchen;
3. The network of supermarket, fridge and freezer, microwave, and automatic timing devices helps time shifting (Imram, 1999 and Earle, 1997).

Therefore, convenience products are likely to be more popular in the future.

D. Price

When respondents were asked for the factor influencing their decision to try new products, most low-income consumers considered price as the main factor. This
agrees with the evidence given by Kotler (1991) that all price changes (e.g. price reductions) have an influence on consumers’ reaction. Quite a large proportion of consumers had a yearly income below £10,000. Therefore, food companies could take some action in the product development process to meet this kind of consumer demand. However, lower price is not necessarily an effective strategy in attracting consumers to choose a new product. Sometimes, lower price can mean lower quality. In this study, generally high-income respondents did not mind about the price when they were thinking to try a new food product. Price reduction for a new product might also be interpreted as a barrier to non-users, which reinforces their perceptions regarding lack of value for money (Hill and Lynchehaun, 2003).

In addition, there were some consumers who did not mention the price as a factor influencing their buying behaviour. Anderson, Taylor and Holloway (1966) said that the number of alternatives affected the role of price; the greater the number of alternatives, the less important becomes price as an evaluation. Therefore, although the price can indeed influence the consumers’ decision making, other factors also play a part in the importance of price. Food companies should not only seek to reduce their new product costs, but also improve their quality.

6.9.8 The Influence of Age on Consumer’s thoughts on NPD

A number of significant findings were found in this study about the different thoughts on food NPD from different age groups. All the findings (Section 6.2-6.8), showed that younger people were more demanding about new product than the older respondents. Results reported that they were more likely to try something new, had more expectation about food products and wanted to improve product convenience.
When they made a decision to buy a new product, they tended to think about price and ‘others’ suggestion’ (such as friends and family). Product variety and attractive appearance would more attract young people. As they were more likely to accept new food products (QIII) and wanted products to change (QII), they were likely to try all kinds of new foods from new brand, new packaging to new flavour. Especially, they preferred to taste new ethnic foods and new convenience foods compared with their older counterparts (QIV). Because a big proportion of the young people were students, and students face the general problem of allocating scarce financial resources to a series of competing obligations and passions such as accommodation and food, most young people would consider price of the product when they do their shopping. They want a lower or reasonable price for their foods. They would like to take other’s suggestions (friend or family) as their shopping guide. Promotion would be a means to let them get to know and accept a new product. Convenience food is one of young people’s favourites, because it is cheap and easy to cook and means that they can avoid the responsibility of cooking or avoid catered food (Warde, 1999).

Food manufacturers should pay more attention to the young population and focus on their lifestyle characteristics, when they develop their new products, as young people are regarded as a prospective target for current marketing activity and as a potentially lucrative segment with which to form longer term marketing relationships (Jenkinson, 2000). Particularly, for new products, young people will eventually become the main consumers and guide the new food trends. Therefore, young people present food manufacturers with opportunities to catch consumers at a critical point in the life cycle. Further to this is the prospect of building long-term marketing relationships with young consumers.
The food industry needs to understand all these characteristics, design and launch more suitable new food products to feed the young, including lower priced, more attractive and convenient products adapted to their lifestyle and then use an effective promotion method to catch them. In the results of this study, young people expected that ethnic foods and convenience foods trends would increase in the future, and they also predicted low price and new packaging trends.

Although young people formed a large proportion of respondents in this survey (51.4%) and will become the main shoppers and food consumers in the future, older people's opinions should not be ignored by food companies, as the world’s population is not only getting bigger, but getting older and this poses challenges for developed countries (www.wednesday_night.com/population.asp). It is interesting to find many different results between younger and older people on new food product development. It seems that older people were less keen to buy new food products. The results showed that they much more trust themselves and their beliefs when they made their buying decisions. What they want for a food product is more healthy and natural. This may be because over their lifetime they have witnessed massive changes in food production, access and cost as well as experiencing changing economic circumstances from working life to retirement (Geissler and Oddly, 1993; Hockey and James, 1993). Thus, this group of consumers is less interested in changes and they are well placed to consider the continuities and shifts in dietary beliefs and practices. Moreover, many of these consumers are pensioners and have relatively tight financial constraints compared with middle-age groups. They also need to consider the product price.
Therefore, the food industry needs to help the older people to build an interest in new products.

6.9.9 Gender and NPD

Although many recent articles in the literature provide evidence to prove that there are many differences between men and women in relation to food choice (Lorberi and Farrell, 1991; Harding, 1998; Connell, 1995 and Pound et al., 2003), the detailed quantitative findings described in this study provide a coherent and relatively consistent picture of agreement between male and female thoughts and action in relation to new food products. As women are the main shoppers in the food market in Britain, many food companies have new product plans which focus on women consumers. For example, many new convenience food products are aimed at working women (Pound, et al., 2000).

Only one significant difference has been found in this survey between men and women in making their purchase decision relating to a new product. Women care more about suggestions from others, such as, friends, doctor or media recommendation or promotion, when they chose a new product. This means that outside influences affect their buying behaviour much more strongly than men’s. To take advantage of this factor, the food industry should recognise the strategic value of segmenting their potential customers into opinion leaders and opinion receivers (Pound, et al., 2000). If the food industry can first direct their promotional messages at the more influential referents-women consumers, or the important people around women consumers, these consumers will then transmit the messages more persuasively to those who seek product advice. Thus, an efficient promotion or
enough knowledge and messages about a new food product from the food industry through the media or other channels is very important for the food industry to launch a successful new product.

6.10 Limitation

This survey aimed to discover consumers' perceptions, preferences and expectations of New Product Development and predict the trends of New Product Development. However, some potential limitations of this study should be explicitly recognised and taken into account when interpreting its findings.

First and most critically, the measurement instrument (questionnaire) in this study may not be accurate, for example, there is a large 'Standard Deviation' (2.36) in male group statistics and willingness to try new products, compared with females (0.5707). This may be because of the smaller sample size. This is discussed in Chapter 5.

Secondly, the subjects used in the main study all came from the south of England, which is known as being affluent, compared with other areas in Britain. This means that respondents' living standards may well be higher than the average level in the U.K, leading to some bias in the study. Thus, generalisations cannot be made with respect to Britain as a whole.

A third possible time-related limitation concerns the nature of the data collected. As the time was limited, information was collected from all respondents in only six weeks. There were some limitations on data collection, owing to the use of
questionnaire. In-depth interviews may have yielded different and more insightful results.

Another concern with the current study is the possibility of common method bias resulting from the use of perceptual measures of all the structural, process, and outcome variables. The researcher attempted to minimise this problem by relying on answers from different levels (age, education, gender and income) of respondents to measure conceptually related variables.

6.11. Conclusion

This chapter discussed the findings from the British consumer's study. This study identified the main ideas of a new food product concept from the British consumer's view, which echo the most popular definition of the new product concept in the literature. The main findings of this study indicated that it was necessary to launch more new products into the British food market, as most British consumers expected more new products to appear into the market and they would like to try all kinds of new products, although some main factors such as 'product quality', 'family or friend's suggestion' and 'product price' influenced their purchase behaviours. Findings from the Ajzen-fishbein (TRA) model demonstrated that the British consumers' intentions to try a new food product were driven by their attitudes and subjective norms to this food and it provided prudent information to the food industry to launch their new products efficiently. 'Healthy', 'natural', 'functional', 'ethnic' and 'convenience' have been predicted by consumers as the main food trends in the next 10 years in Britain. Consumer's socio-economic status and demographic
characteristics also have been found to affect some of their food choices on new products.

In addition, four important consumers' issues on NPD – health, quality, price and convenience, emerged from the findings. It was recommended that the food industry needed to focus on all these consumers' issues to capture the consumers' real thoughts on NPD.

The following chapter will discuss the findings from the Chinese consumer's study, and Chapter 10 will compare these with the British consumer's views.
Chapter Seven
Chapter 7

Findings & Discussion (II) --- Chinese Consumer Study

7.1 Introduction

This Chapter reports and discusses the results of Chinese consumer’s food preferences, perceptions, attitudes and buying behaviours towards new food products, and their predictions of the NPD trends in China’s food market.

7.2 Reliability

A Cronbach’s alpha value of 0.9064 was calculated in this study, which is much higher than the requirements suggested (0.6-0.8) for exploratory research (Bryman & Crammer, 1999) to confirm internal consistency.

7.3 Characteristics of Chinese Consumer Sample for Study of NPD

- **Age**

The total number of respondents was 139. There was a representation in each age group (Table 7.1). The largest proportion (57.6%) of the respondents was in the 34 years or below age group (80 persons), three times as many as in the 55 years or above age group (20.1%, 28 persons). There were 31 respondents in the 35-54 years age of group (22.3%).

- **Gender**

The male to female ratio is fairly equal, with 70 women (50.4%) and 69 men (49.6%) (see Table 7.1).
• **Education**

More than half (52.2%) of the respondents held a bachelor's degree, 34.8% of the respondents, where educated up to higher education diploma (those whose highest level of education was high school or below represented 5.8% of the sample, 'middle professional qualification', 6.5% and higher education diploma 22.5%). Results reveal that most respondents were well-educated people. The sample catchment areas were in the 'intellectual areas' (West and Northwest Beijing, areas having many universities and research institutes), as the figures shown in the results are much higher than the average in China, which would be educated to high school level.

**Table 7.1 Chinese Consumer Profile**

<table>
<thead>
<tr>
<th>Age (year)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>34 or below</td>
<td>57.6</td>
</tr>
<tr>
<td>35-55</td>
<td>22.3</td>
</tr>
<tr>
<td>55 or above</td>
<td>20.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>50.4</td>
</tr>
<tr>
<td>Male</td>
<td>49.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>High school</td>
<td>5.8</td>
</tr>
<tr>
<td>Middle professional qualification</td>
<td>6.5</td>
</tr>
<tr>
<td>Higher education diploma</td>
<td>22.5</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>52.2</td>
</tr>
<tr>
<td>Postgraduate degree or above</td>
<td>13.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Income (yuan)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 10000</td>
<td>7.4</td>
</tr>
<tr>
<td>10001-20000</td>
<td>25.2</td>
</tr>
<tr>
<td>20001-30000</td>
<td>23.0</td>
</tr>
<tr>
<td>30001-40000</td>
<td>14.1</td>
</tr>
<tr>
<td>40001-50000</td>
<td>15.6</td>
</tr>
<tr>
<td>50001-80000</td>
<td>11.9</td>
</tr>
<tr>
<td>80001-100000</td>
<td>2.2</td>
</tr>
<tr>
<td>100001 or above</td>
<td>0.7</td>
</tr>
</tbody>
</table>

• **Incomes**

It can be seen from Table 7.1 that most respondents are in the RMB10, 001-20,000 yuan (25.2%) and RMB20001-30000 yuan (23.0%) per annum groups. This is much higher than the average personal yearly income (RMB 7, 078 yuan) in China in 2000 and lower than the average personal yearly income in the biggest city of China -

Only 7.4% of respondents were in the lowest income group (below RMB 10,000 yuan annum), which comprised mainly students and pensioners. The lowest proportions of the respondents are in the RMB 80,001-100,000 yuan group (2.2 %) and the highest income group (RMB 100,001 yuan +) (0.7%). The middle income groups RMB 40,001-50,000 yuan and RMB 50,001-80,000 yuan made up 14.8% and 11.9 % of respondents respectively. Four respondents did not answer this question, however, the percentage of missing data is low (2.8%). This statistic is somewhat different from the British family annual income figures established in the British consumer study, as it is much easier to get the data about personal income, rather than family income, in China, because most Chinese statistics are based on personal income rather than family income.

**Weekly Food Spending**

This question was an open-ended question, and 121 respondents answered it (Fig. 7.1). The most common household weekly food spend was from RMB101 to 800 yuan per week. (42% of the households in the sample spent RMB 101-500 yuan on food per week; 32% spent RMB501-800 yuan on food weekly.)
7.4 New Product Concept

Among the sample, "More healthy product" (\(\bar{x} = 3.74, \text{Std.} = 1.11\)) and "A completely new product" (\(\bar{x} = 4.34, \text{Std.} = 0.97\)) were found to be the two most important 'definitions' of a 'New Product' concept (Table 7.2). "Safety improved" (\(\bar{x} = 3.45, \text{Std.} = 1.09\)) and 'Quality improved' (\(\bar{x} = 3.44, \text{Std.} = 1.17\)) were also important explanations. Most consumers did not think that "Price change" (\(\bar{x} = 2.32, \text{Std.} = 1.24\)) "New appearance" (\(\bar{x} = 2.47, \text{Std.} = 1.21\)) and "New to the company" (\(\bar{x} = 2.86, \text{Std.} = 1.21\)) constituted New Product concepts. The 'Others' (n=16), as response was qualified as 'New ingredient'.
### Table 7.2 Chinese Consumer's perceptions of New Product Concept

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely new products</td>
<td>4.34</td>
<td>0.97</td>
</tr>
<tr>
<td>New Healthy food</td>
<td>3.74</td>
<td>1.11</td>
</tr>
<tr>
<td>Safety Improved</td>
<td>3.45</td>
<td>1.09</td>
</tr>
<tr>
<td>Quality Improved</td>
<td>3.44</td>
<td>1.17</td>
</tr>
<tr>
<td>New taste</td>
<td>3.27</td>
<td>1.04</td>
</tr>
<tr>
<td>New brand</td>
<td>3.03</td>
<td>1.22</td>
</tr>
<tr>
<td>New to the company</td>
<td>2.86</td>
<td>1.21</td>
</tr>
<tr>
<td>New appearance</td>
<td>2.47</td>
<td>1.21</td>
</tr>
<tr>
<td>New price</td>
<td>2.32</td>
<td>1.24</td>
</tr>
</tbody>
</table>

#### 7.5 Necessity to Introduce New Products into the Food Market

Results are shown in Fig 7.2. Most consumers ($\bar{x} = 4.10$, 87.7%) thought that it was necessary to introduce new food products into the market (23.7% ‘extremely necessary’; 64% ‘necessary’). None of the respondents thought that it was ‘unnecessary’, and only one respondent gave the ‘extremely unnecessary’ answer. The ‘not sure’ answer was used by 11.5% of respondents, presumably indicating that some consumers were satisfied with current food. Whether young or old, men or women, low or high income and education level, people showed great agreement on necessity to introduce new product to the food market. (There were no significant differences in perceived necessity in the basis of any of the demographic variables.)
7.5.1 Reasons for Current Product Change

The highest mean value for reason for product change related to ‘health’ (Table 7.3), with a mean value of 4.27(sd.=0.88). It therefore seems that most Chinese consumers care about their health, and want to be able to buy healthy products. Quite a few people reported that they were bored with current products (\( \bar{x} = 3.98, \text{sd.} = 1.39 \)) and wanted to try something new (\( \bar{x} = 3.93, \text{sd.} = 0.89 \)). Convenience (\( \bar{x} = 3.80, \text{sd.} = 0.86 \)) and ‘poor quality’ (\( \bar{x} = 3.7, \text{sd.} = 1.17 \)) were also reasons for people’s consideration of why products should change. Gender, education and income were not significant discriminators for people’s thoughts about the reasons why products should change. However, younger people tended to think that lack of demand was a significantly more important reason for product change, compared with the older people (p=0.029) (Appendix 7.1), although no significant differences were found between age groups using Multiple comparison tests.
Table 7.3 Reasons for Current Product Change (Chinese Consumer Study)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>To improve health</td>
<td>4.27</td>
<td>0.88</td>
</tr>
<tr>
<td>Bored with current products</td>
<td>3.98</td>
<td>1.39</td>
</tr>
<tr>
<td>Try something new</td>
<td>3.93</td>
<td>0.89</td>
</tr>
<tr>
<td>Improve Convenience</td>
<td>3.85</td>
<td>0.86</td>
</tr>
<tr>
<td>Poor quality</td>
<td>3.71</td>
<td>1.16</td>
</tr>
<tr>
<td>Lack of demand</td>
<td>3.52</td>
<td>1.35</td>
</tr>
<tr>
<td>Poor taste</td>
<td>3.50</td>
<td>1.05</td>
</tr>
<tr>
<td>High price</td>
<td>3.50</td>
<td>1.22</td>
</tr>
<tr>
<td>Less variety</td>
<td>3.46</td>
<td>1.09</td>
</tr>
</tbody>
</table>

7.5.2. Main Factors Influencing Consumer's Purchase Behaviour Relating to New Food Products

Results showed (Table 7.4) the top 3 highest mean values for why consumers choose a new product were product quality ($\bar{x} = 4.21$, sd. = 0.90), suggestion from family or friends ($\bar{x} = 3.73$, sd. = 0.91) or doctor's recommendation ($\bar{x} = 3.63$, sd. = 1.03). 'Product appearance', 'media message' and 'variety' ($\bar{x} = 3.4$) were also considered as factors influencing consumer's purchase behaviour towards a new food product. 'Promotion and advertising', which is noteworthy for food companies, and 'price' had mean values just above 3. These two reasons can be regarded as slightly positive. 'Other' factors, which were given by respondents in this question, have been
summarised as health requirement (n=16), quality issues (n=13), taste (n=8) and origins of product (n=8).

Table 7.4 Main Factors Influencing Chinese Consumer’s Purchase Behaviour towards New Food Products (n=139, 1= strongly disagree, 5= strongly agree)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality factor</td>
<td>4.22</td>
<td>0.90</td>
</tr>
<tr>
<td>Family Suggestion</td>
<td>3.73</td>
<td>0.91</td>
</tr>
<tr>
<td>Doctor recommendation</td>
<td>3.63</td>
<td>1.03</td>
</tr>
<tr>
<td>Appearance factor</td>
<td>3.50</td>
<td>1.00</td>
</tr>
<tr>
<td>Media</td>
<td>3.43</td>
<td>1.12</td>
</tr>
<tr>
<td>Variety</td>
<td>3.41</td>
<td>1.17</td>
</tr>
<tr>
<td>Price Factor</td>
<td>3.14</td>
<td>1.24</td>
</tr>
<tr>
<td>Promotion</td>
<td>3.09</td>
<td>1.17</td>
</tr>
<tr>
<td>Belief</td>
<td>1.90</td>
<td>1.03</td>
</tr>
</tbody>
</table>

There were no significant difference in the main factors influencing buying behaviour between males and females and different income groups. An interesting finding was that ‘belief’ was significantly more important to people who had a higher education level (p= 0.038) and ‘attractive appearance’ was more important to young respondents (p= 0.002) (Appendix 7.2 & 7.3).

7.6 Consumer’s Willingness to Try New Products

A large percentage of consumers (71.3%) were likely to try new products with 13.7% indicating it as ‘very likely’ and 57.6% rating it as ‘likely’. The mean of 3.83 for consumers’ willingness to try new products is closer to the ‘likely’ rating of 4 (See
Table 7.5 and Fig. 7.3). It is shown therefore that new products do have a potential market. Twenty-eight percent of respondents were not sure about trying new products. This may be because some consumers only want to buy the goods that they are familiar with. Young people (34 years or below) were significantly more likely to try new food products than other age groups (p<0.05).

**Fig 7.3 Chinese Consumers' willingness to Try New Products (n=139)**

Of the two categories of foods (Group A product characteristics, Group B type of product) given for consumers to choose between each other, 'natural food' was the type of food more likely to be tried (X̄ =4.31) in Group B and 'good quality' (X̄ =4.14) and 'healthy version' (X̄ =4.06) were the top choices in Group A. 'Try different taste' (X̄ =4.00) followed them closely. In Group B, the mean for willingness to try different food types ranged from 3.18 (convenience foods) to 4.31 (natural foods). Similarly in Group A means were all above 3, except package change (X̄ =2.85, sd.=0.95).

These results suggest that Chinese consumers would like to try different new products and that they care more about the product itself (quality and ingredients) than its package.
Women were significantly more likely to try a healthy version product than men (p=0.003) (Appendix 7.4). A rise in the level of education appeared to be associated with an increased willingness to try new ethnic food products (p=0.019), although no significant difference was found between each education group using Multiple Comparison tests. Whilst, more highly educated people also appeared to have higher interest in new natural food products (p=0.005) (Appendix 7.5). Significant differences were found between the high school or below group and the bachelor degree group (p=0.029), and between the high school group and the postgraduate or above group (p= 0.047). The difference between the high school or below group and the middle professional education group (p=0.039) was also significant. Chinese consumers were less likely to try new ethnic foods as they became older (Appendix 7.6), particularly with a significant difference between old people (>=55-year old) and young people (<34 years old, p=0.034). No significant differences were observed among different income groups.

Table. 7.5 Chinese Consumers’ willingness to Try New Products

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group A</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New products</td>
<td>3.83</td>
<td>0.86</td>
</tr>
<tr>
<td>Natural food</td>
<td>4.31</td>
<td>0.86</td>
</tr>
<tr>
<td>Quality</td>
<td>4.14</td>
<td>0.76</td>
</tr>
<tr>
<td>Healthy version</td>
<td>4.06</td>
<td>0.89</td>
</tr>
<tr>
<td>New taste</td>
<td>4.00</td>
<td>0.83</td>
</tr>
<tr>
<td>Price reduction</td>
<td>3.91</td>
<td>0.92</td>
</tr>
<tr>
<td>Functional food</td>
<td>3.44</td>
<td>1.07</td>
</tr>
<tr>
<td><strong>Group B</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnic food</td>
<td>3.37</td>
<td>1.23</td>
</tr>
<tr>
<td>New brand</td>
<td>3.28</td>
<td>1.00</td>
</tr>
<tr>
<td>Convenience food</td>
<td>3.18</td>
<td>1.02</td>
</tr>
<tr>
<td>New package</td>
<td>2.85</td>
<td>0.95</td>
</tr>
<tr>
<td>New Products</td>
<td>3.83</td>
<td>0.68</td>
</tr>
</tbody>
</table>

n=139, 1=strongly unlikely, 5=strongly likely
7.7 TRA Model Applied to Investigate Chinese Consumer’s Attitude and Intention to Try New Food Products

As in the British consumer study (Chapter 6), the Ajzen-Fishbein Model was also applied in this study to predict and understand Chinese consumer’s behaviour in relation to choice of new food products. The same four intentions were tested as in the British consumer study. Table 7.6.c, 7.7.c, 7.8.c and 7.9.c summarise the results. First, brief descriptive statistics were used in order to demonstrate patterns that emerged among responses for each question. Then, by multiplying the relevant beliefs, and summing the resulting products, two estimates ($\Sigma B_i E_i$ and $\Sigma N_j M_j$) were created (Each belief response ($B$) was multiplied by the appropriate evaluation score ($E$) and the products were summed ($\Sigma B_i E_i$); Normative belief responses ($NB$) were multiplied by the corresponding motivation to comply responses ($M$) and the products summed ($\Sigma N_j M_j$)). An examination using a Pearson test revealed the correlation between these two estimates and attitude/subjective norm. Furthermore, multiple regression procedures were used to estimate both attitude’s and subjective norm’s influence on intention to try different kinds of new foods. This also tested the simultaneous predictive power of Chinese consumer’s attitude to new foods and the subjective norms, as well as the relative contributions of the two predictors in terms of standardised regression coefficients.

7.7.1 Trying New Food Products

Of the 139 respondents interviewed, 65 stated they would try new food products in the next four weeks (Likely to do $n=48$, very likely to do $n=17$). Fifty-five percent of the 139 respondents indicated they felt that it was either good or very good to try new
foods. They believed that providing new food products means they can make more healthy choices ($\bar{x} = 3.65$), and get quality improved foods ($\bar{x} = 3.75$). They thought both of them (more healthy choice $\bar{x} = 4.50$, and improved quality $\bar{x} = 4.26$) were good. However, they still worried about the reliability of new foods ($\bar{x} = 3.12$), because they thought to enable consumers to choose foods that they may be not sure of the reliability was bad ($\bar{x} = 2.00$). Subjective norm produced positive responses. Forty-five percent of the respondents expressed that it was either very likely or likely that those who were important to them thought they should try new food products. They believed most producers ($\bar{x} = 3.70$) thought they should try new foods, but they would not follow their suggestion ($\bar{x} = 2.50$). They were more likely to take suggestions from doctors ($\bar{x} = 3.80$) or their family numbers ($\bar{x} = 3.78$) or their friends ($\bar{x} = 3.68$). However, 37.4% felt that they were not sure if those people who were important to them would think they should try new food products or not.

The mean responses calculated for each of attitude, subjective norm and intention reflected that responses were neutral ($\bar{x}$ about 3) to the intention to try new food products.

Table 7.6.a Mean Values to Attitude Questions regarding Trying New Food Products within Four Weeks (Chinese Consumer Study) n=139

<table>
<thead>
<tr>
<th>Attitude Measure</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>3.40</td>
<td>0.87</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>3.35</td>
<td>0.99</td>
</tr>
<tr>
<td>Intention</td>
<td>3.39</td>
<td>0.99</td>
</tr>
</tbody>
</table>
The lack of positive or negative response given to the intention of trying new food products may be related to the responses given by the consumer’s beliefs that showed they were not sure about new product reliability. It might be assumed that this might have been because when a general new food product concept had been given to consumers, consumers may be not sure about the nature of the product itself, thus they were confused about the product. Therefore, in trying to comply with the perceived, possibly contradictory beliefs of the significant others, the respondent’s reaction is considerably more confused in the individual belief pathway to attitude than in the subjective norm process (Ajzen-Fishbein, 1980). Table 7.6.c showed significant correlation between the respondent’s attitude and multibeliefs (ΣBiEi).

The results of a stepwise regression to test the best determinant of intention to try new food products are presented in Table 7.6.b

### Table 7.6.b Regression Results on Attitude/subjective Norm and Intention to Try New Food Products (Chinese Consumer Study) n=139

<table>
<thead>
<tr>
<th></th>
<th>R square</th>
<th>Adjusted R square</th>
<th>F</th>
<th>p</th>
<th>t</th>
<th>p</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>0.178</td>
<td>0.166</td>
<td>14.712</td>
<td>0.000</td>
<td>2.622</td>
<td>0.010</td>
<td>0.254</td>
</tr>
<tr>
<td>Subjective norm</td>
<td></td>
<td></td>
<td>2.247</td>
<td>0.026</td>
<td>0.218</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Both attitude and subjective norm significantly influenced intention to try food products (F=14.712, p=0.000). The t-test also produced significant results (p<0.05), suggesting both of these two factors were good predictors of intention to try new food products in the next four weeks. However, this significance was much lower than any attitude or subjective norm included in the stepwise model for British consumer study (Pa=0.010, psn=0.026). The lower significance observed is reflected in the Beta
**Behavioural Beliefs**

*Providing new food products means:*

More healthy choice  
Quality improved  
Not sure reliability

**Evaluation Beliefs**

*To enable consumers to choose*

More healthy choice is good/bad  
Quality improved foods is good/bad  
Not sure reliability is good/bad

**Normative Beliefs**

*Most ....think I should try new food products*

Family members  
Friends  
Doctors  
Producers

**Motivation to Comply**

*Generally speaking, I want to do what ....think I should do*

Family members  
Friends  
Doctors  
Producers
weighting produced from the estimated regression. Attitude has a slightly higher Beta weighting, suggesting it to be slightly influential. Table 7.6.c showed subjective norm was influenced by $\Sigma N_j M_j$.

### 7.7.2 Trying New Healthy Foods

Sixty percent of respondents indicated that they would try new healthy foods in the next four weeks, with 40.3% indicating ‘likely’ and 20.1% indicating ‘very likely’. Results showed that Chinese consumers believed that providing new healthy foods means that they can get more healthy choices ($\bar{x} = 4.00$), which they thought was ‘good’ ($\bar{x} = 4.50$), but they thought that they may lack clear product knowledge ($\bar{x} = 3.63$) and that new healthy foods means more expense for consumers ($\bar{x} = 3.40$). Although they did not think that lacking clear product knowledge ($\bar{x} = 1.93$) and ‘expensive foods ($\bar{x} = 2.34$)’ were good for them, 110 of the 139 respondents (79.1%) stated that they thought it was ‘good’ or ‘very good’ to try new healthy foods. The mean responses to subjective norm, attitude and intention to try new healthy foods are shown in table 7.7.a. Chinese consumers believed that their family members ($\bar{x} = 3.99$), friends ($\bar{x} = 3.90$), doctors ($\bar{x} = 3.65$) and producers ($\bar{x} = 3.63$) would think that they should try new healthy foods. The influences from significant others, except producers ($\bar{x} = 2.50$), affected Chinese consumers’ intentions to try new healthy foods ($\bar{x}$ friends=3.68, $\bar{x}$ family=3.78, and $\bar{x}$ doctors=3.80), i.e. they wanted to do what these groups thought they should.'
Table 7.7.a Mean Values to Attitude Questions regarding Trying New Healthy Foods within Four Weeks (Chinese Consumer Study) n=139

<table>
<thead>
<tr>
<th>Attitude Measure</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>4.16</td>
<td>0.86</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>4.06</td>
<td>0.93</td>
</tr>
<tr>
<td>Intention</td>
<td>3.61</td>
<td>1.07</td>
</tr>
</tbody>
</table>

Although both attitude and subjective norm produced more positive results, the mean of intention to try new healthy foods was lower than the mean of either subjective norm or attitude.

Only attitude was selected by regression analysis as a predictor of intention (Table 7.7.b)

Table 7.7 b Regression Results on Attitude/Subjective Norm and Intention to Try New Healthy Foods (Chinese Consumer Study) n=139

<table>
<thead>
<tr>
<th></th>
<th>R square</th>
<th>Adjusted R square</th>
<th>F</th>
<th>p</th>
<th>t</th>
<th>p</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>0.288</td>
<td>0.283</td>
<td>55.474</td>
<td>0.000</td>
<td>7.448</td>
<td>0.000</td>
<td>0.537</td>
</tr>
</tbody>
</table>

A highly significant F value (55.474) was produced, indicating a relationship between attitude and intention to try new healthy foods. T-test produced a significant result, proving that only attitude in this study was a predictor for Chinese consumer's intention to try new healthy foods, with Beta weighting 0.537.
**Behavioural Beliefs**
- Providing new healthy foods means:
  - More healthy choice
  - Lack of product knowledge
  - More expense

**Evaluation Beliefs**
- To enable consumers to choose:
  - More healthy choice is good/bad
  - Lack of knowledge foods is good/bad
  - Expensive foods is good/bad

**Normative Beliefs**
- Most...think I should try new food products
  - Family members
  - Friends
  - Doctors
  - Producers

**Motivation to Comply**
- Generally speaking, I want to do what ...think I should do
  - Family members
  - Friends
  - Doctors
  - Producers
Table 7.7 summarises the results from the whole model and shows that there are significant correlations between attitude and $\Sigma BiEi$ and between subjective norm and $\Sigma NjMj$ (p=0.000 for each).

### 7.7.3 Trying New Convenience Foods

Table 7.8 presents the mean responses (and standard deviation) in relation to attitude, subjective norm and intention to try new convenience foods.

#### Table 7.8a Mean Values to Attitude Questions regarding Trying New convenience foods within Four Weeks (Chinese Consumer Study) n=139

<table>
<thead>
<tr>
<th>Attitude Measure</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>3.41</td>
<td>0.94</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>3.21</td>
<td>0.99</td>
</tr>
<tr>
<td>Intention</td>
<td>3.14</td>
<td>1.05</td>
</tr>
</tbody>
</table>

Compared with the results of trying new healthy foods, the mean of responses were more neutral. Only 37.4% of respondents showed they would try new convenience foods in the next four weeks, with 28.8% stating 'likely' and 8.6% stating 'very likely'. Respondents believed that providing new convenience foods means that they can cook foods easily and quickly ($\bar{x}=4.11$), which they thought was 'good' ($\bar{x}=3.45$). However, they believed that convenience foods may be less healthy ($\bar{x}=3.23$), which was not good for them ($\bar{x}=1.64$). Sixty-one of the 139 respondents (43.9%) thought that trying new convenience food was 'very good' or 'good'
('Good': n=43, 'very good': n=18). Sixty of the respondents demonstrated a neutral answer 'not sure', resulting in the overall response to this intention being neutral as opposed to positive or negative. The lack of positive mean values may be related to the responses given by participants when asked about their beliefs (including behavioural beliefs, evaluative beliefs and normative beliefs) about convenience food. Respondents thought that their doctors (\(\bar{x} = 2.74\)) would not suggest that they tried new convenience foods, and respondents were inclined to follow their doctors' advice (\(\bar{x} = 3.80\)).

Table 7.8.c shows the significant relationships between these beliefs and attitude/subjective norm (p<0.005).

**Table 7.8 b Regression Results on Attitude/Subjective Norm and Intention to Try New Convenience Foods (Chinese Consumer Study) n=139**

<table>
<thead>
<tr>
<th></th>
<th>R square</th>
<th>Adjusted R square</th>
<th>F</th>
<th>p</th>
<th>t</th>
<th>p</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>0.335</td>
<td>0.326</td>
<td>34.300</td>
<td>0.000</td>
<td>3.440</td>
<td>0.000</td>
<td>0.369</td>
</tr>
<tr>
<td>Subjective norm</td>
<td></td>
<td></td>
<td>2.308</td>
<td>0.000</td>
<td>0.247</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Regression results (Table 7.8.b) showed that both attitude and subjective norm significantly drove Chinese consumer's intention to try new convenience foods, with a significant F value of 34.3 (p=0.000). The R square of 0.335 suggested that these two determinants accounted for 33.5% of the variation in intention to perform the behaviour. The Beta weight shows the strength of the variables in influencing behavioural intention. Attitude has a higher Beta weight (0.369) than subjective norm (0.247). This result reflects that attitude has greater influence over intention to try new convenience foods.
**Behavioural Beliefs**

*Providing new convenience foods means:*

Easy to cook
Less healthy

**Evaluation Beliefs**

*To enable consumers to choose*

easy to cook foods is good/bad
less healthy foods is good/bad

**Normative Beliefs**

*Most ....think I should try new food products*

Family members
Friends
Doctors
Producers

**Motivation to Comply**

*Generally speaking, I want to do what ....think I should do*

Family members
Friends
Doctors
Producers
7.7.4 Trying New Ethnic Foods

Table 7.9.a Mean Values to Attitude, Subjective Norm and Intention Questions regarding Trying New Ethnic Foods within Four Weeks (Chinese Consumer Study) n=139

<table>
<thead>
<tr>
<th>Attitude Measure</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>3.45</td>
<td>1.00</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>3.28</td>
<td>1.01</td>
</tr>
<tr>
<td>Intention</td>
<td>3.08</td>
<td>1.06</td>
</tr>
</tbody>
</table>

Table 7.9.a shows a neutral mean response to Chinese consumer’s intention to try new ethnic foods. Thirty-six percent of respondents intended to try new ethnic foods in the next four weeks (28.8% ‘likely’; 7.2% ‘very likely’). Forty-seven point four percent of respondents thought trying new ethnic foods was ‘good’ or ‘very good’ (‘good’: 30.9%, ‘very good’: 10.5%). Respondents believed that they could get more food choice from being given new ethnic foods (\(\bar{x} = 4.04\)), which they believed was ‘good’ (\(\bar{x} = 3.96\)), but they thought that ethnic foods may not be to every consumer’s taste (\(\bar{x} = 3.81\)), which they did not think was ‘good’ (\(\bar{x} = 2.98\)). Subjective norm proved a less positive response than attitude. This may be because respondents were not sure if their family would suggest that they tried new ethnic foods (\(\bar{x} = 3.12\)), and Chinese consumers wanted to follow their family’s suggestion (\(\bar{x} = 3.78\)). All these relatively neutral responses may be because of the respondent’s beliefs (behavioural and normative) about new ethnic foods, which were found to have a significant influence on attitude and subjective norm (Table 7.9.c).
**Behavioural Beliefs**

*Providing new ethnic foods means:*

More choice
Not suit for everyone’s taste

**Evaluation Beliefs**

*To enable consumers to choose*

more choice is good/bad
not suit for every one’s taste foods is good/bad

**Normative Beliefs**

*Most ....think I should try new food products*

Family members
Friends
Producers

**Motivation to Comply**

*Generally speaking, I want to do what ....think I should do*

Family members
Friends
producers
Regression analysis indicates that only attitude significantly drove respondent’s intention to try new ethnic foods. ANOVA confirmed this relationship between attitude and intention, producing a highly significant F statistic (F=77.514, p=0.000). Beta weights show a strong influence of attitude on intention (0.601).

Table 7.9.b Regression Results on Attitude/subjective Norm and Intention to Try New Ethnic Foods (Chinese Consumer Study) n=139

| Attitude | 0.361 | 0.357 | 77.514 | 0.000 | 8.804 | 0.000 | 0.601 |

7.7.5 Conclusion

In General, the analysis above illustrated that the Theory of Reasoned Action can be used to determine Chinese Consumer’s behavioural intentions to try new foods. The best determinants for each intention relied on the respondent’s attitude and subjective norms. The influential predictors of intentions for each of the four intentions measured are summarised below:

1. Trying new food products (general): attitude and subjective norm
2. Trying new healthy foods: attitude
3. Trying new convenience foods: attitude and subjective norm
4. Trying new ethnic foods: attitude

Results proved that Chinese consumer’s intentions to try new (general) foods and new convenience foods are functions of two basic determinants, one personal in nature
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(态度) and the other reflecting social influence (subjective norm). The relative importance of these two predictors is revealed by inspecting Beta weights. Both factors are important determinants of these two intentions, and the relative weights of the attitudinal and normative factors varied from one intention to another. In this study, the relative contributions of attitudes exceeded that of subjective norms. (Intention to try new (general) foods: Ab 0.254 > SN 0.218, intention to try new convenience foods: Ab 0.369 > SN 0.247). However, there was no significant relationship between the subjective norm and intentions to try new healthy foods and new ethnic foods which may call into question the self-consistency of the answer to the subjective norm parts of the questionnaire (e.g. some Chinese consumers were not sure about the opinions of others who were important to them about new products). However, attitude through to intention in this study, showed significance. There could be a number of reasons for the above. It might have been that in trying to comply with the perceived and possibly contradictory beliefs of the significant others, the respondent’s reaction is considerably more confused and inconsistent in the subjective norm process to intention than the individual attitude pathway. Results may also reflect a relatively small sample.

Overall, all results showed that Chinese people intend to perform the behaviour of trying different kinds of new food products when they evaluate the products positively and when they believe that important others think they should try them.
7.8 NPD Trends

Two groups of New Product Development factors were given as possible trends that might develop in the next 10 years. (Group A focused on changes in product characteristics, such as brand, packing, and price; Group B focused on the kind of new products, including ethnic food, natural food, ready or convenience food, healthy food and functional food.)

Table 7.10 Anticipated NPD Trends amongst Chinese Consumer's

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group A:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variety</td>
<td>4.35</td>
<td>0.84</td>
</tr>
<tr>
<td>Quality</td>
<td>4.32</td>
<td>0.83</td>
</tr>
<tr>
<td>Appearance</td>
<td>4.19</td>
<td>0.93</td>
</tr>
<tr>
<td>Taste</td>
<td>4.19</td>
<td>0.84</td>
</tr>
<tr>
<td>Packaging</td>
<td>3.93</td>
<td>0.99</td>
</tr>
<tr>
<td>Brand</td>
<td>3.69</td>
<td>1.05</td>
</tr>
<tr>
<td>Price</td>
<td>3.67</td>
<td>1.03</td>
</tr>
<tr>
<td><strong>Group B:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural food</td>
<td>4.50</td>
<td>0.79</td>
</tr>
<tr>
<td>Healthy food</td>
<td>3.93</td>
<td>1.10</td>
</tr>
<tr>
<td>Functional food</td>
<td>3.87</td>
<td>0.99</td>
</tr>
<tr>
<td>Convenience food</td>
<td>3.80</td>
<td>0.96</td>
</tr>
<tr>
<td>Ethnic food</td>
<td>3.52</td>
<td>1.09</td>
</tr>
</tbody>
</table>

n=139, 1=very unlikely, 5=very likely
Frequency Statistics show that the majority regarded that all the specified trends in both Group A and Group B were thought likely to occur during the next 10 years.

From the comparison of mean values between each group, it seems that Chinese consumers think that changes relating to the product itself are more likely to happen than the different types of food development (Ma>Mb).

**Group A**

Table 7.10 gives a clear order of main anticipated trends in new product development from most likely (5) to least likely (1). In Group A, the order is from 'more variety' ($\bar{x} = 4.35$), 'quality improved' ($\bar{x} = 4.32$), 'attractive appearance' ($\bar{x} = 4.19$), 'changed taste' ($\bar{x} = 4.19$), 'new packaging' ($\bar{x} = 3.93$), 'new brand' ($\bar{x} = 3.69$) to 'lower price' ($\bar{x} = 3.67$).

**Variety:** 'Increased variety' was perceived to be the biggest main trend in NPD in the future with 87.8% of Chinese consumers rating that it would be a top trend in the next 10 years. (52.5% thought it 'very likely' and 32.3% thought it 'likely'.)

**Quality:** 'Quality Improved' as a main trend in the future closely followed the top trend of 'increased variety'. A majority of respondents (90.7%) predicted that food product quality would be improved in the following years. (47.5% thought it 'very likely' and 43.2% thought it 'likely').

**Attractive Appearance and Flavour:** (with the same mean value) can be regarded as the third main trends. Although 82.7% respondents thought 'attractive appearance' was likely to be important in NPD and 84.2% of respondents thought that 'flavour change' would be a main trend of NPD, the percentage choosing 'very likely' for new appearance (43.9%) was higher than for new taste (39.6%).
**New Brand and Lower Price:** Although new brand and lower price had the lowest two scores, they were still considered as trends in NPD in the future. Sixty-four percent of people felt that more new brands were likely to be introduced in the food market in the following 10 years, 41.7% indicating ‘likely’ and 22.3% indicating ‘very likely’. More than half of respondents (55.7%) also expected lower price to be a tendency, although 32.4% of respondents were ‘not sure’ if this would occur in the future.

**Group B**

In this group, natural foods ($\bar{x} = 4.50$) were perceived to be the most likely main trend, followed by healthy foods ($\bar{x} = 3.93$), functional foods ($\bar{x} = 3.87$), convenience foods ($\bar{x} = 3.80$) and ethnic foods ($\bar{x} = 3.52$).

**Natural Foods, Healthy Foods and Functional Foods** may be generally regarded as ‘healthy foods’. In this survey, they were perceived to be the top 3 potential new food product development trends, with most consumers considering that the development of these three kinds of foods would be the main trends in the future food market. Ninety-two percent of respondents thought it likely (‘very likely’ (61.9%) or ‘likely’ (30.2%)) that natural food would be a main food development trend. Seventy-one percent of the respondents rated ‘healthy food’ as a likely trend, with 36.7% indicating ‘very likely’ and 34.5% indicating ‘likely’. The percentage of Chinese consumers’ expecting of functional foods to be a main trend (73.4%) is higher than the percentage expecting healthy foods, however, only 26.6% of consumers thought that functional foods were ‘very likely’ to be a trend. This may be because many people still do not understand what functional food means.
**Convenience Foods and Ethnic Foods:** Convenience foods were also rated as a trend with 66.9% of respondents considering it likely to be a trend (42.4% rated it ‘likely’ and 24.5% rated it ‘very likely’). Although the mean score reflects a positive result in relation to ethnic foods as a trend in the future, less than half (49.6%) of the respondents’ held this opinion.

People with different education levels, and males or females had similar expectations of food trends (p>0.05). However, young people were more likely to anticipate functional foods (p=0.014) and the products with new appearance (p=0.004) as food trends. A significant difference was found between the 34 years or below group and the 35-54 years group on indicating functional foods as a trend (p=0.014). In addition, the anticipation of young people (<= 34 years) on ‘attractive appearance’ trend was extremely different (higher) from people aged 55 years or above (p=0.004). There was a significant difference associated with income: lower income groups generally anticipating that natural foods would increase in the future market more than higher income groups (p=0.035) (Appendix 7.7 & 7.8). However, no significant differences were found between any particular income groups using Multiple Comparison tests.

**7.9 Discussion**

This survey investigated the general thoughts of Chinese consumers in Beijing about new food product development, including their perceptions of and preferences for new food products, their buying behaviour related to new products and their expectations of food trends.
7.9.1 New Product Concept

Different consumers have different understandings about the concept of a new product. However, most Chinese consumers in this survey agreed that 'a completely new product' was a new product, which partly confirmed Booz, Allen and Hamilton's (1982) first statement of a new product, that it should be completely new to the world. Chinese consumers did not think a product with attributes such as new price, new appearance and 'new to the company' constituted a new product. They chose 'new healthy foods' and 'safety improved' products as new products. This shows some differences from most western researchers' suggestion of a new product concept, such as the most popular definition from Booz, Allen and Hamilton (1982): '1. New-to-the-world; 2. New-to-the-Company--market extension; 3. New-to-the-Company; range extension....' This suggests that although western foods have raised Chinese consumer awareness of new food products and concepts of quality in relation to product appearance, such as packaging and presentation, inevitably, they were affordable only to the elite, at least in the early stages of market development (Kim, et al., 2002). Thus, Chinese consumers did not accept the western new product concept completely. They tended to adopt Chinese traditional concept about 'food for health', as most of them held the opinion like 'a more healthy food' is a new product in this survey.

7.9.2 Necessity for NPD and Chinese Consumer's willingness to Try New Food Products

This survey revealed that most Chinese consumers thought that it was necessary to introduce new products into the food market and they were likely to try almost every
kind of new products. This may suggest that they are not quite satisfied with the current food products in China and feel that some existing food products were boring and that they wanted to try something new. It may also reflect a desire to improve health by having a more healthy food product (most Chinese consumers would like to try new healthy foods in this study). This expectation again matches the traditional Chinese philosophy about food for health, which has been called ‘Shi Bu’ (Swanson, 1996).

7.9.3 Consumer’s Preference on Different Kinds of New Products

Natural foods and healthy foods were widely accepted by Chinese consumers in different age, education and income levels in this survey. This once again supports the Chinese traditional thoughts about food for health. With this in mind, quite a few consumers wanted more functional foods to promote their health. As China is a country with a huge population and different nations and minorities, Chinese people are likely to accept different kinds of food from different parts of the world. With the development of the Chinese economy and the development of the food industry, various foods from different countries, such as India and Italy came into China’s food market. Chinese consumers are preparing to accept these different kinds of ethnic foods. A willingness of Chinese consumers to try ethnic foods in this survey also showed this trend. Chinese people are also likely to buy increasing amounts of convenience food to suit their busy life, as modern life in China become more like a westerners’ life style (Zhang, 1999).

The survey results also showed that the Chinese consumers would like to try all kinds of new product, except new packaging, which may suggest that Chinese people care
more about a product's function rather than its package. It also reflects that although
many foreign products and ideas have become a part of Chinese people's daily-life,
Chinese Consumers are still holding some traditional thoughts about food, such as
'the package has not a good value' (Anderson & He, 1998).

7.9.4 Main Factors Affecting Chinese Consumer's Purchase Decisions in Relation to New Food Products

Azjen- Fishbein's Theory of Reasoned Action (TRA) model was used in this study
for testing Chinese consumer's choice of new food products. As its name implies, the
TRA provides a rational explanation for Chinese consumers' food choices. The results
showed that both consumers' attitude to the new products and the subjective norms
around the consumers were driving their intention to try new food products. The
results also proved that the consumers' attitudes derived from their beliefs about the
new products and the individual's positive or negative evaluation of the outcomes of
performing the particular behaviour. In this study, consumer's beliefs derived from
their knowledge or thoughts about the new products. (e.g. product quality and safety,
what attribute does this new product provide for consumers? Is it good or bad?)
Therefore, their attitudes about the new products mainly depended on the product
itself (its attributes) and consumers' knowledge about it. Intention could also be
influenced by the reaction of others around consumers (their friends or relatives
suggestion, doctor's recommendation, media and promotion). Responses to questions
asking the main factors influencing consumers purchase behaviour for new products,
also confirmed this. The three main factors driving Chinese consumer's purchase
behaviour towards a new food product were 'product quality' (which could affect
consumer's attitude to the new products), 'family or friend suggestion' or 'doctors' recommendation'. The latter revealed that Chinese consumers rely on their family and friends' suggestions when making buying decisions about new food products. In Chinese culture, the family would be expected to be instrumental, as it is the basic social unit in China (Anderson & He, 1998). The Chinese's sheltered image and their strong family orientation thus influences the Chinese when obtaining new product information and making their decisions. It has long been held that the Chinese have a distinct and consistent value system that has endured for many generations, based on the importance of interpersonal relationships in all decision making (Kindel, 1983). Moreover, friends and other important people around consumers also have an influence on buying decisions, because Chinese society has a communal tradition, focusing more on the development of the social self than on the private self. 'Face' ('mianzi' meaning reputation, prestige obtained through one's efforts or conduct) in China is related to both tangible and intangible personal success (Anderson & He, 1998). When Chinese people make purchase decisions, they care about other people's opinions about their purchase, to keep 'face'. Therefore, sometimes, 'face' makes the Chinese risk-averse and slower to accept new products (Kindel, 1983).

The results also suggested that other factors affected Chinese consumer's decision making, such as 'product appearance', 'variety' and 'media'. The first two are product attributes, and are related to the product quality. The media was also important as a driver of consumer choice. The mass media provides people with knowledge and guidance in their consumer behaviour development (O'Guinn & Shrum, 1997), as people learn about new products and establish a preference for them (McNeal & Ji, 1999). Thus, the interactions between the media and the public are very important to food marketers in order to promote their new products efficiently.
7.9.5 New Product Trends

All kinds of product change and new products specified in this questionnaire were anticipated as likely to occur in the next 10 years. The reasons for this may include that the Chinese are no longer only interested in their traditional foods but have developed tremendous appetites for international foods, demanding more variety (Gises, 1998). This may be the result of the development of technology, improved transportation and lower transport costs, meaning consumers get more information and different food from around the world (Gises, 1998).

In addition, strong awareness of healthy eating means that the Chinese consumers seek for more healthy, natural and better quality new products (Wu, 1995). Convenience foods may be anticipated as a trend, because with the development of China's economy, the life-style in China's urban areas is becoming more like a western lifestyle. People spend less time on cooking and eating than before (Gises, 1998), hence developing a need for foods that are quick to prepare.

7.9.6 The Difference between the Younger and Older Chinese Consumers

Findings presented some distinct differences between the younger and older Chinese consumers in their thinking about NPD. The younger consumers were more likely to try new ethnic foods, were more interested in functional foods and expected that it would become a trend in the future. Additionally, they were more attracted by new product appearance.

The distinction between the younger and older consumers in this study can be summarised, as:
Younger Consumers:
More likely to accept new foods (e.g. ethnic foods) from different areas;
Have various demands to new products;
Attracted by ‘attractive appearance’;
Consider affordable pricing and value for money

Older Consumers:
Desire for quality;
Care less about product appearance;
Not as willing as young people to accept new foods from different areas;
Caution, probably need more extensive product information and are more
cautious about trying new foods

These results might reflect the experience of older and younger consumers. People aged 35 or above grew up in Mao’s (Mao Zedong) socialist regime, and experienced the Cultural Revolution and lack of conspicuous consumption. People under 34 grew up under Deng’s (Deng Xiaoping) economic reform and open-to-the-outside-world policy, therefore, they are more affected by fashion and western products and ideas (Lin, 1985). Andrew and He’s study in 1998 indicated similar findings to the current study in relation to differences between older and younger Chinese consumers. Jimes (1993) also suggested that older and younger consumers in China had different outlooks on food. Older Chinese consumers are said to eat burgers for nutrition, but the younger consumers to eat them for taste. Therefore, understanding the thoughts of Chinese consumers of different age groups is vital to the food producers and marketers.
7.9.7 Three Important Consumer Issues on NPD

From the results and previous discussion, three key consumer issues emerged in relation to food NPD — 'Health', 'Quality' and 'Price'.

- **Health**

Most respondents were likely to try healthy foods or a product with a healthy version (especially female consumers). They wanted to buy new natural, healthy or functional foods (Question IV) and expected that these products would be likely to be introduced into the future food market (Question VI). All findings indicated that awareness of health was an important issue in Chinese people's minds. To the Chinese, having a healthy diet is important, this traditional belief has been passed from generation to generation throughout Chinese history. Although the nutritional philosophy is different from that of western countries, a healthy awareness has been promoted, and guidelines are provided on the nutritive value of food in China and this should be reflected in food processing (Wu, 1995). Thus, the development of healthy foods in China is the one of most important targets for food producers in the NPD process.

- **Quality and Price**

A report by Promar International (2000) concluded that:

'Chinese consumers have been willing to accept products of lower quality for a lower price, especially when the difference in price of an imported or foreign branded product is not justified in terms of perceived product quality/benefit.' (Promar International, 2000, p28)
However, in this survey, results suggest that most respondents cared more about food quality than other product attributes. They wanted more 'improved quality' new products (Question IV) and expected that it would be the main trend in the future (Question VI). When they chose new products, they normally, considered its quality rather than price (Question III). They did not think 'lower price' to be an attribute of a new product (Question I) and the price factor was not the main driving force for their food choice (Question III). They enjoyed food taste and variety but did not think high price of current products was the main reason for product change (Question II).

Although the relatively low-priced foods fill basic consumer needs and appeal to a wide variety of people in China, responses to this questionnaire suggest that quality influences buying behaviour more than price. This may be because the catchment areas were urban and relative wealthy areas in China. With the increase of the Chinese economy and consumer’s income, price is less important than before in some urban areas. For example, when resources are limited, consumers may more heavily rely on price in making product evaluations and purchase decisions. However, when more resources become available, consumers may desire more quality attributes in the product itself rather than being concerned with price (Promar International, 2000). Another reason is that as more information and knowledge comes from the outside-world, Chinese consumers are learning to understand price-quality relationships, and are shopping for different qualities among products (Anderson & He, 1998). Food companies should be aware of this change and focus on improving food quality.
7.10 Limitation

China, is a large country, which has regional differences, especially where climates and cultural environments differ. Thus, it is likely that the results for consumers researched in Beijing, the Capital city, would be different from consumers elsewhere in China. Furthermore, it is important to note that the sample of this study does not represent all Chinese consumers, only those from the sampling areas. This diversity implies that the marketing mix for one time period and region of a large, diverse country tends to be effective only for similar consumers in similar regions and times (Kim, et al., 2002). Therefore, generalisations cannot be made with respect to China as a whole.

7.11 Conclusion

This chapter looked at the findings from the Chinese consumer survey about new product development in the food industry in China.

The findings demonstrated that most Chinese consumers in urban areas thought that it was necessary to introduce new products into the food market and they would like to try different kinds of new products. Most Chinese consumers considered ‘completely new to the world products’, ‘improved quality’ and ‘improved health’ products as new products. These results are different from British consumers’ results. The results from this study also concluded the main factors influencing Chinese consumers’ buying behaviours towards new products, which were influenced by ‘friends and family suggestion’ and ‘food quality’. Both consumers’ attitudes and subjective norms to new products were found to be determinants, affecting Chinese consumers’ intentions.
to try new products. New healthy foods (including new functional foods, natural foods and improved quality foods) and more variety of foods (e.g. convenience foods, ethnic foods, new appearance, new brand, and new packaging) were predicted as main trends in the future by Chinese consumers.

The findings highlight the need to pinpoint the most critical areas for product development from a Chinese consumers' viewpoint, which gives precedence to health, quality and price. Therefore, in order to achieve a successful NPD, the food industry should bear these in mind to fully understand consumers' thoughts on new products.

Chapters 8&9 deal with the opinions of R&D personnel from the food industry in Britain and China, to gain an understanding of NPD process in both countries and to see if industry understands current consumer's needs for new food products. (Some differences between China and Britain will discuss in Chapter 10.)
Chapter Eight
Chapter 8

Findings and Discussion (III) British Food R & D Personnel Interviews

8.1 Introduction

Previous chapters have assessed both British and Chinese Consumer's perceptions, preferences, and expectations of new food product development. This Chapter reports the results of the Phase II research – the thoughts on food NPD from R & D personnel in the British food industry. (Chapter 9 discusses same for the Chinese food industry.) It discusses their views on the new product concept, NPD process, success and trends, and compares these with results from previous surveys.

The interviews were captured with the assistance of an interview protocol to guide the discussion toward issues that emerged from both the literature review and the consumer surveys.

The raw data from the 13 interviews were transcribed verbatim from tape recordings and were inductively processed to identify, code, and categorise data into 5 constructs (company background, new product concept, NPD process, NPD success, and NPD trends) by content analysis. (Examples of transcripts are shown in Appendix 5.13)

8.2 Company Background

Of the 13 food companies in the study, six were established between 1900 and 1980, three were established prior to 1900 and three were new (established after 1980)
<table>
<thead>
<tr>
<th>Company No.</th>
<th>Established Year</th>
<th>No. of Employee</th>
<th>Main Product</th>
<th>Ownership</th>
<th>Position</th>
<th>No. of New products</th>
<th>NPD Organisation</th>
<th>NPD Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1864</td>
<td>5200</td>
<td>Fresh custard, dairy</td>
<td>private</td>
<td>Senior Food Tech.</td>
<td>30-40</td>
<td>a</td>
<td>whole team</td>
</tr>
<tr>
<td>2</td>
<td>1866</td>
<td>&gt;1000</td>
<td>Confectionary</td>
<td>independent</td>
<td>Technical Manager</td>
<td>40-50</td>
<td>a</td>
<td>marketing director</td>
</tr>
<tr>
<td>3</td>
<td>1948</td>
<td>10000</td>
<td>Biscuits</td>
<td>private</td>
<td>External Manager.</td>
<td>200</td>
<td>a</td>
<td>marketing director</td>
</tr>
<tr>
<td>4</td>
<td>1967</td>
<td>3000</td>
<td>Reform chicken, poultry</td>
<td>private</td>
<td>Marketing Director</td>
<td>40-50</td>
<td>a</td>
<td>product executive</td>
</tr>
<tr>
<td>5</td>
<td>1952</td>
<td>100</td>
<td>Cereal, dried fruit</td>
<td>independent</td>
<td>QA Manager</td>
<td>8</td>
<td>QA+c</td>
<td>outside research</td>
</tr>
<tr>
<td>6</td>
<td>1887</td>
<td>720</td>
<td>Muffin and Cake</td>
<td>private</td>
<td>NPD Technologist</td>
<td>30</td>
<td>a</td>
<td>marketing director</td>
</tr>
<tr>
<td>7</td>
<td>1975</td>
<td>70</td>
<td>Soya product</td>
<td>private</td>
<td>Site Tech. Manager.</td>
<td>60-70</td>
<td>a+b</td>
<td>market research</td>
</tr>
<tr>
<td>8</td>
<td>/</td>
<td>&gt;1000</td>
<td>Frozen foods</td>
<td>independent</td>
<td>Food Technologist</td>
<td>8</td>
<td>Brand Dept.</td>
<td>Joint decision</td>
</tr>
<tr>
<td>9</td>
<td>1887</td>
<td>100</td>
<td>Sauce, dressing</td>
<td>limited</td>
<td>NPD Manager</td>
<td>200-300</td>
<td>a</td>
<td>NPD director</td>
</tr>
<tr>
<td>10</td>
<td>1972</td>
<td>&gt;6000</td>
<td>Dairy products</td>
<td>/</td>
<td>NPD Manager</td>
<td>/</td>
<td>a</td>
<td>NPD Manager</td>
</tr>
<tr>
<td>11</td>
<td>1985</td>
<td>60</td>
<td>Beverage, confectionary</td>
<td>independent</td>
<td>NPD Manager</td>
<td>/</td>
<td>b</td>
<td>NPD Manager</td>
</tr>
<tr>
<td>12</td>
<td>1980</td>
<td>4500</td>
<td>Pie, pasty, bakery</td>
<td>private</td>
<td>R&amp;D Staff</td>
<td>600-700</td>
<td>a</td>
<td>NPD team</td>
</tr>
<tr>
<td>13</td>
<td>1989</td>
<td>250</td>
<td>Pasta Sauce</td>
<td>private</td>
<td>Brand Manager</td>
<td>125</td>
<td>a+b+c</td>
<td>whole team</td>
</tr>
</tbody>
</table>

Note: 1. a: A separate NPD department b: internal market research resources c: carried out by existing product executive (or agency)
2. a: Whole team includes R&D, production and sales staff together; b: Joint decision is made by technical, development, brand and marketing personnel
3. No. of New Products: Numbers of new products has been introduced in the last 5 years.
One food company did not provide a clear time. Table 8.1 shows that the interviewees were from three small companies (number of staff ≤ 100), 3 medium size companies (101-1000) and 7 large food companies (>1000). Their main products covered bakery, confectionery, dairy, dried fruits and poultry. Seven of the companies were family or privately owned, and the remainder of them were independent. Most of the interviewees were R & D personnel; some were from other departments such as the operations department or technical department. During the previous 5 years, most of the companies had introduced 30-70 new products to the food market. These new products were of different innovation types, for example, 10 completely new products and 50-60 new brands or labels were introduced by the dairy company. Ten of the 13 companies indicated that there was a separate NPD department in their company. Three had no separate R&D department undertaking new product development, with new product development occurring in the operations or production departments or a brand development department for instance:

' We have a Brand Development Department. This department incorporates both the marketing function and NPD. The NPD work is carried out at the manufacturing site in ..., while the marketing function is a Head Office department based in .... The two functions work closely together, with travel between the two sites a weekly occurrence' (NPD Technologist, A Large Frozen Food Company).

In four companies, NPD managers and directors took the ultimate responsibility for NPD. In another four companies, interviewees thought that NPD was the responsibility of the marketing director. Other companies had different people taking the ultimate responsibility, including the operations manager or the whole team, as a senior food technologist said:
‘Operationally, the technical director, but from a sales or marketing viewpoint—are different individuals depending on the project.’ (Food Technologist, A Large Dairy Company)

R&D personnel from another company held a similar view:

‘In theory it is a joint decision, but in reality marketing tend to make the decisions and therefore the ultimate responsibility lies with them. If marketing don’t feel that they can sell the product at the price that we have developed it, we reassess the ingredients and see if it can be made cheaper. If not it is ‘killed’ before reaching the marketplace.’ (NPD Technologist, A Large Frozen Food Company)

8.3 New Product Concept

The concept of ‘new food product’ has various definitions. This research used the definition of Booz, Allen and Hamilton (1982) and Kotler (1991). Results found that all of the thirteen food companies classed completely new products and line extensions or improved products as their new products. Six of them also classed new brands as new products. The ratio between these three categories varied. For nine companies (most of them were bakery and confectionery companies), new products were mainly line extensions or improved products, but in four food companies, completely new products occupied the main part of the new products (Table 8.2). All companies thought that it was necessary to introduce new products into current food markets.

8.3.1 Reasons for Changing Current Products

Table 8.3 shows that R&D personnel from the food companies thought that the main reasons for changing current products were that people (consumers) became bored
<table>
<thead>
<tr>
<th>Company No.</th>
<th>New Product Concept</th>
<th>Ratio a:b:c (%)</th>
<th>Main Product</th>
<th>Material Change</th>
<th>Packaging, etc. Change</th>
<th>By-product Efficiency</th>
<th>Lower Cost</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>a+b+c</td>
<td>5/75/20</td>
<td>Fresh custard</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>a+c</td>
<td>/</td>
<td>confectionary</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>a+b+c</td>
<td>/</td>
<td>Biscuits</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>a+b</td>
<td>80/20/0</td>
<td>Reform chicken</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>a+b+c</td>
<td>75/15/10</td>
<td>Cereal</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>a+b</td>
<td>40/60/0</td>
<td>Muffin and Cake</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>a+b</td>
<td>70/30/0</td>
<td>Soya product</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>a+b</td>
<td>10/90/0</td>
<td>Cake, Pastry</td>
<td>Y</td>
<td>/</td>
<td>N</td>
<td>/</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>a+b</td>
<td>/</td>
<td>Sauce, dressing</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>a+b</td>
<td>20/80</td>
<td>Dairy products</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>a+b+c</td>
<td>10/80/10</td>
<td>Dairy products</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>a+b+c</td>
<td>33/33/33</td>
<td>Pie, Pastry</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>a+b+c</td>
<td>30/60/10</td>
<td>Pasta Sauce</td>
<td>Y</td>
<td>Y</td>
<td>sometimes</td>
<td>natural taste</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- a: completely new product, b: line extension or improved product, c: new brand
- Y: Yes, N: No

Table 8.2 New Product Concept and Implementation of New Product Change (British Food Industry)
with the existing food (9) and desired something new (10), especially improved product convenience (9). They also thought ‘lack of demand’ (7), ‘to improve health’ (7) and ‘less variety’ (7) were reasons for product change, but less than half thought ‘poor quality of current product’ (6) and ‘poor flavour’ (5) were reasons. High price was seldom selected (2). (A checklist given to interviewees, provided nine reasons which were summarised from the literature review. This was same list as provided to consumers to allow comparison. See Appendix 5.10)

Table 8.3 Reasons for Product Change (British food industry study) n=13

<table>
<thead>
<tr>
<th>Reason</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desired something new</td>
<td>10</td>
</tr>
<tr>
<td>Bored with the existing food</td>
<td>9</td>
</tr>
<tr>
<td>Improved product convenience</td>
<td>9</td>
</tr>
<tr>
<td>Lack of demand</td>
<td>7</td>
</tr>
<tr>
<td>To improve health</td>
<td>7</td>
</tr>
<tr>
<td>Less variety</td>
<td>7</td>
</tr>
<tr>
<td>Poor quality</td>
<td>6</td>
</tr>
<tr>
<td>Poor taste or flavour</td>
<td>5</td>
</tr>
<tr>
<td>High price</td>
<td>2</td>
</tr>
</tbody>
</table>

8.3.2 The Intention of Food Companies to Introduce Different Kinds of New Foods

Fig. 8.1 (A&B) presents the intention of the food industry to develop two categories of new food products. In group A (different types of new foods), convenience food (10) and natural food (8) were most likely to be introduced into the food market. Less than half of the companies (5) intended to develop new ethnic foods and only four companies of the 13 showed an interest in developing more functional foods. From group B (different product characteristics), it can be seen that most food companies showed the greatest interest in developing ‘new taste’ (12), ‘new package’ (12) and ‘healthy version’ (12) foods. To improve food product quality (9) was also an
important task. They were not keen to develop new brands or to reduce the product price.

Fig. 8.1 Intention of British Food Industry to Introduce Different Foods (A) (n=13)

8.3.3 Implementation of New Product Change

The above indicated the changes that the food industry would like to make to their new products. This section reports the kinds of change that have been implemented by the food companies. Table 8.2 lists the changes carried out by the sample companies
during their NPD. Ten of the thirteen companies agreed that there had been some changes in basic raw material ingredients or other ingredients. Nine of the 13 companies indicated that their new products involved some changes in processing method, equipment, packaging or manner of dispensing from packing. Five companies thought their new products permitted more efficient use of by-products from existing processing operations. Only four companies' new products permitted processing at a lower direct cost than would otherwise be required for an equivalent amount of a similar product. Some interviewees also provided other attributes of their new products, such as more profit, added niche market and shelf life increased. For the changes in processing method, equipment and packaging, one manager's opinion (NPD Manager, A Small Sauce and Dressing Company), represented the views of other R&D personnel.

'It will depend on the product question. Some are straightforward extensions of current product, e.g. a new flavour crumb on a chicken core, while others will require significant investment in terms of machinery either as part of a new process method or a new packaging material.'

8.3.4 Consumer's Needs

Almost everyone believed that the ultimate purpose of all new product development activities was to meet consumers' needs and that new product attributes needed to satisfy the consumer's needs. However, for the question 'what are the consumers' needs of new products?', different interviewees expressed different understandings:

'They are looking for new flavour, new ideas, new recipes.... They are looking for new concept, a reduction of cost... and people are looking for healthy products as well.' (Marketing Director, A Large Poultry Company)
'Consumers need a product that not only tastes good, but makes them feel good, for example a great tasting product that is low in fat so that they do not feel guilty after eating it.' (NPD Manager, A Small Confectionery Company)

'I would say convenience, value for money, fitness for purpose, quality, something different or perceived to be different.' (Brand Manager, A Medium Pasta Sauce Company)

'Consumers are looking for good flavour and taste along with the convenience of being able to cook product quickly and without much effort. For example, a product that could be microwaved in 10 minutes would be regarded as convenient, but it would still need to taste good etc. in order to secure repeat purchase.' (NPD Technologist, A Large Frozen Food Company)

'Convenience with a part to play, however, in the prepare process, i.e. meal kits.' (NPD Manager, A Large Dairy Company)

'The products meet demand at the right price and with the right quality.' (NPD Technologist, A Medium Bakery Company)

Six main consumer needs could be summarised from the interviewees' views: 'convenience', 'healthy', 'good quality', 'good taste', 'new idea' and 'reasonable cost'.

8.4 NPD Process

The emergence of a new product in the market is the result of several activities spanning an appreciable length of time, depending on the product type. Different food companies have their own main products, therefore, individual food companies have their own process of NPD. For example,
'I need to speak to NPD person, Just NPD only. NPD worked from their knowledge, they do the marketing research for the similar product market and they will produce some sample and screening... a testing panel... and from that point, take a product analysis...and then we take a product trial, and from the product trial, they make a certainty quality product and give to sales person show the customers to see if they like it. Then, they get response. If they got positive response, then the product will be launched, if negative, then the product will be dropped. ...' (Marketing Director, A Large Poultry Company)

'The process that we use is essentially the same for all products. A concept is generated from an identified marketing brief. This is issued to development; from which we make up a number of different products, which might be the same ingredients but different format for packaging. The samples are then sent for marketing approval and then the best/preferred samples are selected for scale up trials which market research is carried out on. ... Small scale research is also carried out before full scale production trials are carried out... ' (NPD Manager, A Medium Sauce Company)

'General description of NPD process: Blue Sky ideas are worked upon on a continual basis-in between existing briefs. Competitor products are evaluated on a monthly basis-during Product Development Meetings. When looking at competitor products, gaps in the marketplace are also identified. Briefs are taken by the Product Development Director (who is the Account Manager for Retail), the Business Development Manager (who is the Account Manager for Business to Business products i.e. added value and foodservice) and myself, the Product Development
Manager who also deals with general customer Product Development related
enquires. The briefs are interpreted by myself, and the projects are then handled over
to the two Development Technologists who design the food products for the clients.
The accounts for food design are split between the two Technologists to allow for
continuity. The Senior Development Technologist (my second) is responsible for
taking approved products to trial and hence overlooking first production runs.'(NPD
Manager, A Large Dairy Company)

Although different companies had their own NPD process with particular products,
the process of NPD in each company was quite similar in general. Seven phases in the
sequence of the NPD process: a) new product strategy development, b) idea
generation, c) screening and evaluation, d) business analysis, e) development, f)
testing and g) commercialisation, have been identified from the literature (Booz,
Allen and Hamilton, 1982). This seven-phase model was used to assess the
involvement of the food companies in pre-commercialisation NPD activities and
revealed that some companies were active in some phases of the process. ‘Idea
generation’, ‘screening and evaluation’, and ‘business analysis’ were the three main
phases in which all the food companies (13) were active, while participation was least
(8) in ‘testing and commercialisation’ (Fig. 8.2).
Fig. 8.2 NPD Process/Involvement of British Food Companies in Different NPD Phases of the NPD Process (n=13)

Note: a: new product strategy development, b: idea generation, c: screening and evaluation, d: business analysis, e: development, f: testing, g: commercialisation

A company to company assessment in this study showed that six of the food companies were following all the seven phases of the NPD process. While intensity of activity in the different phases of the NPD process varied from company to company, or from product to product, the chances of new product success may be jeopardised by the exclusion of any phase from the process. This is largely due to the fact that each phase is a filter which provides vital information needed for crucial decisions along the process. Generally, the process was similar for all products within a company. 'Generally, it is similar for all products, sometimes, it is just the case of matching an existing product.' (R&D Manager, A Large Dairy Company)

During these phases, eight of the thirteen companies reported the business analysis stage as the most important stage, three companies regarded ‘idea generation’ as the most important stage. One food company reported that testing and analysis were the
most important, and another said that commercialisation was the most crucial. Two companies' managers said that all stages were important for NPD, e.g.

'All stages are regarded as important and interrelated. If one stage is not fully completed then it impacts others.' (Technical Manager, A Large Confectionery Company)

8.4.1 New Product Strategy Benefit

Table 8.4 shows that nearly all benefits identified by the researcher were acknowledged as elements of new product strategy for food companies. Twelve companies agreed that a new product strategy increased their profitability and nine companies thought it improved the companies' internal capability and promoted sales.

A 'new product strategy' benefited eleven companies by increasing or retaining their customers. One R&D manager gave different opinion as

'it improves the company's presence in the marketplace. A broader range of products makes the company more efficient as a down turn in product demand is less likely if there are products to suit all seasons.' (NPD Manager, A Large Dairy Company)

Interviewees from eight companies also thought their strategy helped them access new markets. Only four companies used their new product strategy to increase the size of their company, e.g. 'the aim of new product launches is to grow the company.' (Brand Manager, A Small Sauce Company)
Table 8.4 New Product Strategy Benefits (British food industry study) n=13

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase profitability</td>
<td>12</td>
</tr>
<tr>
<td>Increase and retain customers</td>
<td>11</td>
</tr>
<tr>
<td>Promote sales</td>
<td>9</td>
</tr>
<tr>
<td>Improve the companies’ internal capability</td>
<td>9</td>
</tr>
<tr>
<td>Access new market</td>
<td>8</td>
</tr>
<tr>
<td>Increase the company size</td>
<td>4</td>
</tr>
</tbody>
</table>

8.4.2. Types of NPD

When asked ‘which types of product innovation do you use?’, most food R&D personnel agreed that ‘continued development of existing products’ (13) and ‘first in the field with a new product’ (13) were the most widely used NPD types for their NPD. Less than half (6) of the food companies considered the ‘follow the leader with rival products’ and ‘longer term research into new products ideas’ as their NPD types (Fig 8.3).

**Fig. 8.3 NPD Types Conducted by British Food Companies (n=13)**

8.4.3 NPD Information Sources

Most food companies derived their new product ideas from one or more of R&D, production, marketing (sales), supplier and customers (Table 8.5), which are similar
to Kotler’s (1996) classification of NPD sources. Kotler (1996) grouped the NPD sources as internal sources (including R&D, production, and marketing (sales) etc.), distributors and suppliers, customers, competitors and other sources. The diversity of these sources is of tremendous benefit to companies in broadening the reservoir of ideas and reducing the failure of ideas in the NPD process. The willingness and ability to effectively tap all sources of knowledge, both external and internal, has been found to be a major source of successful new product development (Cannon, 1978).

Table 8.5 NPD Information Source (British food industry study) n=13

<table>
<thead>
<tr>
<th>Information Source</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company research or development lab.</td>
<td>6</td>
</tr>
<tr>
<td>New product research</td>
<td>5</td>
</tr>
<tr>
<td>Discussion with customers</td>
<td>5</td>
</tr>
<tr>
<td>Trade customers</td>
<td>4</td>
</tr>
<tr>
<td>Sales personnel</td>
<td>3</td>
</tr>
<tr>
<td>Marketing research involving other products</td>
<td>3</td>
</tr>
<tr>
<td>Suppliers</td>
<td>3</td>
</tr>
<tr>
<td>Advertising agency</td>
<td>1</td>
</tr>
<tr>
<td>Trade magazines or reports</td>
<td>1</td>
</tr>
<tr>
<td>Competing companies</td>
<td>1</td>
</tr>
<tr>
<td>Other (USA Headquarters)</td>
<td>1</td>
</tr>
</tbody>
</table>

8.4.4 New Product Distribution Channels and the Time of New Product Being Withdrawn from the Market

Eight of the 13 food companies’ distribution channel combined retail and wholesale. Three companies used wholesale only and two companies used retail channels only. Different promotions were used to boost new product sales according to different products and different distribution channels, for example, one company that used wholesale as the only distribution channel:
'Our whole sale team promote our products for our direct customers and to some warehouse or wholesalers. Leaflets sent to customers and different sales teams, visits to customers by sale team.' (R&D Staff, A Large Dairy Company)

However, most food companies used advertisements and in-store promotions, for instance 'advertisements in Retail Magazines, e.g. the Sainsbury’s magazine,' 'TV advertisement' and 'buy one get one free' promotion. 'Food exhibition' was also identified as a promotion channel.

It is not easy to test how long is given to new products before they are withdrawn from the market, as none of these 13 food companies could give a clear time. For this question, the main answers are:

'Generally, new products will be given 6 to 12 months to prove themselves, depends on the products...' (NPD Technologist, A Large Dairy Product Company)

'Depends on the listing with major retailers on the time given for success, i.e. new launch, addition to a range, new sector, financial reward from shelf space.' (NPD Technologist, A Large Frozen Food Company)

'The product is withdrawn when the cost are not covered by the sales.' (NPD Manager, A Medium Bakery)

'It depends on the expectations of the product. Some would be removed within three months; others would be given six or so. Sales of all products are monitored and any under-performing product is reviewed even if they have been in the market for a number of years.' (Technical Manager, A Medium Dairy Company)

'This is in the hands of the retailers. The retailers will inform us (if it is a supermarket own label product) or our customer will inform us if we are supplying a
component to their pack ... are particularly ruthless, if a product does not sell within the first couple of weeks, then they will withdraw it with immediate effect. The other supermarkets tend to use the aid of promotional tools, seasonal trends within their analysis before writing products off... (NPD Manager, A Small Salad Dressing and Sauce Company)

'Three months before withdrawn with unsatisfying sale.' (NPD Manager, A Large Dairy Company)

Therefore, the time before new products are withdrawn from the market depends on the product itself, and the customer's satisfaction with the product. Food companies need product market research to design suitable new products to meet the consumers' demand and to adapt products to the consumer market for new products with a long life.

8.5 NPD Success

Encouraged by past success, many food manufacturing businesses seek sales growth through the development and introduction of new products. Thus new product success is extremely important to the food industry. In order to define a successful NPD, practitioners and researchers have carefully explored the causes of new product failures (Hollingsworth, 1996; Hood et al.; 1997, Hoban, 1998; Lynon, 1986). From the literature, several handicaps and reasons for new product failure have been summarised. These were used in the current research to test NPD success factors in the British food industry.
8.5.1 Handicaps to NPD Success

Table 8.6 summarises the main handicaps to NPD success in the current British food industry. These were ‘funding’ (5) and ‘non-intensive selling and marketing’ (5), and for the small companies, ‘size of firm’ (3) was one of the main handicaps. These partly matched Kotler’s (1991) ideas of NPD handicaps, which included capital shortage, fragmented market, shortage of marketing ideas, and social and governmental constraints. Three companies admitted that ‘lack of consumer knowledge’ could be a handicap. Two people from two different companies agreed that they needed to overcome the problem of ‘lack of expertise’. Two managers mentioned ‘time’:

‘The main problem is the time scale from concept to launch. It takes a long time to fully develop and research new products within the organisation and this sometimes means that others get there first so we end up making a new launch. The new systems and processes that we used are laid down from our parent company. Being so large it sometimes slows things down.’ (NPD Manager, A Large Dairy Company)

Two companies indicated no handicap to their NPD success.

Table 8.6 Handicaps to NPD Success (British food industry study) (n=13)

<table>
<thead>
<tr>
<th>Handicaps</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of funding</td>
<td>5</td>
</tr>
<tr>
<td>Non-intensive selling and marketing</td>
<td>5</td>
</tr>
<tr>
<td>Firm size</td>
<td>3</td>
</tr>
<tr>
<td>Lack of consumer knowledge</td>
<td>3</td>
</tr>
<tr>
<td>Lack of expertise</td>
<td>2</td>
</tr>
<tr>
<td>Time scale</td>
<td>2</td>
</tr>
</tbody>
</table>
8.5.2 Reasons for NPD failure

Table 8.7 indicates that ‘failure to achieve adequate distribution for new products’ (7) was the main reason given for NPD failure, followed by ‘insufficient marketing effort’ (6) and ‘product-itself defects’ (6). ‘Poor timing’ (5) and ‘R & D costs were higher than anticipated’ (5) were also reasons for NPD failure. One R & D manager expressed:

‘95% of all development work is discarded, products may be acceptable but to survive in the marketplace they have to be special. It is all part of the product development work to discard such a high percentage of work.’ (Site Technical Manager, A Medium Soya Product Company)

More than half (9) of the food companies had met several problems in their NPD. For example, a marketing director remembered:

‘we developed a new product, which was failed to the market, or it could not reach the end market, as it is more expensive than we anticipated. It is too expensive; the customers would not buy it. Another example is that we produced a new flavour chicken product. The flavour was not quite right for the market. We tried to launch it for two markets. For the Polish market, it was quite popular, and we thought it would be successful to launch it in the U.K. market, but the flavour was not quite right. It was too sweet....’ (Marketing Director, A Large Poultry Company)

Table 8.7 Reasons for NPD Failure (British food industry study) n=13

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to achieve adequate distribution</td>
<td>7</td>
</tr>
<tr>
<td>Insufficient marketing effort</td>
<td>6</td>
</tr>
<tr>
<td>Product itself defects</td>
<td>6</td>
</tr>
<tr>
<td>Poor timing</td>
<td>5</td>
</tr>
<tr>
<td>R&amp;D cost higher than anticipated</td>
<td>5</td>
</tr>
</tbody>
</table>

### 8.5.3 Key Factors for NPD Success

Nine of the thirteen food companies thought that their NPD success rate was satisfactory (ranging from 50% to 85%). Success rate of four food companies gave lower figures than the average and one technical manager reported that the NPD success rate in their company was very low. Different individuals had different ideas on the most important or key factors for the NPD success (a summary as below):

- ‘...Customer wants...’ (Marketing Director, A Large Poultry Company)
- ‘...Understanding the market need, and delivering consumer expectation....’ (Food Technologist, A Large Dairy Company)
- ‘...Customer’s information...’ (Technical Manager, A Large Confectionery Company)
- ‘...Our ability to create customer cereal blends...’ (QA Manager, A Small Dried Fruit Company)
- ‘...Establishing what the customer wants and ensuring that the market is there – low risk...’ (Site Technical Manager, A Medium Soya Product Company)
- ‘...Market research...’ (External Manager, A Large Biscuits Company)
- ‘...Support from market research to identify consumers needs and ensure quality...’ (NPD Technologist, A Medium Bakery)
- ‘...Knowledge base and experience...’ (NPD Manager, A Small Sauce Company)
- ‘...Quality...’ (NPD Manager, A Small Beverage Company)
‘...Finding a product which is different from other products already on the market...’ (Brand Manager, A Small Sauce Company)

‘...Agreeing on a product, developing it and sticking to the design brief. All too often the brief changes during the project...’ (Food Technologist, A Large Frozen Food Company)

‘...Our foodies team-who are passionate about their profession and food in general—the NPD Department is the engine room of the business...’ (R & D Staff, A Large Bakery)

‘...Efficient plan...’ (NPD Manager, A Large Dairy Company)

The key factors for NPD success, from the above, can be summarised as efficient market research to understand customers' needs and focusing on consumers' needs to develop a high quality and suitable new product to satisfy them. These have been mentioned by several authors in literature (e.g. Hood, et al., 1997, Linnemann, et al., 1998, Kirk, 1998, Saguy & Moskowitz, 1999).

8.6 NPD trends

All interviewees expected that convenience foods and increased variety would be key trends in the next 10 years. Twelve of the thirteen interviewees agreed that new flavour and new taste, and more healthy foods would also appear on the food market in the future. Eleven of them thought that natural foods, improved quality and new packaging of foods were likely to become food trends. Ethnic foods (10), functional foods (10) and food products with an attractive appearance (8) were also seen as future trends. Nearly half (7) of the companies saw 'price reduction' as a trend in the following 10 years. Only four of the thirteen interviewees considered new brands as a NPD trend for the future.
8.7 Discussion

This section compares results from the British consumer survey (Chapter 6) with results from the food industry.

8.7.1 Discussions of New Product Concept

Most current British food companies have their own R & D departments and relatively mature NPD processes. They develop three main groups of new products: completely new products, line extensions or improved products and new brands. This concept of a new product is similar to the perception of British consumers, who believed that 'a completely new product', 'new to the company' product and 'new brand' could be considered as new products.

8.7.2 Need for NPD and Reasons for Product Change

Both British consumers and food industry personnel thought that it was necessary to introduce new products into the British food market. Both reported the same main reasons for product change: people become bored with current food products and desire to try something new.

8.7.3 Willingness to Develop Different Kinds of New Products

Most British consumers were likely to try new food products, and all the British food companies were happy to introduce new food products into the market. Most R & D personnel (irrespective of company) thought that understanding consumers' needs and making a suitable product to satisfy consumers were the most important factors for successful food NPD. The consumer survey showed that British consumers wanted more healthy foods (including natural foods and functional foods, and a good quality...
and safe food product) to promote their health. They also needed more convenience foods to conform to their busy modern lifestyle. They would like to try various new foods, including new taste, new packaging, and ethnic foods. The British food industry was engaged in developing these kinds of foods. The interviews showed that most food R&D personnel understood the consumers’ needs, and would like to introduce more healthy and more convenience foods, and as well as various foods to meet different consumers’ needs.

8.7.4 NPD Trends

'Healthy', 'natural', 'convenience' and 'functional' foods were perceived to be major food trends. New packaging, new taste, improved quality, and increased variety were also likely to be trends in the future. These opinions were widely reported by both British consumers and the British food industry.

8.8 Implications

Some implications are worth noting from industry interviews:

1. Some food companies were not active enough in market research, which was regarded as the most important stage in the NPD process by most food companies. This was reflected in low funding, small firm size and inadequate staffing, and resulted in poor new product performance.

2. The new product development strategy and the product are the core or the central strategy in new product development and food companies can seek differential advantages (like promote sales, improve company internal capability, access to new markets, increase profitability, increase company size, and increase or retain customers) through them (Imram, 1999; Rudder, et al., 2001; Johne & Snelson,
1990). However, it is important that a very strong synergy exists between the product and the companies' technical and product capabilities and resources base.

3. Most British food companies had their own relatively mature NPD Process and they followed similar phases.

4. The existence of an R & D department for the food companies is necessary, but for some food companies, this alone is not sufficient to ensure successful management of the NPD Process. The multifactorial nature of the process indicates that greater NPD success can be achieved through the team work of professionals from R & D, production, marketing and other departments, and understanding the consumers' needs is vital for NPD success.

5. In spite of the high risk involved, new product development activities have become widely accepted by the British food industry as an important strategy for improving the corporate viability of business organisations in a dynamic and increasingly competitive market.

6. Most British food companies have paid more attention to development in ingredient technologies, processing technology, packaging systems and materials, since technical and production capability support is an important factor for new product success in the food industry. Efforts have been made to develop capabilities by the food companies in these areas to enable companies to explore opportunities created by new or imaginative combinations of existing technologies (e.g. an efficient use of by products or lower direct cost) (Iiori, et al., 2000).

Finally, in view of the unique nature of each new product development, two recommendations are made as general guides:
1. Food companies are encouraged to strengthen their R & D departments through increased funding and intensive market research.

2. As almost each phase in the NPD process has some contribution to new product success, adequate attention should be given to all phases of the new product development process (Iiori, et al., 2000).

8.9 Conclusion

The overall impact of this study is expected to be an increased understanding in new product development leading to a greater propensity to succeed. The results of interviews with British food R & D personnel represent a picture of the new product development process, and success in the current British food industry, and reflect the importance of NPD in the British food Industry. All results have been interpreted by using research theoretical framework and reference to literature. In relation to some key issues, (e.g. the new product concept, necessity to introduce a new food product, why products should change and new product trends) the results from the food industry interviews echo the findings from the consumer survey. It reveals that understanding consumers’ needs is the most important factor in new product development in the British food industry. The British food industry is seeking more efficient ways to innovate to satisfy consumers’ demands, as most food companies have realised the importance of getting to know consumers’ needs.

Chapter 9 will discuss the findings from interviews with Chinese food R & D personnel.
Chapter Nine
Chapter 9

Findings & Discussion (IV)

Chinese Food Industry Interviews

9.1 Introduction

Chapter 7 discussed the Chinese consumer’s thoughts about new product development and their increased demands for new products. It revealed that changing consumer preferences foster demand for new products with good quality, longer shelf life, and better appearance. Therefore, for the Chinese food industry, more successful R&D is becoming important in a competitive Chinese food market.

This Chapter reports on interviews with R&D personnel in China and compares their opinions with those of Chinese consumers.

9.2 Company Background

Table 9.1 presents the background of the sample food companies. The Chinese food companies were quite young, as the Chinese food industry has grown rapidly since the 1980’s. Most of the sample companies (12) were established after 1980, with only one food company established many years ago (in 17th century). This is a Chinese old traditional food company, famous for its traditional Chinese food products—Bean curd products. Six of the thirteen food companies were of medium size (101-1000 employees), and four were large food companies (>1000 employees). There were three small companies, in which the number of employees was less than 100. The main products of the thirteen food companies were bakery, beverages, confectionery,
<table>
<thead>
<tr>
<th>Company No.</th>
<th>Established Year</th>
<th>No. of Employee</th>
<th>Main Product</th>
<th>Ownership</th>
<th>Position</th>
<th>No. of New products</th>
<th>NPD Organisation</th>
<th>NPD Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1993</td>
<td>250</td>
<td>dairy product</td>
<td>joint-venture</td>
<td>R&amp;D Manager</td>
<td>several</td>
<td>a</td>
<td>R&amp;D Manager</td>
</tr>
<tr>
<td>2</td>
<td>1995</td>
<td>500</td>
<td>Pie, biscuits</td>
<td>joint-venture</td>
<td>R&amp;D Technologist</td>
<td>several</td>
<td>a</td>
<td>Technical Department</td>
</tr>
<tr>
<td>3</td>
<td>1996</td>
<td>80</td>
<td>Canned food</td>
<td>private</td>
<td>President</td>
<td>serveral</td>
<td>a</td>
<td>President</td>
</tr>
<tr>
<td>4</td>
<td>2000</td>
<td>5000</td>
<td>Tea products</td>
<td>private</td>
<td>Marketing Manager</td>
<td>5</td>
<td>outside</td>
<td>Marketing Manager</td>
</tr>
<tr>
<td>5</td>
<td>1995</td>
<td>500</td>
<td>confectionary</td>
<td>foreign invest.</td>
<td>R&amp;D Technologist</td>
<td>7</td>
<td>a</td>
<td>R&amp;D</td>
</tr>
<tr>
<td>6</td>
<td>1669</td>
<td>3000</td>
<td>Bean Curd</td>
<td>state owned</td>
<td>R&amp;D Director</td>
<td>23</td>
<td>a</td>
<td>R&amp;D</td>
</tr>
<tr>
<td>7</td>
<td>2000</td>
<td>100</td>
<td>beverage</td>
<td>private</td>
<td>R&amp;D Executive</td>
<td>20</td>
<td>small R&amp;D group</td>
<td>Factory Director, R&amp;D</td>
</tr>
<tr>
<td>8</td>
<td>1990's</td>
<td>5000-6000</td>
<td>coffee</td>
<td>foreign invest.</td>
<td>Senior Channel Mgr.</td>
<td>several</td>
<td>a</td>
<td>R&amp;D</td>
</tr>
<tr>
<td>9</td>
<td>1996</td>
<td>406</td>
<td>meal</td>
<td>joint-venture</td>
<td>Marketing Manager</td>
<td>/</td>
<td>/</td>
<td>Management Team</td>
</tr>
<tr>
<td>10</td>
<td>1988</td>
<td>1000</td>
<td>biscuits</td>
<td>joint-venture</td>
<td>R&amp;D Technologist</td>
<td>&gt;20</td>
<td>a</td>
<td>R&amp;D</td>
</tr>
<tr>
<td>11</td>
<td>1990</td>
<td>200</td>
<td>infant food</td>
<td>joint-venture</td>
<td>Sale Manager</td>
<td>10</td>
<td>a</td>
<td>R&amp;D</td>
</tr>
<tr>
<td>12</td>
<td>1997</td>
<td>60</td>
<td>fruit juice</td>
<td>foreign invest.</td>
<td>R&amp;D Executive</td>
<td>/</td>
<td>a</td>
<td>R&amp;D</td>
</tr>
<tr>
<td>13</td>
<td>1993</td>
<td>280</td>
<td>cake, bakery</td>
<td>Taiwanese</td>
<td>R&amp;D Technologist</td>
<td>several</td>
<td>a</td>
<td>R&amp;D</td>
</tr>
</tbody>
</table>

Note: 1. a: A separate NPD department b: internal market research resources c: carried out by existing product executive (or agency)
2. No. of New Products: Numbers of new products has been introduced in the last 5 years
dairy or tea products. Joint-venture (half state owned and half foreign enterprise investment) companies, of which there were 6, formed the major ownership category within the sample companies. In addition, there were three private companies, three foreign enterprise investment companies and one state-owned food company. More than half of the interviewees (62%) were food R&D personnel from their company’s R & D department; the others were a company president, two marketing managers, one sales manager and one senior product (distribution) channel manager.

In response to the question ‘how many new products has your company introduced in the last 5 years?’, a few Chinese food companies did not give a detailed figure, describing it as ‘several’. Three companies confirmed that they had introduced about 20 or more new products into the food market over the past 5 years. Other food companies reported less than 10 new introductions in the last 5 years. New product development in the Chinese food industry was therefore not as active as in Britain, with less new products being introduced. However, the Chinese food industry has been reported as making great progress, with more new products appearing since the 1980’s (Zhang, 1997). Eleven food companies had their own NPD (or related) department or NPD group, indicating that Chinese food companies are paying more attention to new product development. Two companies had no functional NPD department but they invited external groups or institutes to give them ideas. One interviewee explained

‘our company is small, we lack skilled personnel and it is too expensive to have a separate R & D functional organisation for us. We more prefer to buy some technology or invite some consultants for our product design.’ (R&D Executive, A Small Beverage Company)
This situation would be true of most small Chinese food companies. Despite awareness of the importance of NPD, few Chinese local small food companies had NPD budgets, as they did not believe that they would benefit from NPD. They preferred to buy technology and knowledge in the form of machines. Sometimes, they had failed to build their own competency (in the research process for appropriate technology) and relied on consultants even to acquire technology.

Eight Chinese food companies reported that their R&D department or group took ultimate responsibility for NPD. Two companies indicated that their marketing director or factory director took responsibility for NPD, one president said that he had full responsibility and one R &D employee reported that the whole team shared the responsibility. In another company, NPD was the responsibility of the technology department.

9.3 New Product Concept

As described in Chapter 8, three groups of new product concepts (Completely new products, line extension or improved products and new brand) had been given to the food R & D personnel to identify their new products against. Almost all Chinese food companies producing processed food in this study developed line extensions or product improvements, except one tea company and one inflight catering company whose new products were distinctly new products.

Five companies had both distinctly new products and line extensions or improved products. None of the companies had developed a new brand product in the past five years. Results suggest that although a westerner’s classification of the new product
concept has its advantages from a marketing or investment perspective, it only partially reflects the situation in the Chinese food industry. This may be because the Chinese food industry believes that new products are based on consumer values, perceptions and enabling technologies as it helps the food companies to specify type and mix of new products for resource allocation and to leverage and expand innovation capability or R & D perspective. Table 9.2 shows that NPD resulting in ‘new to the world’ innovation is apparently rare in China. There were eleven food companies which produced processed food in this survey. (The other two companies were a tea company and an air-catering company). Only two of the eleven companies had completely new products comprising greater (6:4) or equal (5:5) proportions of their improved products. Others had very high percentages of line-extensions or improved products. Nearly half (45.5%) of the companies did not have any completely new products.

Ten food companies reported that their new products involved some changes in basic raw materials or other ingredients, and the same number of the companies reported that their new products involved changes in processing method, equipment, packaging or manner of dispensing from packing. Only three companies indicated that their NPD permitted more efficient use of by-products from existing processing operations. New products from more than half of the companies (7) resulted in processing at a lower direct cost. Other new product attributes (e.g. more function, new taste and no pollution) were mentioned by the interviewees. The results again suggest that most Chinese food companies were producing product improvements or line-extensions as their NPD activities. NPD for product quality improvement and cost reduction (such as finding less expensive inputs without reducing consumer perceptions of product
### Table 9.2 New Product Concept and Implementation of New Product Change (Chinese Food Industry)

<table>
<thead>
<tr>
<th>Company No.</th>
<th>New Product Concept</th>
<th>Ratio a:b:c (%)</th>
<th>Main Product</th>
<th>Material Change</th>
<th>Packaging, etc. Change</th>
<th>By-product Efficiency</th>
<th>Lower Cost</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>a+b</td>
<td>4% : 96%</td>
<td>dairy product</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Quality</td>
</tr>
<tr>
<td>2</td>
<td>b</td>
<td>100%</td>
<td>Pie, biscuits</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Flavor</td>
</tr>
<tr>
<td>3</td>
<td>b</td>
<td>100%</td>
<td>Canned food</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>a</td>
<td>100%</td>
<td>Tea products</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>No pollution</td>
</tr>
<tr>
<td>5</td>
<td>b</td>
<td>100%</td>
<td>confectionary</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Flavour, price</td>
</tr>
<tr>
<td>6</td>
<td>a+b</td>
<td>20%:80%</td>
<td>Bean Curd</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>flavour</td>
</tr>
<tr>
<td>7</td>
<td>b</td>
<td>100%</td>
<td>beverage</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>a+b</td>
<td>20%:80%</td>
<td>coffee</td>
<td>N</td>
<td>Y</td>
<td>/</td>
<td>/</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>a</td>
<td>100%</td>
<td>meal</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>guide consumer</td>
</tr>
<tr>
<td>10</td>
<td>a+b</td>
<td>60%:40%</td>
<td>biscuits</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>taste</td>
</tr>
<tr>
<td>11</td>
<td>b</td>
<td>100%</td>
<td>infant food</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>b</td>
<td>100%</td>
<td>fruit juice</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>a+b</td>
<td>50%:50%</td>
<td>cake</td>
<td>Y</td>
<td>y</td>
<td>N</td>
<td>N</td>
<td>functional</td>
</tr>
</tbody>
</table>

**Note:**
- a: completely new product, b: line extension or improved product, c: new brand
- Y: Yes, N: No
quality) were also routine. The classification of new products in the Chinese food industry was similar to Cooper's (1993) final three categories:

- **New to the company:**
  This refers to new products which are produced for the first time by the company. They may be new to the Chinese market or already available from another company. For example, one company had begun to produce egg pie, which had never been sold in China, but was already available in Japan. Another company had invested in new facilities to produce a coffee flavour drink, but this product is already imported and sold in the Chinese market by other competitors.

NPD of this style (new to the company) is considered more risky than other types of NPD and was less prevalent. It often requires large investment in both processing facilities and marketing. However, if the company has expertise in a field, risk is reduced if the new line is at least in this field, for example, a dairy company focusing its business on yoghurt or a confectionery food company focusing on chocolate in this research. Companies may consider new lines not currently produced, but the line would generally have to be within the broad category in which they already operate, so that they knew something about the basic processing and marketing. New product ideas for such NPD originates from the top R & D management, and relies on their vision of market and business opportunities. The R & D personnel in some small Chinese companies traditionally base their decisions on experience and rough analysis to get a 'feel' for the market. If they decide the product line is necessary for the company's long-term growth, they will push it into NPD.
A few Chinese food companies made such decisions for short life cycle products. They normally invested in a new product line to copy very successful products of other companies or other countries (sometimes, the international operations of large foreign companies gave them new product knowledge world-wide, so they could identify new products which could have huge potential in China). In doing so, they did not have to expend much effort to incorporate superior products, concepts, or attributes. Hence the Chinese food companies move faster in introducing ‘me-too’ new product lines.

- **Additions to Existing Product Lines:**

  In China, many food companies also use existing or minor modification of existing facilities to produce new products (to them). These may or may not be new to the market, but are usually far less risky, as existing facilities can be used with little adjustment, the company has some experience with marketing of similar products, and consumer ‘risk aversion’ to radically unfamiliar food products is reduced. New product ideas come from both marketing and R&D, taking note of consumer preferences. Thus, this kind of new product is an extension of platform, offering a distinctive claim, feature and market position relative to competition (Suwannaporn & Speece, 2000). For example, a company may use existing facilities which manufacture yoghurt to produce new milk products, expanding its consumer product line.

- ** Modifications of Existing Products:**

  Most companies in this research used this form of NPD—e.g. adding more variety of taste, aroma, form, content and packaging to their current products. The aim of
developing this kind of new product was to keep market image, particularly by satisfying the consumers' desire for variety. For example, a bean curd product company can diversify its existing dried bean curd by adding spicy and non-spicy versions, or northern and southern taste styles.

New-to-the-world products were rarely developed within the Chinese food companies because of their high risk, high investment nature. Most R & D activity was focused on process innovation rather than NPD, as the main purpose was to increase productivity or reduce cost. Currently, most of the Chinese food companies studied did not have truly new products, however they will struggle to remain competitive in the long run by following the traditional practice of copying foreign products, sometimes with minor changes.

However, the Chinese food industry has become more aware of consumers' needs. In response to the question 'what do you think are the Chinese consumers' needs of new products?' most interviewees reported more healthy (including functional and natural), improved quality, good taste and low price, which exactly matched the results of the Chinese consumers' survey (Chapter 7).

9.4 NPD Process

Seven Chinese food companies followed the general seven-stage NPD process (Chapter 8). Two food companies had no internal NPD process, as they invite external new ideas for their new products. The other four companies did not have a fully mature NPD process, but some small test trials were done by their production or operations department or NPD group. This may be because most of these companies
were of medium or small size. They could not therefore afford an innovative NPD process for financial reasons. Some small companies carried out some small market tests before their new products were launched to get customer feedback, which they may incorporate into product adjustments, but market research was rarely conducted in these companies. Their market forecast and customer needs were assumed from the experience of top management or factory directors. Some companies (e.g. the catering company) produced products according to customer specification or recipe; but did not develop their own products. Their core competencies were in process, not product technology.

Interviewees from four companies thought every stage in the NPD process was very important. Five R & D personnel agreed that the early stages from new product strategy and idea generation to business analysis were very important, as they said that a successful NPD would benefit from the previous stages in the NPD process. One R & D manager (A Large Dairy Product Company) said:

'...the more refined previous NPD stages, the better NPD results...'

Twelve food company personnel in this survey thought that market research or business analysis was the most important stage in the NPD process. This is because companies seek to understand consumers' needs and wants in great detail throughout the NPD process. One NPD technologist said that the testing for them was also vital to develop a successful new product. This strategy also requires a certain amount of R & D expertise, and usually can be applied successfully only by companies which have well-established brand names. Subsidiaries of foreign investment companies or joint-venture may follow this approach, but often are tied to the policies of their mother companies concerning NPD and Branding.
Generally, in the Chinese food industry, the NPD process moves from idea through a superficial definition, right into full-scale development. Throughout, new products and market are only roughly defined. Market research is often used to determine consumer preferences, but little effort was made to actually incorporate consumer responses by integrating market research into the process. However, some large Chinese food companies were well-organised and had a strict and scientific NPD process. One R & D manager described their general NPD process as:

'Marketing contributes to new product concepts/ideas and product definition / specification. R & D people use these contributions to create prototypes, and develop it by reducing the number of experimental formulation and increase the chances that the new product will finally be accepted by the food market. Technical people produce the samples for testing and provide their suggestion to R & D. R & D considers these views, and use knowledge of the existing products and production process in its NPD process from both internal and external. Then, we make test trials both technology and marketing. After that, new products will be launched by commercialisation.'

(NPD Manager, A Large Dairy Company)

9.4.1 NPD Strategy Benefits

Fig. 9.1 presents the perceived benefits for the food companies from their new product strategy. ‘Increased profitability’ was the most frequently mentioned benefit for most companies in this research (9). Eight companies used their new product strategy to access a new market and increase or retain their customers.
‘Promotion sales’ and ‘increase the size of the company’ were also benefits perceived by four companies. Two companies reported that they improved their company’s internal capability by a new product strategy.

Fig. 9.1 New Product Strategy Benefits (Chinese Food Industry Study) n=13

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>New product</td>
<td>9</td>
</tr>
<tr>
<td>Increased demand</td>
<td>8</td>
</tr>
<tr>
<td>Increased awareness</td>
<td>7</td>
</tr>
<tr>
<td>More innovative</td>
<td>6</td>
</tr>
<tr>
<td>More innovative</td>
<td>5</td>
</tr>
<tr>
<td>More innovative</td>
<td>4</td>
</tr>
<tr>
<td>More innovative</td>
<td>3</td>
</tr>
<tr>
<td>More innovative</td>
<td>2</td>
</tr>
<tr>
<td>More innovative</td>
<td>1</td>
</tr>
<tr>
<td>More innovative</td>
<td>0</td>
</tr>
</tbody>
</table>

9.4.2 NPD Types

Answering the question about ‘Which types of product innovation do you use?’, different companies have different NPD Types. Eight of the thirteen food companies were currently engaging in continued development of existing NPD; three companies had longer term research into new product ideas; and four companies have more than one innovation type. ‘First in the field’ with a new product was used by three companies and another three companies were interested in follow the leader with rival products (See Fig. 9.2)
9.4.3 New Product Information Sources

Information sources are very important for the success of NPD. Internally, R&D need to have good linkages with marketing and manufacturing. Externally, linkages with suppliers and customers must be efficient, as poor information can greatly reduce the effectiveness of NPD (Suwannaporn & Speece, 2000). Table 9.3 shows that company sales personnel were the main information source for many food companies (9). Some food companies (4) relied on information from their trade customers and suppliers. This was especially true of local brands associated with well established Chinese food companies, which preferred to build their own brand extensions and usually obtained to know how from suppliers and customers. Three of the food companies derived the information from their company research and development laboratories. Discussion with consumers (2), competing companies (2), Consumer magazines or reports (1), outside consultants (1) or marketing research (1) firms were also mentioned by interviewees as NPD information channels. All these information sources found from the current study can be grouped as internal sources (including R&D, production, and
marketing (sales etc.), distributors and suppliers, customers, competitors and other sources. It confirmed Kotler's (1991) classification of NPD information sources in literature.

### Table 9.3 New Product Information Source (Chinese Food Industry Study) n=13

<table>
<thead>
<tr>
<th>Information Source</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company sales personnel</td>
<td>9</td>
</tr>
<tr>
<td>New product Research</td>
<td>4</td>
</tr>
<tr>
<td>Suppliers</td>
<td>4</td>
</tr>
<tr>
<td>Trade Customers</td>
<td>4</td>
</tr>
<tr>
<td>Company research and development Lab.</td>
<td>3</td>
</tr>
<tr>
<td>Competing companies</td>
<td>2</td>
</tr>
<tr>
<td>Discussion with customers</td>
<td>2</td>
</tr>
<tr>
<td>Marketing research involving other products</td>
<td>1</td>
</tr>
<tr>
<td>Consumer magazines and reports</td>
<td>1</td>
</tr>
<tr>
<td>Outside consultants or marketing research</td>
<td>1</td>
</tr>
<tr>
<td>Others (food exhibition &amp; conference)</td>
<td>3</td>
</tr>
</tbody>
</table>

### 9.4.4 New Product Distribution and the Time of New Product Being Withdrawn from Market

More than half of the food companies (7) combined retail and wholesale as their distribution channel. The others used either whole sale (3) or direct sale (3) as their only distribution channel. 'Advertisement' and 'in-store promotion' were the main ways that Chinese food companies boosted sales of their new products. As the food industry world-wide has relatively low R&D intensity compared to most other major industries, traditional competition is mainly by price with food products that are essentially commodities, and modern brands often compete more on advertising and sales promotion (Suwannaporn & Speece, 1998).

Most interviewees could not give clear figures for the time given before a new product was withdrawn from market, giving the same answer as the British R &D
Li Cheng
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personnel—"it depends on the individual product." Some companies suggested that it would be 2 to 4 years, but some were much shorter. Normally, new products were dropped if they did not reach the presumed sales targets, in order to maintain product lines; poor performing older products were phased out as new ones succeeded. Therefore, in China, products were upgraded quickly.

9.5 NPD Success

This survey revealed that the Chinese food industry had realised that a successful NPD was the life-blood of the food industry. They are engaged in successful NPD in a competitive market environment. A reported high success rate reflected that they were rewarded for their work. Most food companies (8) in this survey reported a high success rate (>75%) for their new products. (This may be because most of these food companies developed line extensions or product improvements as their new products, which were less risk than completely new products.) Four companies did not provide figures for their new product success rate. Only one food company's new product success rate was considered as very low (30%), and they had introduced some completely new products with a relatively high risk. However, most food companies still had some new products that failed to reach the market or failed in the marketplace.

9.5.1 Handicaps to NPD Success

Table 9.4 indicates that the biggest handicap for most food companies (9) was lack of consumers' knowledge. During the interviews, R &D personnel often claimed that consumer information was not efficiently transferred from marketing to R&D. This may lead to poor idea generation and cause R&D to develop prototypes which do not
correspond to the real consumer needs. Because of lack of consumer knowledge, local food companies usually overlooked the importance of directly measuring consumer’s attitudes to new products. Sometimes, they did measure objective attributes such as size, shape, or packaging rather than more subjective assessments such as sensory evaluation or assessment of product nature. ‘Funding’ (3) and ‘lack of expertise’ (4) were considered as handicaps to the NPD process for some small companies. One company’s R &D manager thought that their company size somehow blocked their NPD success. One person said that they needed more government support. Three R & D personnel said that their NPD success was hindered by non-intensive selling and marketing, for instance:

‘Our marketing strategy is not effective enough, and the information channel sometimes, has been blocked. It led to a poor recognition of the current market and made a fairly slow reaction to the market.’ (Senior Product Channel Manager, A Large Coffee Company)

R & D personnel also pointed to other handicaps, such as tight time, limitation of company policy and nature of the company, and lack of staff training.

Table 9.4 Handicaps to NPD Success (Chinese food industry study) n=13

<table>
<thead>
<tr>
<th>Handicaps</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of consumer knowledge</td>
<td>9</td>
</tr>
<tr>
<td>Lack of expertise</td>
<td>4</td>
</tr>
<tr>
<td>Lack of funding</td>
<td>3</td>
</tr>
<tr>
<td>Non-intensive selling and marketing research</td>
<td>3</td>
</tr>
<tr>
<td>Company size</td>
<td>1</td>
</tr>
<tr>
<td>Government support</td>
<td>1</td>
</tr>
<tr>
<td>Tight time</td>
<td>1</td>
</tr>
<tr>
<td>Lack of staff training</td>
<td>1</td>
</tr>
<tr>
<td>Limitation of company policy and resources</td>
<td>1</td>
</tr>
</tbody>
</table>
9.5.2 Reasons for NPD failure

From Table 9.5, it can be seen that different companies reported different reasons for their NPD failure. 'Insufficient marketing effort was allocated to support introduction of the new products' was the most frequently mentioned reason for the Chinese food industry's NPD failure. Nine of the thirteen food companies had met this problem during their NPD process. One R & D personnel said:

'Poor market research led to our new product failure. Based on this market research, we designed a new product which our consumers did not like, as it did not meet most consumers' taste.' (R&D Technologist, A Medium Confectionery Company)

This reflects a common problem of NPD in the Chinese food industry. Market research is often not as effective as it could be, as it may not be specific enough to the particular new product. Because some companies are afraid that their competitors will learn of the NPD and push their own new products into the market first, a poor analysis of customers needs owing to tight time-scales in the NPD process, can lead to market failure.

Other reasons mentioned included, 'the defects of product design' (5) and 'poor timing' (4). 'Development and production costs were higher than anticipated' and 'inadequate distribution channel' were mentioned by two companies as the reasons for NPD failure. One R & D employee reported that their new products once failed in the marketplace, because their competitors introduced similar new products which achieved unanticipated success.
Table 9.5 Reasons for NPD Failure in Chinese Food Industry (n=13)

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient marketing effort</td>
<td>9</td>
</tr>
<tr>
<td>Defects of product design</td>
<td>5</td>
</tr>
<tr>
<td>Poor timing</td>
<td>4</td>
</tr>
<tr>
<td>R&amp;D cost higher than anticipated</td>
<td>2</td>
</tr>
<tr>
<td>Inadequate distribution</td>
<td>2</td>
</tr>
<tr>
<td>Competitors introduced similar products</td>
<td>1</td>
</tr>
</tbody>
</table>

All the reasons provided accorded with evidence from the previous literature of NPD failure in the food industry (Chapter 2).

9.5.3 Key Factors for NPD Success

In order to achieve a successful NPD, the most important factor reported by the Chinese food industry personnel was to conduct efficient market research to guide development of products that meet the consumers’ demands. The factors thought to be most vital for NPD success are shown in Table 9.6, which are similar to the evidence from the literature review:

Table 9.6 Key Factors for NPD Success (Chinese food industry study) (n=13)

<table>
<thead>
<tr>
<th>Factors</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meet consumers demands (for taste, quality)</td>
<td>7</td>
</tr>
<tr>
<td>Marketing research</td>
<td>3</td>
</tr>
<tr>
<td>Information source</td>
<td>1</td>
</tr>
<tr>
<td>Product identification and positioning</td>
<td>1</td>
</tr>
<tr>
<td>Team work</td>
<td>1</td>
</tr>
<tr>
<td>Funding</td>
<td>1</td>
</tr>
<tr>
<td>Innovation capability</td>
<td>1</td>
</tr>
</tbody>
</table>
9.6 NPD Trends

Almost all food companies predicted that healthy food (including functional foods and natural foods) and improved quality foods would be the main trends in the future food market. Increased variety, which includes new package, new taste, new appearance, new brand and new choice of ethnic foods and convenience foods were also expected to be food trends. R &D personnel from five companies mentioned that food price reduction would probably occur quite often in the next 10 years. These results echo the findings from the Chinese consumer study (Chapter 7), which indicated that most Chinese consumers expected that healthy foods (including natural foods, functional foods and new foods with good quality) and increased variety (e.g. new taste, new appearance, new packaging, new brand, ethnic foods and convenience foods) would become new food product trends and also reflect the previous literature (Chapter 2 Section 2.9).

9.7 Discussion

Compared with the Chinese consumer study (Chapter 7), the results from the R &D personnel interviews reveal that the Chinese food industry has realised the importance of understanding consumers’ demands. This appears to have been achieved as what the food R&D personnel thought would be the reasons for current product change exactly matched the consumer’s thoughts, suggesting that the Chinese food industry is engaged in attempting to understand consumers’ needs. Moreover, several notable points can be generalised from this survey.
• NPD Process

Most Chinese food companies interviewed had a NPD process, but few of them followed the full NPD process that has been accepted by most western food companies. The results indicated that most joint-venture or foreign enterprise investment food companies had relatively mature NPD processes, imported from western countries. Local companies, were tending to learn about new technology and knowledge for NPD from western countries and adapted this to their practice to improve their NPD. However, in small food companies, the food NPD process was limited by company size and resources. No full NPD process was applied in such companies. Whatever the food company’s size, the early stages of the NPD process, especially the first two phases corresponding to idea generation and conceptual design and analysis, were perceived to be very important. This echoes a Chinese saying ‘a good beginning is half the success.’ Generally, NPD focused more on process innovation, with manufacturing issues being stronger than others factors and food R&D personnel usually being more involved in manufacturing.

• R &D and Marketing

It is difficult to manage rapidly changing multiple products in the multiple lines, without marketing, as too many new products can cause poor product focus, confuse consumers by diluting brand identification, reduce economics of scale, and make inventory control more difficult (Suwamnaporn & Speece, 1998). In markets with short life cycles, new product results in increased sales, replacing declining sales of other products, and with the declining products phased out, to prevent the line becoming unmanageable (Suwamnaporn & Speece, 1998). However, in some medium size food companies in this research, where R&D is formally under the marketing
development, marketing did not actually become highly involved in NPD. The marketing function waits to see the market opportunity demonstrated by successful launch of a competing new product, after which they can rush in. They preferred to sell existing products, which are more predictable. Even if marketing realised the importance of NPD, they often preferred to devote more focus to minor revisions, such as changing taste, package or size. They perceived that consumers are risk averse about new products, so that marketing should be cautious. Although in the Chinese consumer study (Chapter 7), a completely new product had been identified as the main description of a new product, the Chinese consumers were cautious about truly new product concepts, most thinking that they lacked new product knowledge and that therefore they could not be sure of the new product reliability. Therefore, companies in China rarely introduced 'new to the world products'.

However, this survey, has shown that Chinese food companies have increasingly realised that marketing is crucial, especially for the large local companies and foreign investment enterprises. To make NPD work better when the R&D function is under the marketing department, NPD must be explicitly included as one part of the marketing responsibility. The new product introduction goals and associated sales targets should be set to market more proactively.

- **Consumer Knowledge**

A few food R&D personnel in this survey thought that lack of consumer knowledge was one of the main handicaps to their NPD success. During the interviews, R&D personnel complained that their product information came mainly from their sales personnel and suppliers, and consumer research was rarely carried out. This led to a
poor product definition and a misunderstanding of the real consumer market. Nevertheless, local food companies knew the importance of understanding of consumer’s needs, but they lacked consumer knowledge such that they sometimes overlooked the product nature to consumers.

Therefore, scientific and prudent consumer research is very important if the Chinese food industry is to improve the success of their NPD.

**9.8 Conclusion**

This study investigated NPD in the Chinese food industry. It discussed the new product concept, NPD process, success and trends from the perspective of Chinese food industry personnel. Findings suggest that understanding consumer’s needs is the most important factor for successful NPD. They show that R&D capabilities in the Chinese food processing industry were relatively poorer than technology capabilities, because R&D activities were not well managed or non-existent, and most new product developments were ‘Me-too’ or line extension products, which followed foreign trends. Marketing was mainly focused on advertising, promotion or sales, with little care about the product nature. However, most Chinese food companies have realised their problems and they are trying to improve their NPD and are seeking more efficient and successful procedures.

The results from the interviews also suggest that the Chinese food industry is trying to identify scientific improvements from outside of the country and is employing the strategies for the NPD success of westerners. The next chapter will compare NPD in
the food industry between China and Britain from both a consumer and food industry perspective.
Chapter Ten
Chapter 10

Research Findings and Discussion (V)

Comparison Between Chinese and British Studies

10.1 Introduction

The previous four chapters, discussed separately the results of the consumer studies and industry studies relating to NPD in the food industry, in both China and Britain. This chapter compares results between Britain and China to explore the similarities and differences in food NPD between the countries from both a consumer and food industry personnel perspective.

10.2 Comparison of British Consumers and Chinese Consumers

Thoughts on NPD

Many studies (e.g. Kim, et al., 2002; He & Anderson, 1998; McCracken, 1986; Roth, 1995) have reported that consumers in different countries have distinctive perceptions of products. Evidence from cross-cultural comparison studies (e.g. Darling & Kraft, 1977; Cattin, et al., 1982; Nagashima, 1970; Papadopoulos, et al., 1990) on product evaluation effects have shown that consumers’ attitudes towards products differ significantly from country to country. A strong linkage between social values and consumers’ needs in the markets in different countries (representing different socio-economic status and culture) was found in Roth’s study (1995). Generally, East Asian people are relatively collectivistic in their social values compared to individuals from Western countries (Hofstede, 1984). Thus, these differences may exist between
Chinese and British consumers. Until recently, a wide variety of consumer goods were simply not available to the average Chinese citizen, and consumption of goods and services was limited (Kim, et al., 2002), China, however, has undergone considerable social and economic change in recent years. As a result, a strong consumers market is developing in China (Chan, 1995) and more Chinese consumers are in a position to purchase a wide variety of processed foods. The findings from this research (discussed further below) indicated that regional socio-economic and cultural environments affected the consumer’s thoughts on new food product development.

10.2.1 Sample Profile

Table 10.1 presents the respondent profile of each country. The sample in both countries was similar in terms of age, social status and economic background, but differed in gender and education background. More men completed the questionnaire in China, and the Chinese sample was generally better educated. Overall, however, the samples were fairly similar in social and economic standing, and all respondents came from major urban areas in the two countries. All were the self-reported chief food purchaser in their households.

<table>
<thead>
<tr>
<th>Table 10.1 Comparison of Consumer Profiles of British and Chinese Consumers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (year)</strong></td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>34 or below</td>
</tr>
<tr>
<td>35-55</td>
</tr>
<tr>
<td>55 or above</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td><strong>Education</strong></td>
</tr>
<tr>
<td>Low</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>High</td>
</tr>
<tr>
<td><strong>Income</strong></td>
</tr>
<tr>
<td>Low</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>High</td>
</tr>
</tbody>
</table>
10. 2.2 Necessity to Introduce New Products and Consumer’s willingness to Try New Food Products

Tansuhaj et al., (1991) argued that there is some indication that understanding of the fundamental cultural values of a country can help to explain the differences in NPD in the global marketplace. Table 10.2 (Page 321) shows a significant difference (p=0.025) between consumer’s perception of the necessity to introduce new products into the food market in Britain and China, but an agreement in their willingness to try new product (p=0.100). Both British and Chinese consumers would like to try new food products and Chinese people felt it to be more necessary to introduce new products to the market. This may be because Chinese consumers have become increasingly demanding about their food since China’s ‘open-door-to the outside world’ policy. However, processed foods are still simply not as widely available to the Chinese consumers as to the British consumers. Compared to western countries, food technology in China is not advanced. Therefore, Chinese consumers were apparently eager to see the introduction of new food products to fulfil their demands. In contrast, although no significant difference was found between Chinese consumers’ willingness to try a new food product compared with the British consumers, a slightly lower average willingness of the Chinese consumers to try a new food product was still found. This may suggest that the Chinese place greater emphasis on tradition and are less likely to take risks than the British, especially in relation to new or innovative products. The Chinese are less likely to change merely for the sake of change, and they often view new things with great scepticism and may only accept them after conquering their resistance (Yang, 1989). Generally, the Chinese tend to be post-orientated and place greater value on tradition, while the British have a strong future
### Table 10.2 NPD Necessity and Consumer Willingness to Try New Product Comparison

<table>
<thead>
<tr>
<th>Statement</th>
<th>British (n=222)</th>
<th>Chinese (n=139)</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>Sd.</td>
<td>M</td>
</tr>
<tr>
<td>Necessity</td>
<td>3.91</td>
<td>0.83</td>
<td>4.10</td>
</tr>
<tr>
<td>Willingness</td>
<td>3.96</td>
<td>0.75</td>
<td>3.83</td>
</tr>
</tbody>
</table>

Note: M=Mean SD= Std. Deviation * P<0.05

### Table 10.3 New Product Concept Comparison

<table>
<thead>
<tr>
<th>Statement</th>
<th>British (n=222)</th>
<th>Chinese (n=139)</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>Sd.</td>
<td>M</td>
</tr>
<tr>
<td>new appearance</td>
<td>2.50</td>
<td>1.23</td>
<td>2.47</td>
</tr>
<tr>
<td>quality improved</td>
<td>3.05</td>
<td>1.12</td>
<td>3.44</td>
</tr>
<tr>
<td>improved healthy</td>
<td>3.26</td>
<td>1.06</td>
<td>3.74</td>
</tr>
<tr>
<td>improved safety</td>
<td>3.10</td>
<td>1.08</td>
<td>3.45</td>
</tr>
<tr>
<td>taste change</td>
<td>3.20</td>
<td>1.04</td>
<td>3.27</td>
</tr>
<tr>
<td>new price</td>
<td>2.22</td>
<td>1.16</td>
<td>2.32</td>
</tr>
<tr>
<td>completely new</td>
<td>4.56</td>
<td>0.86</td>
<td>4.34</td>
</tr>
<tr>
<td>new brand</td>
<td>3.69</td>
<td>1.10</td>
<td>3.03</td>
</tr>
<tr>
<td>new to the company</td>
<td>3.50</td>
<td>1.13</td>
<td>2.86</td>
</tr>
</tbody>
</table>

Note: M=Mean SD= Std. Deviation * P<0.05
orientation, thus, the Chinese are less willing to try something new than the British (Anderson & He, 1998).

Another reason may be that the rate of adoption of new products is directly related to the person’s belief in ‘fate’ beside ‘tradition’ (Lowe & Corkindale, 1998). The Chinese believe in luck and fate to a greater extent than the Westerners (Hsu, 1961). Thus, they are probably more fatalistic than the British, or more risk averse. Additionally, the Chinese consumer’s attitude towards new products has also been found to be influenced by the thought of ‘mean’ (i.e. not going to the extremes) (Lowe & Corkindale, 1998). The ‘mean’ concept stresses that the Chinese believe in the importance of exercising self control and not letting oneself go to the extremes (Loudon & Della Bitta, 1988). They may regard adopting new products as an extreme behaviour and then would not accept them. Thus, the Chinese tended to be more conservative than the British, when trying new food products. Furthermore, the Chinese think that in trying a new product it is easy to make a mistake, which leads to a loss of ‘face’, as they are not familiar with the new product and can not handle it as easily as the existing product. This factor is likely to cause the Chinese to be more cautious than the British (Lowe & Corkindale, 1998).

However, more recently, Chinese people in urban areas are more likely to accept new things reflecting western living styles and philosophies.

10.2.3 Reasons for Current Product Change

There was agreement on the reasons for current product change between the Chinese and the British consumers. However, a mean difference close to significance
between the Chinese and the British was found in relation to needing to improve product convenience. The Chinese respondents were more likely to think that new products needed to be improved to become more convenient. Chinese people's lifestyle is changing rapidly, becoming more similar to western lifestyles. The Chinese thus may need more convenience food to adapt to this busy lifestyle.

10.2.4 New Product Concept

The major differences between the Chinese and British consumers lay in their perception of new products (Table 10.3). Both groups of consumers believed that a completely new product is a new product, but that 'new appearance' and 'new price' were not. They also agreed that 'taste change' could be an attribute of a new product. The Chinese were more likely to think that changes to a product's internal attributes' (e.g. 'improved quality, safety and healthy') made a new product rather than external changes such as 'new brand' and 'new to the company'. The British people took both a product's internal and external changes into consideration when thinking of a new product. This difference probably reflects different social values, and has conceivably stemmed from the Chinese placing high value on the human-being (Lowe & Corkindale, 1998) or related factors (e.g. the product would provide some good for them, for instance, promoting their health.) and thus comparably less emphasis on the external factors. The Chinese had a relatively simpler and less differentiated concept of new product. It was based primarily on product features (e.g. quality), which may lead to the Chinese tending to a mostly utilisation viewpoint of the products, compared with the British consumers.
10.2.5 Main Factors Influencing Consumers Purchase Behaviour

The results from the Ajzen-Fishbein Model in both Chinese and British consumer studies suggested that the consumer's intention to try new products in both countries was influenced by both their attitude to the new products and the subjective norm, with the influence of their attitude being stronger than the influence of the subjective norm. The results presented a clearer relationship between the attitude/subjective norm and intention to try a new product in the British study, than in the Chinese study, possibly because of the smaller Chinese sample size. The influences from the significant others (doctors $\bar{x} = 3.80$, family $\bar{x} = 3.78$, friends $\bar{x} = 3.68$, and producers $\bar{x} = 2.50$) more strongly affected the Chinese consumers' intention to try new products than the British (doctors $\bar{x} = 3.40$, family $\bar{x} = 3.06$, friends $\bar{x} = 2.70$, and producers $\bar{x} = 1.98$).

'Product quality', 'friends/family suggestions' and 'doctor's recommendation' were the main factors influencing consumer's purchase behaviour towards new products in both countries. However, Table 10.4 shows some significant differences between the Chinese and the British consumers, in the factors affecting their purchase decision.

The biggest difference related to price ($p=0.000$). Most British people thought price was an important factor when making their purchase decision (ranked in the top 3 main factors). In contrast, Chinese consumers did not consider it as much as the British did and they marked this factor amongst the lowest three factors influencing their purchase decision. This finding is different from results reported by other researchers (e.g. Lowe & Corkindale, 1998; Proma International, 2000), which indicated that price affected Chinese consumer's purchase behaviour. This might be
Table 10.4 Factors Influencing Consumer's Purchase New Product Behaviour
Comparison

<table>
<thead>
<tr>
<th>Statement</th>
<th>British (n=222)</th>
<th>Chinese (n=139)</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>Sd.</td>
<td>M</td>
</tr>
<tr>
<td>Price factor</td>
<td>3.75</td>
<td>0.96</td>
<td>3.14</td>
</tr>
<tr>
<td>Belief</td>
<td>2.40</td>
<td>1.09</td>
<td>1.90</td>
</tr>
<tr>
<td>Variety</td>
<td>3.53</td>
<td>0.84</td>
<td>3.41</td>
</tr>
<tr>
<td>Promotion</td>
<td>3.20</td>
<td>1.02</td>
<td>3.09</td>
</tr>
<tr>
<td>Quality</td>
<td>3.93</td>
<td>0.79</td>
<td>4.21</td>
</tr>
<tr>
<td>Appearance</td>
<td>3.30</td>
<td>1.00</td>
<td>3.50</td>
</tr>
<tr>
<td>Suggestion</td>
<td>3.80</td>
<td>0.92</td>
<td>3.73</td>
</tr>
<tr>
<td>Recommendation</td>
<td>3.63</td>
<td>1.00</td>
<td>3.62</td>
</tr>
<tr>
<td>Media</td>
<td>3.46</td>
<td>0.98</td>
<td>3.43</td>
</tr>
</tbody>
</table>

Note:
M=Mean SD= Std. Deviation * P<0.05
because the Chinese sample came from intellectual and wealthy areas. Such people might have a comfortable financial situation and be more accepting of products. When they choose a new food product, they thought more about whether other product attributes fulfilled their needs, rather than the price. Keeping 'face' is probably another reason for their decision. Under a comfortable financial situation, they may be more likely to choose a product with good quality and other attributes without thinking of price, thus avoiding selection of a 'wrong' product. This difference once again showed the utilisation attitude of the Chinese consumers towards new food products.

The figures also indicated that the Chinese did not think their beliefs affected their buying decision (p=0.000). The mean score in this factor was much lower than the mean score in the British study, although most British people did not consider it as a principle factor either. This may be because most Chinese people are atheists, and they do not follow a religion, since the Cultural Revolution.

10.2.6 Consumer’s Willingness to Try Different Types of New Products

Generally, both Chinese and British consumers would like to try a number of new food products, or changed products (as presented in the questionnaire). However, there were some significant differences between the consumers from each country (Table 10.5). The Chinese consumers were more likely to try natural food (p=0.000), or a product with a new taste (p=0.000) or improved quality (p=0.000) than the British. The British preferred to try new brands (p=0.002) more than the Chinese. It can be assumed that different social-cultural values affected different countries’
### Table 10.5 Consumer's Willingness to try Different New Products Comparison

<table>
<thead>
<tr>
<th>Statement</th>
<th>British (n=222)</th>
<th>Chinese (n=139)</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>Sd.</td>
<td>M</td>
</tr>
<tr>
<td>Ethnic Food</td>
<td>3.41</td>
<td>1.10</td>
<td>3.37</td>
</tr>
<tr>
<td>Natural food</td>
<td>3.82</td>
<td>0.89</td>
<td>3.31</td>
</tr>
<tr>
<td>Convenience food</td>
<td>3.25</td>
<td>1.06</td>
<td>3.18</td>
</tr>
<tr>
<td>Functional food</td>
<td>3.37</td>
<td>1.02</td>
<td>3.44</td>
</tr>
<tr>
<td>New brand</td>
<td>3.60</td>
<td>0.93</td>
<td>3.28</td>
</tr>
<tr>
<td>New package</td>
<td>2.65</td>
<td>0.89</td>
<td>2.85</td>
</tr>
<tr>
<td>Improved quality</td>
<td>3.84</td>
<td>0.77</td>
<td>4.14</td>
</tr>
<tr>
<td>Lower price</td>
<td>3.98</td>
<td>0.91</td>
<td>3.91</td>
</tr>
<tr>
<td>Healthy version</td>
<td>4.17</td>
<td>3.47</td>
<td>4.06</td>
</tr>
<tr>
<td>New taste</td>
<td>3.35</td>
<td>0.88</td>
<td>4.00</td>
</tr>
</tbody>
</table>

**Note:**
M=Mean SD= Std. Deviation * P<0.05

### Table 10.6 New Product Trends Comparison

<table>
<thead>
<tr>
<th>Statement</th>
<th>British (n=222)</th>
<th>Chinese (n=139)</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>Sd.</td>
<td>M</td>
</tr>
<tr>
<td>New brand trend</td>
<td>3.98</td>
<td>0.87</td>
<td>3.69</td>
</tr>
<tr>
<td>New packaging trend</td>
<td>4.29</td>
<td>0.81</td>
<td>3.92</td>
</tr>
<tr>
<td>Quality improved trend</td>
<td>3.87</td>
<td>0.87</td>
<td>4.32</td>
</tr>
<tr>
<td>Attractive appearance</td>
<td>4.09</td>
<td>0.76</td>
<td>4.19</td>
</tr>
<tr>
<td>Lower price</td>
<td>2.97</td>
<td>1.17</td>
<td>3.67</td>
</tr>
<tr>
<td>New flavour</td>
<td>3.55</td>
<td>0.84</td>
<td>4.19</td>
</tr>
<tr>
<td>Variety trend</td>
<td>4.10</td>
<td>0.74</td>
<td>4.35</td>
</tr>
<tr>
<td>Ethnic trend</td>
<td>3.95</td>
<td>0.91</td>
<td>3.52</td>
</tr>
<tr>
<td>Convenience trend</td>
<td>4.26</td>
<td>0.84</td>
<td>3.80</td>
</tr>
<tr>
<td>Natural trend</td>
<td>4.23</td>
<td>0.76</td>
<td>4.50</td>
</tr>
<tr>
<td>Functional trend</td>
<td>4.03</td>
<td>0.81</td>
<td>3.87</td>
</tr>
<tr>
<td>Healthy trend</td>
<td>4.23</td>
<td>0.75</td>
<td>3.93</td>
</tr>
</tbody>
</table>

**Note:**
M=Mean SD= Std. Deviation * P<0.05

327
consumers’ preference for new foods, as it has previously been proved that social culture influenced consumers’ food perceptions and preferences (Prescott, 1998, Grunert, 1997).

10.2.7 NPD Trends

Table 10.6 shows many significant differences between the consumers’ expectations of NPD trends in China and Britain. Although the consumers in both countries agreed on ‘all the trends mentioned in the questionnaire would become the food trends in future’, different expectations between the Chinese and the British were found in relation to almost every trend, except ‘new appearance trend’ and ‘new functional food trend’. The British consumers expected that ‘new brand’ (p=0.005), ‘new packaging’ (p=0.000), ‘ethnic food’ (p=0.000), ‘convenient food’ (p=0.000) and ‘healthy food’ (p=0.002) were more likely to be the main trends during the next 10 years. Chinese consumers thought ‘quality improved’ (p=0.000), ‘taste/flavour change’ (p=0.000), ‘more variety’ (p=0.003), and ‘natural’ (p=0.001) would be the main trends. The British did not think ‘lower price’ would be a food trend, but the Chinese did (p=0.000).

These differences again revealed differences in social-cultural values between the Chinese and the British, with the Chinese caring more about the ‘utility’ of the products, whereas the British also consider the intangible attributes of a product, such as product image and style.
10.2.8 Consumer's Age and New Products

Young consumers from both countries showed significant differences (p < 0.05) from the old when they thinking about new products. Both of Chinese and British young consumers were more likely to try new food products than the older consumers. Results from both countries' studies report significant differences in their willingness to try new products (p Chinese=0.032, p British=0.004). Significant differences (p<0.05) were also found between young and old consumers, in their thinking about the reasons for product change and the factors influencing their buying behaviours. Both Chinese (p=0.023) and British (p=0.038) young consumers (compared with older consumers) thought lack of demand was one of the main reasons for product change, suggesting a big demand for new products from the young people. The young people thought more about product appearance than the older respondents when buying a food product (pChinese=0.002, pBritish=0.001), indicating that young consumers were more easily attracted by product appearance. These differences illustrate that young people are more active than older people when thinking about new products, whether in a developed or developing country.

10.2.9 Implications

Overall, 24 attributes, were shown to have distinctive discriminating power between the Chinese and the British consumers. These significant differences covered the consumers' thoughts on all areas of the questions including new product concept, willingness to try new product, consumers' attitude and intention to try a new product and NPD trends. Four groups of factors in both countries have been identified: 'health', 'quality and price', 'brand' and 'convenience'. 
• Health

'Health' is the only issue of the four with which consumers from both countries agreed in relation to new foods. Healthy eating is expected to be the biggest international tendency in the world (FMI/Prevention, 2000). Whether in a developing or developed country, more and more people care about health and related issues such as safety in relation to food.

• Quality and Price

Consumers from both countries thought 'quality' to be very important for new food product development and they would like to try improved quality food. It seemed that the Chinese were more engaged in having an improved quality new food product, and that the British tended to care more about the product price. This difference reflects different consumer social cultural values, as consumer values influence product attitudes and purchase behaviour (Kim, et al., 2002). The differences in this study reflect that the value systems seem to be different between the Chinese and the British. Research has shown that Chinese people care more about the intrinsic attributes (such as quality, taste and variety etc.) than extrinsic attributes (such as price and brand), probably because the Chinese have a different philosophy of value from the British. They expect 'utility' value from the product rather than being influenced by the intangible nature of the product. In contrast, British people are more likely to consider both intrinsic and extrinsic values of new products. For example, when they evaluated a new product, they often took 'the price' into consideration, as sometimes, the price may be used to evaluate the quality of a product when other information is lacking (Anderson & He, 1998).
Brand

Results showed that the Chinese consumers were not sure if a new brand product could be regarded as a new product, and they were less willing to try a new brand and had less expectation of a new brand trend than the British. This may be because Chinese consumers have relatively limited economic resources compared with the British, and their exposure to western culture has been restricted, thus they have had less opportunity to learn about brands. The new brand concept is not (relatively) important in their philosophy of value. Moreover, the Chinese tend to put more value on ‘past-time’ orientation and ‘continuity’ and place greater value on tradition than the British. They do not want to take a risk and try a new brand, which implies that they are probably more brand loyal than the British. They are less likely to switch to try a new brand or product unless the product or brand being used proves very unsatisfactory. Therefore, it is not easy for the Chinese food industry to establish a new brand in China’s Food market. It can be assumed that a popular branded product in China’s food market is a product with a relatively good quality and other attractive attributes, which has been accepted widely by the Chinese consumers. These results suggest that consumer’s values shape motivations to purchase new products or brands by prioritising their needs, and influencing their product evaluation and consumption decisions (Ang, 1997).

Understanding different cultures and different consumer values in different countries is crucial for the food industry if it is to develop new food products to meet the needs of a global market.
10.2.10 Limitation in the Consumer’s Study

Limitations in this research have been discussed in previous chapters (4,5,6,7). Four limitations were specifically linked to the cross-cultural study.

One of the difficulties in conducting cross-cultural studies is to develop a single measuring instrument that can be used for different cultures. This research used a questionnaire translated to both Chinese and English. This single measurement instrument might lead to a certain measurement bias (e.g. problems in translation) that makes cross-cultural comparisons more difficult. Piloting studies were carried out in both countries to minimise this bias. Back translation, and checking by bilingual colleagues, were also used in this research to avoid language bias.

Secondly, the respondents’ attitudes and preferences towards the new products in this study were based on their responses to some simple statements. To accurately examine these variables, there would need to be a more complex experimental design, such as more enlightening interviews.

Thirdly, the consumer samples referred to throughout the dissertation were based on specified regions in China and Britain and are not representative of the respective countries.

Finally, the study was also cross-sectional and so no cause-effect relationships can be claimed, just association.
Despite the limitations stated above, this study provides an indication of the key similarities and differences in the consumer’s thoughts on NPD in both countries and some of the issues that the food industry must take into consideration when developing products for these food markets. In addition, this study can indicate some of the directions for future research (Chapter 11).

10.3 Comparison of NPD in the Food Industry in Britain and China

This section discusses the similarities and differences in NPD in the food industry in China and Britain.

10.3.1 Food Industry Background

Table 10.7 profiles the respondent food companies from both Britain and China by company background (including company size, year of establishment, NPD organisation and responsibility for NPD). Chinese food companies in this research were much younger than the British food companies. Most Chinese companies in the sample were established after 1980, except one traditional food company. By comparison, only three British companies in the sample were young companies, having less than 25 years’ history (after 1980). Results reflect that the food industry is a traditional industry in Britain, with many years of history. China has a long food culture history, but for manufactured foods, the Chinese food industry is younger than the food industry in western industrialised countries, such as Britain. Since the 1980’s, China has made great progress on its economy, with its open-door reform policy. The Chinese food industry has been quickly enlarged, and a lot of new food companies have been created to meet the growing demands of the Chinese food market. Medium sized and small sized food companies in China occupied a big
proportion of the Chinese food industry sample (9 out of 13 Chinese food companies, compared with 6 out of 13 British food companies). (Appendix 10.1 provides a detailed sample company background list.)

Table 10.7 Comparison of Chinese and British Company Background

<table>
<thead>
<tr>
<th>Country</th>
<th>NO. of Company</th>
<th>size</th>
<th>year</th>
<th>NPD organisation</th>
<th>responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>S</td>
<td>M</td>
<td>L</td>
<td>&lt;1980</td>
</tr>
<tr>
<td>Britain</td>
<td>13</td>
<td>3</td>
<td>3</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>China</td>
<td>13</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

The results showed that all British food companies had NPD research, which was conducted by either a separate NPD department or an external research organisation. Two Chinese food companies had no NPD research at all. The R&D team, NPD managers, or marketing directors and operation managers took responsibility for NPD in the British food companies. Similarly, in the Chinese food industry, R & D managers, marketing directors or the whole team were considered as taking responsibility for NPD. NPD in the Chinese food industry is not as developed as it is in the western food industry, however, it is learning the advantages of a NPD system and also from the experience of NPD in western industrialised countries.

10.3.2 New Product Concept and Implementation of New Product Change

Fig. 10.1 showed that almost every British food company developed completely new products, line extension products or improved products as new products. Only five Chinese food companies developed completely new products. Most Chinese food companies (11) had line extension products or improved products. Six British food companies had new brand products as their new products but none of the Chinese food companies had this kind of new products.
Ten companies in each country reported that their new products involved some changes in basic ingredients. Nine British food companies and ten Chinese companies had changed processing method, equipment, packaging, or manner of dispensing from packing for their new products. Five British food companies had made more efficient use of by-products from existing processing operations, but only three Chinese food companies had made this change. The new products from seven Chinese food companies and four British food companies permitted processing at a lower direct cost than a similar product. The differences reveal that generally, the British food industry has a relatively broad new product concept, as they have the capability to develop a completely new to the world product and new brands to compete in a mature food market. This capability is not only based on their experience and knowledge of NPD, but also the advanced technology and sophisticated NPD systems, which may help them to reduce or avoid the risk of NPD failure. As the modern Chinese food industry is relatively young compared with the British food industry, and NPD in the Chinese food industry is still in the primary stage,
manufacturing technology and knowledge and experience of NPD in the Chinese food industry is much poorer. Most Chinese food companies, especially the small companies, could not afford the risks of developing a completely new product. Therefore, they preferred to make minor changes to existing products to reduce the risk of NPD failure. Chinese food companies often copy or modify new products from western countries, or the products which have had successful marketing results from overseas. Compared with the ‘new to the world’ products, a line extension or improved product is usually less risky to produce. Most new products from both Chinese and British food companies were of this style. This survey has shown that most food companies, whether British or Chinese, normally make changes to their raw ingredients or packaging as their new products. Hence new flavours and new packaging concepts have been put into the market and upgraded quickly in both China and Britain. Chinese food companies were also more likely to focus on reducing costs during their NPD, whilst British food companies also attempted to discover ways to make more efficient use of by-products from existing processing operations.

10.3.3 NPD Process

Almost every British food company followed the general NPD process from new product strategy development, idea generation, screening and evaluation to business analysis, development, testing and commercialisation during their NPD. By comparison, 54% of Chinese food companies were involved in the general NPD process but only partly. The majority of respondents from both countries thought that the early stages in the NPD process, which include idea generation to business analysis, were very important to the NPD process. Results indicated that the NPD process in the Chinese food industry is still not sophisticated and needs to be
developed. In a few Chinese food companies’ NPD efforts were limited by their company size, poor technology and other resource limitations. These companies copy small parts of the NPD process from foreign advanced countries, and are learning about the NPD system from such advanced industrialised countries.

10.3.3.1 New Product Strategy Benefits

Fig. 10.2 shows that the majority of respondents from both Chinese and British food companies thought that a new product strategy increased their profitability and helped them to access new markets. Compared with the Chinese food industry, British food companies were more likely to believe that they benefited more from their new product strategy to increase or retain customers. ‘Promoting sales’ was another benefit recognised by British food companies. Nine British food companies reported that they improved their internal capability through their new product strategy, but only two Chinese food companies recognised the same benefit. ‘Increase’ the company size was not a main advantage for either the Chinese or the British food industry. The British food industry appeared to recognise more benefits from their new product strategy than the Chinese food industry, indicating that British food companies’ new product strategy is being fully used and is seemingly more scientific and profitable. This may be because NPD has been carried out for longer and that a more mature system has been established through previous experience. Because of advanced technology, and a more sophisticated NPD system, a more profitable strategy can be created by the British food industry. In China, NPD in the food industry is in the early stages of development and much in the process could be improved. In this situation, it is not easy for Chinese food companies to make a more profitable new product
strategy, owing to limited facilities and knowledge of NPD. Therefore, an immature new product strategy may not bring as many possible advantages for food companies.

**Fig. 10.2 New Product Strategy Benefits Comparison Between British (n=13) and Chinese (n=13) Food Companies**

10.3.3.2 NPD Types

'Continued development of existing products' was the most popular NPD type, widely used by both the Chinese and the British food industry (Fig 10.3). 'Follow the leader with rival products' and 'longer term research into new product ideas' were less used by the food industry in both countries. However, every British food company in this survey used 'first in the field with a new product' as their innovation type, which combined with continued development of existing products. Only three Chinese food companies reported 'first in the field with a new product' as an innovation type. Results once again reveal that most Chinese food companies did not develop many completely new products, as they think this type of innovation is more risky, with more chance of failure and financial loss owing to insufficient NPD
knowledge and less advanced technology. Most Chinese food companies pursued their 'continued development' with limited resources strategy, or copied innovation ideas from others to reduce the high risk of NPD. Therefore, there were few new to the world products in the Chinese food market.

**Fig. 10.3 NPD Types Comparison Between British (n=13) and Chinese (n=13) Food Companies**

![Diagram showing NPD types comparison between British and Chinese food companies](image)

### 10.3.3.3 New Product Information Source

Table 10.8 shows that British food companies obtained their information by various channels. The main information channel was through their new product research (5), company research and development laboratories (6) or discussion with their customers (5). The Chinese food companies relied more on their company sales personnel for information (9). This indicates that British food companies with a strong research position were more sophisticated in their integration of NPD research into the NPD process. Sophisticated new product research is not carried out by most Chinese food companies. They obtained information from their sales personnel or
their traders, such as, suppliers. Food exhibitions and conferences were opportunities to obtain more useful information on NPD for some Chinese food companies.

### Table 10.8 New Product Information Source Comparison Between British and Chinese Food Companies

<table>
<thead>
<tr>
<th>Source</th>
<th>Britain (n=13)</th>
<th>China (n=13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales personnel</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>New product research</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Suppliers</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Trade customers</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Company research and development Lab.</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Competing companies</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Discussion with customers</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Marketing research involving other products</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Customer magazines or reports</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Outside consultant or research</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Advertising agency</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Trade magazines or reports</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Headquarter</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Food exhibitions &amp; conference</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

### 10.3.4 NPD Success

Most Chinese and British food companies had a relatively high NPD success rate. However, almost every food company had some examples of new product failure. Different companies in the different countries had different handicaps to new product success and different reasons for new product failure.

#### 10.3.4.1 NPD Handicaps

Fig 10.4 shows that the first main handicap for British food companies during the NPD process was 'funding', followed by 'non-intensive selling and marketing'. For the Chinese food industry, the top two handicaps were 'lack of consumer knowledge'
and 'lack of expertise', which reflects the real problem in the Chinese food industry. Nine Chinese food companies thought that they lacked consumer knowledge and that this led to their NPD failure. By comparison, only three British food companies thought that this was problem.

**Fig. 10.4 NPD Success Handicaps Comparison Between British (n=13) and Chinese (n=13) Food Companies**

10.3.4.2 Reasons for NPD Failure

Respondents from seven of the thirteen British food companies thought they failed to achieve adequate distribution for the new products, which lead to new product failure. Only two Chinese food companies reported this problem. However, the majority of the Chinese food companies (9) reported insufficient marketing effort allocated to support the introduction of the new products during their NPD process. Six British food companies also reported this problem. There is no one global formula for the success of new products, and different companies had different reasons for new product failure, although 'poor timing' and 'new product-itself defects' lead to NPD failure in some food companies in both countries (Fig 10.5).
10.3.5 NPD Trends

The results from both countries were similar. The respondents from both the Chinese and the British food industry expected that new natural foods and healthy foods would be the main trends in the future, to meet the increasing healthy-eating demands. However, they were more likely to develop more convenient foods in the future. More variety of foods, including new taste, new packaging, new ethnic foods and new brands will also come into the future food market. These results accorded with the evidence in the literature review (Chapter 2, Section 2.9).

10.3.6 Discussion

Some key points have been identified in this research relating to new product concept and the NPD process.

a. New Product Concept

NPD in China is heavily oriented to improved products and does not aim to develop truly ‘new to the world’ products through major advances in products or process.
technology. Most British food companies do compete by exploiting and developing new technologies.

b. NPD Process

More effective and sophisticated NPD strategy and NPD systems were found in the British food industry. Chinese food companies, however, have realised that NPD brings together marketing and its knowledge of customers, manufacturing and its knowledge of process, and R&D to develop products, which fit market needs. Although realising this, their NPD processes did not match this ideal thinking, because of the limitation of knowledge and technology resources. The NPD process in some Chinese food companies was efficient, but less so in others. As the Chinese economy continues to develop, and the market continues to expand in China, the competition in the Chinese food industry will get tougher. NPD must be upgraded. Therefore Chinese food companies should learn the advantages of and acquire knowledge of the NPD process from British food companies’ NPD operations. Several differences between the Chinese and British food industry during their NPD were identified, highlighting where the Chinese food industry needs to learn from more developed processes:

1. The Chinese food industry needs more strategic thinking about new products.

   British food companies were more likely to evaluate how the new products fitted into their overall strategy, including fit into manufacturing, marketing and distribution, to make it fully efficient. This is why they benefited more from the new product strategy than the Chinese food industry did.

2. The Chinese food industry needs to integrate customer information into new product research. A few British food companies could integrate new product
information through their new product research. It seems that they can get more accurate information from the research than from the sales individuals. In the Chinese food industry, food companies seemed to do quite well at integrating knowledge from their sales individuals and suppliers. The Chinese food company itself is not a major source of innovation, but it is fairly up to date on product and process, because of access through sales and suppliers. Sales individuals and suppliers do participate in NPD, which allows the Chinese food companies to develop new products more rapidly than if they used only their own resources. However, for the long term NPD, it is not seen as an advantage.

10.4 Conclusion

This chapter compared of NPD in the food industry between China and Britain from the views of consumers and food industry personnel in both countries. Several similarities and differences had been drawn from the results.

The first part of this chapter examined the consumer's thoughts about new products (e.g. new product concept, necessity of NPD, willingness to try new products, factors influencing their buying behaviour to try new products) in both countries. The results showed that consumers from both countries thought that it was necessary to introduce new products into the food market and they would like to try different kinds of new products and that both consumers' attitude and subjective norm affected their intentions to try new products. However, different social-cultural values influenced consumers' thoughts on new products, which was reflected in some different perceptions and expectations of new products between the Chinese and the British.
The second part compared NPD between the Chinese and British food industry. It indicated that the food industry in both countries had realised the importance of NPD and the importance of NPD in relation to marketing and the consumer. Therefore, most of them were using or learning to use a scientific NPD process from idea generation, business analysis, development to product launch, to capture consumer’s real wants. Compared with the British food industry, the NPD in the Chinese food industry was not fully developed, and the industry needs to learn the advantages of and acquire knowledge of the NPD process from British food companies’ NPD operations.

Chapter 11 will draw conclusions on the whole research in relation to the study aims and give some recommendations for the future research.
Chapter Eleven
Chapter 11

Conclusions and Recommendations

11.1 Introduction

This Chapter analyses the main findings drawn from analysis of the empirical research. The empirical and secondary source data have covered NPD from both the industry and consumer perspective. The main points drawn from each of the five results and analysis chapters (Chapter 6, 7, 8, 9 and 10) are summarised in the first section of this chapter. Conclusions are drawn based on analysing results for the two phases of the research (consumer study and the food manufacturing industry study) as a whole. (The five analysis chapters divided the results into separate sections: Chapter 6 focused on the British consumer respondents' views on NPD; Chapter 7 on Chinese consumer respondents' views on NPD; Chapter 8 and 9 on the views from both Chinese and British food manufacturing industry personnel; and Chapter 10 on a comparison of results from both countries, analysed from a cross-cultural perspective. In particular, the national views of the consumer samples and food manufacturing industry personnel are interpreted. *The consumer samples were drawn from particular urban areas of China and Britain, which are not representative of the population of each country.) This final chapter allows the results of the five result chapters to be inter-related and thus provides an overall interpretation of the results.

The second section examines the managerial implications of this research and the third section offers recommendations for future research that could be undertaken to further develop understanding of NPD in the food manufacturing industry.
11.2 Discussion and Conclusions

This research included two phases, one assessing consumer’s perceptions, expectations and preferences for NPD (using a consumer survey in specific locations in Britain and China), and the other examining the new product concept, NPD process, success and the importance of NPD in both the British and Chinese food industries (conducted using a series of interviews with food manufacturing industry personnel, from a variety of food manufacturing companies serving national and international markets). From the results of this two-phase study, the following conclusions can be drawn.

11.2.1 Consumer Respondents’ views on Food NPD

The results of the primary data analysis indicated the necessity for NPD from the consumers’ viewpoint and the consumers’ perceptions, expectations and preferences for NPD in food manufacture.

- Both British and Chinese consumer respondents perceived that it was necessary to introduce new food products into the market and most of them were likely to try the new products. Today’s consumers are more demanding, and the consumer study results suggested that they were bored with existing products and desired to try something new. These findings echoed the evidence from the previous literature, which indicated that NPD is important for today’s food industry (McIlveen, 1994, Duke, 1990, Davison and Howley, 1995, Best, 1991, Hoban, 1998, de Brentani, 2001).
Consumer respondents in both China and Britain believe that a completely 'new to the world' product is a new product. The Chinese consumer respondents more often considered the internal attribute changes of products (such as improved quality, safety and healthy) as new product attributes, and the British consumer respondents took both internal and external changes of a product into consideration when thinking of a new product. Thus, 'new to the company' products and 'new brand' were also perceived as new products. These differences are probably based on the different social-cultural values in each country, as culture plays a central role in shaping people's attitude to food products (Sobal, 1998). It reflects the literature discussed in Chapter 3 (e.g., Delamont, 1995, Grunert, 1997, Prescott, 1998). Therefore, understanding the different social cultural values in different countries is crucial for food companies creating a new product concept in the international environment.

In general, the consumer respondents' intentions to try new food products in both countries were influenced by both consumer's attitude and subjective norm to the new products. Most of the consumer respondents in both Britain and China relied on 'family or friend's suggestion', 'product quality' and 'doctor recommendation' when making a decision to try a new product. Therefore food manufacturers should study consumer behaviour in order to meet consumer demands, when they introduce a new product. The British consumer respondents were more concerned with the 'product price', which was less often considered by the Chinese consumer respondents. People with higher incomes, thought more about the product quality or other new product attributes, from which they would benefit rather than the product price. Previous work has shown that the number of
alternatives (e.g. personal income and quality) affected the role of price; the
greater the number of alternatives, the less important becomes price as a factor in

- New natural and healthy food products were the foods that both Chinese and
British consumer respondents were most likely to try. As the awareness of health
increases, there will be more demands for ‘healthy’ food products made by
consumers, especially for new food products (Armistead, 1998, Department of
expected that these two kinds of food would be the main trends in food product
innovation during the next ten years. It supports Sloan (1998)’s prediction of the
food trends. Sloan (1998) reported consumer trends to 2020 and beyond as
“Natural becomes the norm” and “Focus on health”. Other consumer demands,
such as variety and convenience, were also important in relation to NPD.

- Four important consumer issues – quality, price, convenience and health were
noted in the results. Food companies should pay more attention to these issues to
meet consumers needs and make successful new products.

11.2.2 Food Industry Personnel views on NPD

Based on the interviews with food R&D personnel and literature review of NPD in the
food industry, four key issues were drawn to answer the research questions:
1. *The Importance of NPD and Necessity and Willingness to Introduce New Products*

New product development is very important for food companies’ survival and development, and new food product development must meet and sustain consumer demand. There are many challenges faced by food product manufacturers during food product development; which include constraints of finance, manpower, time and the need for continual innovation. The main challenges identified in the literature were increasing global competition, developing technologies, increased knowledge levels and expectations of consumers and demographic, economic, and political changes, as well as the potential environmental impact (Mcllveen, 1994, Imram, 1999, Rudder et al., 2001). Therefore, in today’s competitive market, food manufacturers need to 'change to survive' through new product development. Thus, almost every food industry representative interviewed in both countries thought that it was necessary to introduce new food products into the market and they would like to do it to meet the challenges from global competition.

2. *New Product Concept*

Line extension products and improved products as new products were reported to be widely introduced by both the British and Chinese food manufacturing industry. Although 'new to the world' products are considered as new products by consumers in both countries, few food companies were likely to introduce such new product as their main new product into the competitive market, because of its high risk of failure. The results from the current studies are similar with the results of Kotler’s research in 1991, in which he showed that less than 10% of new products were totally innovative.
and new to the world, as these involve the biggest cost and risk in their newness, to both the company and market. Most new products were improved existing products.

3. NPD Process

The process of NPD has been identified as being vital to the survival of any industry (Nuese, 1995). Several NPD processes were identified in this study. Market research, prototype testing with consumers, and product launch are critical activities in the NPD process. Most British food companies and some well-established Chinese food companies were active in the general NPD process. Although an immature and less advanced NPD process was used by small local Chinese food companies, these companies are learning to improve their NPD process. British food companies benefit more from their new product strategies, as they adopt a more sophisticated NPD process. These benefits included increasing profitability, increasing and retaining customers, promoting sales, improving the company internal capability, accessing new market, and increasing the company size, for instance, one R&D manager said:

"It (NPD strategy) improves the company's presence in the marketplace. A broader range of products makes the company more efficient ......." (NPD Manager, A Large British Dairy Company)

Another R&D personnel pointed out "the aim of new product launches is to grow the company." (Brand Manager, A Small British Sauce Company)

Both the Chinese and British food manufacturing industry samples had realised that the early stages of NPD were crucial, as a Chinese R & D manager (A Medium Chinese Dairy Product Company) said: ' ...the more refined previous NPD stages, the better NPD results...'}
Moreover, as McLlveen (1994:29) said: "in order to survive competitively in today’s market, companies must increasingly accelerate the product development process with:

- the ability to ensure the production of consistently high products;
- the ability to make cost-effective products;
- the flexibility to respond rapidly to marketplace changes."

The findings showed that some of food companies have those abilities (e.g., five British food companies and three Chinese food companies reported that they had made more efficient use of by-products; seven Chinese food companies and four British food companies made lower cost products).

Furthermore, food product innovation is also needed to respond and develop the product development processes, as currently used food product development processes can not meet all of the challenges in the food industry in both countries.

4. Success in NPD

The reasons for NPD failures in both countries were generalised as inadequate market analysis, product defects, higher costs than anticipated, poor timing, competition reaction and inadequate marketing effort. Therefore, food manufacturers should try their best to address these issues to avoid failures.

Secondly, food manufacturers should not only recognise the above reasons for NPD failures, but also need to identify the critical factors in the NPD process, such as competition, selling, profitability, product life cycle, urgency and risk in NPD
Moreover, manufacturers should share responsibility for new product success with food retailers, as both of them need to cooperate and coordinate their efforts, as well as find suitable methods to build greater consensus (Hoban, 1998).

Finally, they should know the new product advantages and the management need to firmly believe that their new products will be unique, superior products. All of these, because such new products may meet customer needs better than competitors, solve the customers’ problem and reduce the total cost to consumers (Cooper, 1980). The findings showed that most food manufacturers have realised that understanding customer needs is the most important factor in developing superior and successful new products.

In general, key aspects leading to NPD success, from literature review (e.g., Cooper, 1982, Hood, et al., 1997, Hoban, 1998, Linnemann, et al., 1998, Kirstensen, 1998, Stewart-knox, et al., 2003) and industry studies in both countries, are understanding consumer needs; suitable market research; strong internal and external communication; a real comparative advantage against existing competition; commitment from top management and the sales force; and understanding trade requirements and gaining trade support.
11.2.3 Other Significant Outcomes arising from the Research

Some other significant outcomes from the results of these two phases are:

- **‘Healthy’ Food**

‘Healthy food’, which includes functional food and natural food, is predicted to be the biggest international tendency in the future food market, by both consumer and food manufacturing industry samples from both countries. Consistent with increased awareness of healthy eating, which is the most important concern about food around the world (e.g., Armistead, 1998, Department of Health, 1998, Ruth, et al., 2001), whether in a developing or developed country, more and more people care about health and related issues about food, such as nutrition and safety. Thus, the food industry is preparing to introduce more healthy food products to meet consumer’s demands and healthy eating will become the biggest international tendency in the world.

- **Quality**

Product quality is a major concern for consumers when choosing new products. Many researchers report that consumers expect their food to be of a high quality (e.g, NCC, 1992, Wheelock, 1986, Imram, 1999). Consumer respondents in both countries cared more about food quality than other product attributes, when they made food purchases. They wanted more improved quality products. However, the food manufacturing industry should understand ‘quality’ as perceived by the consumers including variety, content, taste, nutritional value and appearance, as many factors such as taste, odour, packaging and nutritional content affect consumers’ perceptions of the quality of a food product (Imram, 1999). This research showed that most food
companies know that understanding consumer’s wants is important in the development of a successful new product. In order to respond to the consumer’s want for good quality food, they are engaging in developing better quality products.

- **Price**

Most British consumers in the lower income group considered price as the main factor determining their new product purchases. This may support that price reduction might have an influence on consumer’s reaction (Kotler, 1991). Therefore, the food industry needs to find an efficient way to cut NPD costs and to develop new products with an affordable price if they are to attract these low income group consumers. However, the food industry should be aware that a low price strategy is not always effective as a means of attracting consumers to choose a new product. Most consumers with relatively high income in this research did not consider price as the main factor influencing their buying behaviours, as sometimes, a lower price may mean lower quality, and a price reduction sometimes was regarded as lack of value for money (Hill & Lynchehaun, 2003). Therefore, the food manufacturing industry should not only reduce its product costs, but improve their product quality to cope with consumer’s perception of new products.

- **Social-cultural Value in the Cross-national Study**

As an international agenda has appeared in the food market, more and more global new product strategies have been launched by many large food companies to capture the international market (Tansey & Worsley, 1995). In this global NPD process, the food industry needs to consider the different social-cultural value influences on NPD. Consumers from different countries are influenced by their social-cultural values,
when choosing a new product. For example, the Chinese consumer respondents in this research thought more about the 'utility' value (such as quality, taste and variety) of a product than the extrinsic value (such as price or brand) when buying a new product. The British consumer respondents however thought about both the intrinsic and extrinsic values of the new products.

- Young & Old Consumers

This research showed that the younger consumers in the sample were more demanding in relation to new products than the older consumers in both countries. They were more likely to try something new and were interested in all kinds of new foods, especially convenience foods. Older people had more trust in themselves and their beliefs. They were not keen to try new foods and what they most wanted were new products that were more healthy and natural. Therefore, the food manufacturing industry will need to design various new products to meet the needs of different kinds of consumers. To establish a successful food market, they need to attract the younger consumers through unique product attributes. As the young consumers are and will continue to be the main consumers in the food market, they represent huge market potential. Food manufacturers should also help older people to build their interest in new products.

11.2.4 Overall Conclusions

The results from both the industry and consumers' perspective in specified locations in China and Britain indicated that it is very important for the food industry in both countries to develop new products to meet consumer's needs. Consumer's intention to try new food products was influenced by their attitudes and subjective norms to the
new products. Therefore, understanding consumer’s attitudes and demands for new products is crucial for the food industry. Currently, the food industry in both countries has realised the importance of NPD in relation to marketing and the consumers. In order to survive in today’s competitive marketplace, they should fully understand consumer’s demands for new products and choose a successful NPD process to develop more competitive new products, which have unique and superior characteristics and more advantages. Simultaneously, as consumer’s intention to try new products can also be influenced by the food producers, the new products from the food industry sometimes guiding consumer’s food choice.

These results support the theoretical framework of the research proposed in Chapter 4 (Fig. 11.1). The diagram (Fig 11.1) comes from the research theoretical framework, highlighting the key results.
**Main factors influencing British consumers’ thoughts about new products**
- Product quality
- Health awareness
- Significant others’ influences (family members, friends and doctors etc.)
- Price

**Main factors influencing Chinese consumers’ thoughts about new products**
- Product quality
- Health awareness
- Significant others’ influences (family members, friends and doctors etc.)

**Key factors for a successful NPD**
- Understanding consumers’ needs
- Market research
- Internal & external communication
- Product advantages
- Top management

**British food companies**
- NPD Process:
  - Most of them were active in general NPD process
- New Product Concepts:
  - Completely new products
  - Line extension products and improved products
  - New Brand

**Chinese food companies**
- NPD Process:
  - Only well-established companies were active.
- New Product Concepts:
  - Completely new products (few)
  - Main products were Line extension products and improved products
11.3 Managerial Implications

The two-phase study indicated that food manufacturers are in the business of meeting the ever-changing demands of food consumers, and that they are developing food products that are original and have the ability to increase their company’s market share. Thus, many are actively involved in food NPD and in the extension or enhancement of their present products. Food companies should not stand still and should be aware of opportunities available to them to improve their profitability.

Both consumer and industry studies indicated that product, process and marketing information providing consumer knowledge are key elements of NPD. They have very strong linkages (internal and external) between them.

Internal linkage

The food industry should establish a management process to encourage NPD linkage and information transfer within the whole NPD process. NPD requires participation by many functional specialists, which creates interdependencies and a need for cooperation. Food companies, which excel in their ability to apply experience and know-how about the product, process, market and management into similar new product lines, gain strong competitive advantage. Simultaneously, food companies should also continually seek to improve the efficiency and effectiveness of this NPD process (Suwannaporn & Speece, 2000).

External linkage

Key issues for a successful new product are that the food companies should be consumer focused, allow more consumer involvement in the NPD process, and build
consumer links into the NPD process. It is known to be important for food companies to use consumer knowledge and market research when developing new products. However, in China, many are dissuaded by the cost of market research. Focus groups could solve this problem. It helps R&D and marketing to identify consumer preferences, and helps to structure product definition and guide market launch plans with a lower development and marketing research cost.

Therefore, food companies need make sure all elements in NPD are accounted for, and find the best way to help upgrade the quality and efficiency of NPD and make the company more competitive in increasingly demanding food markets.

11.4 Recommendations for Future Research

It is possible to make some recommendations for research in specific research areas needing further study.

The consumer study stage was limited by a relatively small sample size, limited finance and limited time. The present consumer studies investigated consumers’ perceptions, preferences, and expectations of new food products based on specified regions in China and Britain and results are not representative of the respective countries, as there are regional differences, especially where climates and cultural environment differ in each country. Thus, it might occur that results from consumers researched in catchment areas (the recruitment areas in this research were urban areas) would be different from consumers elsewhere in China and Britain. This diversity implies that marketing mix for one time period and one region of a large, diverse country tends to be effective only for similar consumers in similar regions and times
Therefore, the findings of the present study need to be carefully applied to a discussion of consumer’s thoughts on new products in the cross-cultural context. Further research should be based on a larger and more representative consumer sample, carried out in different regions in order to obtain a feedback from a wider socio-demographic sample of the populations (both cross-cultural and longitudinal) to be able to make generalisations for the whole population. This would also offer the opportunity to evaluate a wider socio-economic base, which could enable the assessment of consumer’s perception, preferences and expectations of new food products to be truly tested. As a cross-cultural comparison study, knowledge of culture specifics and universals about consumer’s thoughts needs to be further explored. Different methodological approaches with consumers such as in-depth interviews, may also be used in further study to get more detailed and in-depth consumer information.

The data, generated by this study, can be considered for further research. Each method at an individual level presents an opportunity to expand on the findings.

The qualitative interviews with food manufacturing industry personnel allowed greater insight into food NPD within the food industry. The findings of the qualitative study were based on a small sample of R&D personnel from the food manufacturing industry, and caution should be exercised in attempting to make any generalisations. While there is significant reflection on NPD success in the literature review, there are still a number of themes (such as influences of NPD success) that require further theoretical and empirical exploration. Further research may benefit from using open-ended interview schedules to elicit more detailed and insightful information about
NPD in the food manufacturing industry. The interview schedule used in the present study based on five topics (company background, new product concept, NPD process, success and trends) and as such was very structured. Since this study appears to indicate that different social cultural values in different country affect consumers' thoughts of new food products and food manufacturers therefore need to adapt different social culture when they make the global NPD strategies to face the international markets, further research should include more practical considerations based on the knowledge of cultural differences that exist between the countries. There should be more research into the effectiveness and applicability of new product ideas, technologies and operating experience relating to NPD process and success in China that have been newly introduced based on practices in the West.

Additionally, many of the conclusions were based on the general perception of the entire sample, but cross-national analysis was also carried out. The results from the comparison may be slightly affected by the ways of measurement and data collection. Chinese respondents are less familiar with questionnaires and rating scales (Shenkar and Von Glinow, 1994). In China, respondents may choose central categories on rating scales in order to avoid having to take up extreme positions (Smith & Wang, 1996). Although the data in the present research do not seem to indicate a central tendency in the most Chinese responses on the five-point scales, one should be cautious regarding the validity of some of the comparison involving mean scores in this study. Because of the limitation of time and cost, the present study only gave a simple and general picture of the similarities and differences on NPD in the food manufacturing industry between each country. It is suggested that further research taking a cross-cultural approach could give a clearer insight into the similarities and
differences between each country. It would also be of value to analyse trends over time.

* Note: The consumer samples were drawn from particular areas of China and Britain (Six areas around London and Southeast England (Guildford, Woking, Burpham, Worplesdon, Wimbledon and Brighton) and three areas around Beijing (North, Northeast, and West)), which are not representative of the population of each country.
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Appendix 5.1

British Consumer Questionnaire

Instruction

This survey is a part of a research study into new product development in the food industry in the U.K and China. It is being conducted by a PhD student in the School of Management Studies for the Service Sector at the University of Surrey.

The aim of this survey is to examine your perceptions of new food products and demand for new food products. Please make your responses by circling the appropriate number and return the questionnaire in the reply-paid envelope provided.

The answers you provide are anonymous and confidential and will only be used for the purpose of this research.

It will take you around 30 minutes to finish this questionnaire.

Thank you in advance for your help, and do not forget to send back your prize draw entry form.

Part I

Please circle the number between 1 and 5 that best reflects your thoughts and feelings:

I. What is a ‘new product’? (To what extent do you agree that the following would constitute a ‘new product’?)

<table>
<thead>
<tr>
<th>New appearance</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved quality</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>A more healthy product</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Improved safety</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Flavour changed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Price changed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>A completely new product</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>New brand</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>New to the company</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Others: (please specify) .................................................................

II.a. How necessary do you think it is to introduce New Food Products into the market:

<table>
<thead>
<tr>
<th>Extremely unnecessary</th>
<th>Unnecessary</th>
<th>Neutral</th>
<th>Necessary</th>
<th>Extremely necessary</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

b. If necessary, why should products change? The scale ranges from ‘strongly disagree’ (1) to ‘strongly agree’ (5)

<table>
<thead>
<tr>
<th>Lack of demand</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>To improve convenience</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>To improve ‘health’</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>People become bored with existing food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Desire to try something new</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Lack of variety</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Poor quality of current foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Bad taste of some current foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>High price of current foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Others (please specify) .................................................................

III. What are the main factors influencing your decision to buy new products? The scale ranges from ‘strongly disagree’ (1) to ‘strongly agree’ (5)

<table>
<thead>
<tr>
<th>Product price</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>My beliefs or religion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Increased product variety</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
### IV. How likely are you to try New Products?

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion &amp; advertising</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Product quality</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Product appearance (incl packaging)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>My family or friends' suggestion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Doctor’s recommendation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Health &amp; Safety messages (media)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Others (please specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### b. How likely are you to try the following types of new food products

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnic foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Natural Foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Convenience foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Functional foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

(Continued)

### c. How likely are you to try the following kinds of New Products?

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>New brand of a product you currently use</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>New packaging</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Improved quality</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Price reduction</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Healthy version</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Change of flavour</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

### V. The following questions ask you about what you believe about new products. The scale ranges from ‘very unlikely’ (1) through to ‘very likely’ (5).

1. Providing new food products means:

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) consumers can make more healthy choices:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2) consumers can get quality improved foods:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3) consumers may not be sure of the new food’s reliability:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

2. Providing new healthy foods means

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) consumers can make more healthy choices:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2) consumers may lack clear product knowledge:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3) more expense for consumers:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

3. Providing new convenience foods means

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) consumers can choose easy and quick to cook foods:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2) consumers may choose less healthy foods:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

4. Providing new ethnic foods means

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) consumers can have more choice:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2) They may not be to every consumer's taste:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

5. To enable consumers to choose:

<table>
<thead>
<tr>
<th></th>
<th>Very bad</th>
<th>Bad</th>
<th>Neutral</th>
<th>Good</th>
<th>Very good</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) more healthy food is:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2) quality improved foods is:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3) foods that they may not be sure of the reliability is:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

The following questions refer to those you have answered. They ask whether you think certain things are good or bad. Notice that the scale goes from ‘very bad’ (1) to ‘very good’ (5).
4) foods that they may lack clear product knowledge of is:

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family members</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Friends</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Doctors</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Food producers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

5) expensive foods is:

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family members</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Friends</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>5</td>
</tr>
<tr>
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<td>1</td>
<td>2</td>
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<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Food producers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

6) easy and quick to cook foods is:

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family members</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
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<td>1</td>
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<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Food producers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

7) less healthy foods is:

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family members</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Friends</td>
<td>1</td>
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<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Doctors</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Food producers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

8) foods from more choice is:

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family members</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Friends</td>
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<tr>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Food producers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

9) the food that may not suit their food taste is:

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family members</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
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<tr>
<td>Food producers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

This section asks you what specific groups of people think about your choices of new food products. The scale ranges from ‘very unlikely’(1) to ‘very likely’(5).

6. Most ...... think I should try new food products:

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family members</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
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<td>5</td>
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<tr>
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<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Food producers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

7. Most ...... think I should try new healthy food products:

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family members</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Friends</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Doctors</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Food producers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

8. Most ...... think I should try new convenience food products:

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family members</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Friends</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Doctors</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Food producers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

9. Most ...... think I should try new ethnic food products:

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family members</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Friends</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Food producers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

These questions ask how much you want to do what the groups above think you should do:

10. Generally speaking, I want to do what

1) my family thinks I should do: 12345
2) my friends think I should do: 12345
3) my doctors think I should do: 12345
4) food producers think I should do: 12345

Generally, what do you think people would like you to do?

11. Most people who are important to me think

1) I should try new food products: 12345
2) I should try new healthy food product 12345
3) I should try new convenience food products 12345
4) I should try new ethnic food products:12345

The following questions are designed to measure your general attitudes. The scale ranges from ‘very bad’(1) to ‘very good’(5).

<table>
<thead>
<tr>
<th></th>
<th>Very bad</th>
<th>Bad</th>
<th>Neutral</th>
<th>Good</th>
<th>Very good</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Trying new food products is:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. Trying new healthy food products is:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. Trying new convenience food products is:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. Trying new ethnic food products is:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Finally, how likely are you to try the new food products? The scale ranges from ‘very unlikely’ (1) to ‘very likely’ (5).

16. During the next four weeks, Very unlikely
   1) I will try new food products: 1  2  3  4  5
   2) I will try new healthy food products: 1  2  3  4  5
   3) I will try new convenience food products: 1  2  3  4  5
   4) I will try new ethnic food products: 1  2  3  4  5

VI. What do you think the main trends of food products will be in the next 10 years? The scale ranges from ‘very unlikely’ (1) to ‘very likely’ (5)

<table>
<thead>
<tr>
<th>Group a</th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>New brands</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>New packaging</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Improved quality</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Attractive appearance</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Lower prices</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Improved flavour</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Increased variety</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group b</th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Ethnic foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Convenience foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Functional foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>‘Healthy’ foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Others (please specify)</td>
<td>..................................................</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Part II
Personal Details:

Please answer the following questions as accurately as possible:

**Age:**
- 34 or below
- 35-54
- 55 or above

**Gender:**
- Female
- Male

**Education:**
- Below A’ Level
- A’ Level or equivalent
- Bachelor’s degree or equivalent
- Diploma or professional qualification
- Postgraduate degree or above

**Gross Family Income (per annum)** £:
- Below 10000
- 10001 - 20000
- 20001 - 30000
- 30001 - 40000
- 40001 - 50000
- 50001+

Roughly, how much money do you personally spend on your weekly food shopping, excluding alcohol, other non-food stuff and eating-out?

..............................................................................................................................

Thank you very much!
Appendix 5.2 Chinese Consumer Questionnaire
关于食品新产品发展之消费者问卷

第一部分：
请在1-5的数字中，圆出反映你想法和感觉的恰当数字：
1表示非常不赞成
2表示不赞成
3表示不清楚是否赞成
4表示赞成
5表示非常赞成

一、何谓新产品？在如下选项中你认为哪些可以称为‘新产品’

<table>
<thead>
<tr>
<th>新的外型</th>
<th>质量改善了</th>
<th>一种更健康更健康的食品</th>
<th>食品安全性改善了</th>
<th>口味改善了</th>
<th>价格改善了</th>
<th>一种完全新产品（过去从未有过的）</th>
<th>新品牌</th>
<th>对某一公司来讲是新产品</th>
<th>（其它公司也许已经上市同类产品）</th>
</tr>
</thead>
<tbody>
<tr>
<td>非常不赞成</td>
<td>1  2  3  4  5</td>
<td>非常不赞成</td>
<td>1  2  3  4  5</td>
<td>非常不赞成</td>
<td>1  2  3  4  5</td>
<td>非常不赞成</td>
<td>1  2  3  4  5</td>
<td>非常不赞成</td>
<td>1  2  3  4  5</td>
</tr>
</tbody>
</table>

二、你标出你认为将新产品投放市场的必要程度：

<table>
<thead>
<tr>
<th>非常不必要</th>
<th>非常必要</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  2  3  4  5</td>
<td>1  2  3  4  5</td>
</tr>
</tbody>
</table>

如果必要，请标出你认为为何产品需要改变（从‘1’非常反对到‘5’非常同意，标出你的感觉程度）

<table>
<thead>
<tr>
<th>非常反对</th>
<th>非常赞成</th>
</tr>
</thead>
<tbody>
<tr>
<td>过时了，或缺少需求</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>产品方便程度需要改进</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>使产品更加有益健康</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>产品对现有产品开始厌倦</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>期望有新的尝试</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>现有食品种类较少</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>现有产品质量差</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>现有产品口味差</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>现有产品价格贵</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>其它（请注明）</td>
<td></td>
</tr>
</tbody>
</table>

三、你认为促使你购买新产品的主要是：（请选出色彩使用程度）

<table>
<thead>
<tr>
<th>非常反对</th>
<th>非常赞成</th>
</tr>
</thead>
<tbody>
<tr>
<td>产品价格</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>我的宗教信仰</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>产品的多样性</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>促销及广告</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>产品质量</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>产品外观（含包装）</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>朋友或家人的建议</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>医生的推荐</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>媒体中宣传的健康与安全信息</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>其它（请注明）</td>
<td></td>
</tr>
</tbody>
</table>
四. 你尝试新产品的可能性:

<table>
<thead>
<tr>
<th>非常不可能</th>
<th>非常可能</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

选出对你如下几类新产品的尝试，你愿意尝试它的可能性:

<table>
<thead>
<tr>
<th>非常不可能</th>
<th>非常可能</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

（食品中含强化维生素或微量元素等物质以增进某一人群的健康的食品）

对于新产品的如下改变，你愿意做哪些购买尝试？

<table>
<thead>
<tr>
<th>新品牌</th>
<th>新包装</th>
<th>质量改善</th>
<th>价格降低</th>
<th>有益健康的观感</th>
<th>新口味</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

五. 如下问题是关于你对新产品的判断，请从‘非常不可能’（1）到‘非常可能’（5）的5个刻度中，选出你的程度。

1. 提供新的食品产品意味着：

<table>
<thead>
<tr>
<th>非常不可能</th>
<th>非常可能</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

消费者有更多有益健康的选择：

| 1 | 2 | 3 | 4 | 5 |

消费者能够得到品质改善的食品：

| 1 | 2 | 3 | 4 | 5 |

消费者不能确定食品（健康程度）的可靠性：

| 1 | 2 | 3 | 4 | 5 |

2. 提供新的有益健康的产品意味着：

| 1 | 2 | 3 | 4 | 5 |

消费者有更多有益健康的选择：

| 1 | 2 | 3 | 4 | 5 |

消费者也许会增加购买此类产品的知识：

| 1 | 2 | 3 | 4 | 5 |

3. 提供新型方便食品意味着：

| 1 | 2 | 3 | 4 | 5 |

消费者能够选择简便快捷易烹饪的食品：

| 1 | 2 | 3 | 4 | 5 |

消费者也许会增加购买不太有益健康的食品：

| 1 | 2 | 3 | 4 | 5 |

4. 提供新的域外食品（日本食品等）意味着：

| 1 | 2 | 3 | 4 | 5 |

消费者将有更多的选择：

| 1 | 2 | 3 | 4 | 5 |

也许此类产品并不适于每个消费者的口味：

| 1 | 2 | 3 | 4 | 5 |

*参照上述问题你回答的问题，请从程度（1）‘非常不好的’到程度（5）‘非常好的’中，选择你判断如下看法的好坏程度：

5. 使消费者

<table>
<thead>
<tr>
<th>非常不好的</th>
<th>非常好的</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

选择更多有益健康的食品是：

| 1 | 2 | 3 | 4 | 5 |

选择质量改善的食品是：

| 1 | 2 | 3 | 4 | 5 |

选择不清楚其（健康程度）可靠性的食品是：

| 1 | 2 | 3 | 4 | 5 |

选择缺乏对其了解的食品是：

| 1 | 2 | 3 | 4 | 5 |

选择价格昂贵的食品是：

| 1 | 2 | 3 | 4 | 5 |

选择方便快捷易烹饪的食品是：

| 1 | 2 | 3 | 4 | 5 |

选择不太利于健康的食品是：

| 1 | 2 | 3 | 4 | 5 |

有更多的选择是：

| 1 | 2 | 3 | 4 | 5 |

选择也许不适于每个人口味的食品是：

| 1 | 2 | 3 | 4 | 5 |

*这都是你在你认为如下几组人群对你选择新食品的看法（如不确信，可以猜）‘1’表示非常不可能...... ‘5’表示非常可能
1. 大多数——认为我应该尝试一下新食品

<table>
<thead>
<tr>
<th></th>
<th>非常不可能</th>
<th>非常可能</th>
</tr>
</thead>
<tbody>
<tr>
<td>家人</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>朋友</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>医生</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>媒体和生产商</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

2. 大多数——认为我应该尝试一下新的健康食品

<table>
<thead>
<tr>
<th></th>
<th>非常不可能</th>
<th>非常可能</th>
</tr>
</thead>
<tbody>
<tr>
<td>家人</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>朋友</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>医生</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>媒体和生产商</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

3. 大多数——认为我应该尝试一下新的方便食品

<table>
<thead>
<tr>
<th></th>
<th>非常不可能</th>
<th>非常可能</th>
</tr>
</thead>
<tbody>
<tr>
<td>家人</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>朋友</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>医生</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>媒体和生产商</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

4. 大多数——认为我应该尝试一下新的城外食品

<table>
<thead>
<tr>
<th></th>
<th>非常不可能</th>
<th>非常可能</th>
</tr>
</thead>
<tbody>
<tr>
<td>家人</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>朋友</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>医生</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>媒体和生产商</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

*这些问题是要了解你接受如下人群建议的程度：‘1’表示非常不可能…… ‘5’表示非常可能

1. 总的来讲，我会按照

我家人建议的去做：
1 2 3 4 5
我朋友建议的去做：
1 2 3 4 5
医生建议的去做：
1 2 3 4 5
媒体及厂商建议的去做：
1 2 3 4 5

*总的来说，你认为别人会建议你怎样做？‘1’表示非常不可能…… ‘5’表示非常可能

2. 大多数对我很重要的人认为我应该：

尝试一下新的食品
1 2 3 4 5
尝试一下新的健康食品
1 2 3 4 5
尝试一下新的方便食品
1 2 3 4 5
尝试一下新的城外食品
1 2 3 4 5

*如下问题是测试你对新产品的总的态度。从‘非常不好的’（1）到‘非常好的’（5）选出你的态度。

12. 尝试一下新的食品是
1 2 3 4 5
13. 尝试一下新的健康食品是
1 2 3 4 5
14. 尝试一下新的方便食品是
1 2 3 4 5
15. 尝试一下新的城外食品是
1 2 3 4 5

*最后，再测试一下你尝试新食品产品的可能性，‘1’表示非常不可能…… ‘5’表示非常可能

在未来的四周内，我将

尝试一下新的食品
1 2 3 4 5
尝试一下新的健康食品
1 2 3 4 5
尝试一下新的方便食品
1 2 3 4 5
尝试一下新的城外食品
1 2 3 4 5
六. 你认为在未来的十年中，食品发展的主要趋势是：(请从‘1’非常不可能到‘5’非常可能中，选择你认为的可能程度)

<table>
<thead>
<tr>
<th>类</th>
<th>非常不可能</th>
<th>非常可能</th>
</tr>
</thead>
<tbody>
<tr>
<td>新品牌</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
<tr>
<td>新包装</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
<tr>
<td>改善的质量</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
<tr>
<td>有吸引力的外观</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
<tr>
<td>低价格</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
<tr>
<td>新口味</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
<tr>
<td>多种类，多样性</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
</tbody>
</table>

B 类:

<table>
<thead>
<tr>
<th>类</th>
<th>非常不可能</th>
<th>非常可能</th>
</tr>
</thead>
<tbody>
<tr>
<td>域外食品</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
<tr>
<td>方便食品</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
<tr>
<td>天然食品</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
<tr>
<td>功能性食品</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
<tr>
<td>保健食品</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
</tbody>
</table>

其它（请注明）---------------------------------------------------------------

第二部分:

个人资料:

年龄: 34 岁及以下 □ 35-54 岁 □ 55 岁及以上 □
性别: 男 □ 女 □
学历: 初中及以下 □ 中专 □ 大专 □ 本科 □ 硕士及以上 □
年收入: 1 万及以下 □ 1 万零一到 2 万 □ 2 万零一到 3 万 □
          3 万零一到 4 万 □ 4 万零一到 5 万 □ 5 万零一到 8 万 □
          8 万零一到 10 万 □ 10 万零一到 20 万 □ 20 万以上 □

请大略地估计一下您每周用于食品上的花消约为________________________人民币。
（不含酒类物品）

感谢您的帮助!
Appendix 5.3  Elicitation Questionnaire of TRA

What is advantage of New Product?
What is disadvantage of New Product?
Do you approve New Product?
Are you interested in buying New Product?

What is advantage of healthy food as New Product?
What is disadvantage of healthy food as New Product?
Do you approve healthy food as New Product?
Are you interested in buying healthy food as New Product?

What is advantage of convenience food as New Product?
What is disadvantage of convenience food as New Product?
Do you approve convenience food as New Product?
Are you interested in buying convenience food as New Product?

What is advantage of ethnic food as New Product?
What is disadvantage of ethnic food as New Product?
Do you approve ethnic food as New Product?
Are you interested in buying ethnic food as New Product?
### Appendix 5.4 Result Summary of Elicitation Questionnaire

<table>
<thead>
<tr>
<th>Advan NP (food)</th>
<th>disad NP</th>
<th>approve NP</th>
<th>dissap NP</th>
<th>interst NP</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 more healthy</td>
<td>6 not sure reliability</td>
<td>3 friends</td>
<td>1 friend</td>
<td>3 retailers</td>
</tr>
<tr>
<td>4 quality improved</td>
<td>4 healthy risk</td>
<td>3 family members</td>
<td>1 doctor</td>
<td>3 producers</td>
</tr>
<tr>
<td>2 price reduction</td>
<td>2 pressure fr other companies</td>
<td>1 shopper</td>
<td>1 doctor</td>
<td>2 media</td>
</tr>
<tr>
<td>2 good taste</td>
<td></td>
<td>1 producer</td>
<td></td>
<td>1 doctor</td>
</tr>
<tr>
<td>1 variety</td>
<td>1 lack of familiarity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 leisure</td>
<td>1 no service contract</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 useful</td>
<td>1 expensive price</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>advan healthy</th>
<th>disad healthy</th>
<th>approve hea</th>
<th>dissap hea</th>
<th>interst hea</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 healthy</td>
<td>3 expensive</td>
<td>6 doctors</td>
<td>1 friend</td>
<td>5 producers</td>
</tr>
<tr>
<td>2 nutritional</td>
<td>3 lack of knowledge</td>
<td>3 family m</td>
<td>1 health watch dog</td>
<td>3 doctors</td>
</tr>
<tr>
<td></td>
<td>2 various allergies ingredient</td>
<td>2 friends</td>
<td></td>
<td>1 media</td>
</tr>
<tr>
<td></td>
<td>1 bad taste</td>
<td>2 producer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 no attractive appearance</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>advan conven</th>
<th>disad conven</th>
<th>approve con</th>
<th>dissap con</th>
<th>interst con</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 convenience</td>
<td>7 less healthy</td>
<td>4 friends</td>
<td>3 doctors</td>
<td>3 family</td>
</tr>
<tr>
<td>6 easy &amp; quick</td>
<td>2 need cold storage</td>
<td>4 family</td>
<td></td>
<td>3 friends</td>
</tr>
<tr>
<td>1 tasty</td>
<td>1 over supply</td>
<td>1 producer</td>
<td></td>
<td>2 producer</td>
</tr>
<tr>
<td>1 healthy</td>
<td></td>
<td>1 media</td>
<td></td>
<td>2 retailer</td>
</tr>
<tr>
<td>1 cheap</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>advan ethnic</th>
<th>disad ethnic</th>
<th>approve ethnic</th>
<th>dissap eth</th>
<th>interst eth</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 more choice</td>
<td>4 may not suit to everyone</td>
<td>3 friends</td>
<td>1 doctor</td>
<td>3 family</td>
</tr>
<tr>
<td>6 new taste</td>
<td>1 sensitive</td>
<td>2 family</td>
<td>1 friend</td>
<td>2 friends</td>
</tr>
<tr>
<td>1 healthy</td>
<td>1 too hot</td>
<td>2 media</td>
<td></td>
<td>2 media</td>
</tr>
<tr>
<td></td>
<td>1 oily</td>
<td>2 producers</td>
<td></td>
<td>2 producers</td>
</tr>
<tr>
<td></td>
<td>1 difficult to cook</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Advan NP (food)**: Advantages of the product are noted, with a focus on increased healthiness, quality improvement, price reduction, and good taste.
- **Disadvantages**: Notable disadvantages include lack of reliability, healthy risk, pressure from other companies, and a variety of factors such as less healthy, expensive, doctors, and friends.
- **Approve**: Factors that lead to approval include healthy risk, doctors, friends, and family.
- **Dissap**: Factors that lead to dissatisfaction include lack of familiarity, expensive price, doctors, and friends.
- **Interst**: Interests are noted in the form of various companies, doctors, and friends.
Appendix 5.5  

Pilot study feedback

1 March, 2002 – 16 March, 2002

1. Layout:

1) Original the measurement scale from ‘very positive’ to ‘very negative’, but most people think were used to understanding the way as from ‘negative’ to ‘positive’. Therefore, the new scale is created as from ‘negative’ to ‘positive’.
2) Scale marks were not clear and remarkable in the pilot questionnaire. New scale name is marked on the top of the scale numbers.
3) The format of ‘Q III question and Q V question’ is easy to be skipped.
4) No Instruction. A instruction including ‘what the questionnaire is about, how long to will take to complete, and for what purpose will the responses be used’ should be shown in this questionnaire.
5) ‘Part I’ and ‘part II’ need to be clarified.
6) ‘Group a’ and ‘Group b’ in QVII may need bold.

2. Wording:

A. English Questionnaire:

1) grammar mistake, e.g. 'why you unsatisfied' should be changed into 'why are you satisfied'.
2) ‘NPD’ and ‘TPB’ need to do explanation in full.
3) As seldom respondents knew what is the meaning of ‘functional food’, it need to do some explanation in this questionnaire.
4) Expression of vocabulary: QIII, ‘out of fashion’ may be changed into ‘lack of demand’ and ‘lack of variety’ is much better than ‘existing foods less variety’. Part II, age: ‘34 or above’ is more accurate than ‘below 34 (incl 34)’...
5) QVI,6 section, ‘if you are not sure, guess...’ need to be deleted.
6) Part II, Income column, ‘10001-20000, 20001-30000.....50001+’ should be used instead of ‘10000-20000, 20000-30000.....50000+’
7) ‘Roughly, how much money do you spend on your weekly shopping on food, excluding alcohol and other non-food stuff?’ ---‘eating-out’ need to be excluded as well.

B. Chinese Questionnaire:

Q1:a) Change "对某一公司来讲是新产品" into "其他公司已有的同类产品"
Q1:b) Change "一种更有益健康的食品" into "更有益健康了"
Q4: Change "产品种类" into "多样性"
Q5: Change "对于新产品的如下改变, 你愿意做哪些购买尝试?" into "对于新产品的如下改变, 请标出你愿意做的尝试程度"
Q6: Change "消费者不能确定食品的(健康程度)" into "消费者可能不了解新产品(是否有利于健康)的可靠程度"
3. Analysis:

SPSS programme was used in this pilot study. (measurement: frequency and mean)

4. Comments:

It is not easy to answer this questionnaire. It seems to some people to be very academically orientated. Most people spent around 30 mins in doing this questionnaire, therefore, how to approach the respondents need to be considerate.

On the other hand, gross family income is a sensitive question, so some people did not want to answer it.
Appendix 5.6 Introductory letter to food retailers
Dear Sir/ Madam,

I am conducting postgraduate research on the subject of 'New Product Development in the Food Industry in the U.K and China' in the School of Management Studies for the Service Sector at the University of Surrey. As part of my studies, it is important that I gain responses from those who buy food.

I would like to hand consumers the questionnaire, with a reply-paid envelope, as they leave your store. They will complete the questionnaire at home and send it back to me. We will be offering consumers the opportunity to take part in a prize draw if they complete the questionnaire.

Therefore, I would like to ask your permission to hand out the questionnaires to consumers as they leave your store.

Please find attached a letter confirming my status as a research student. If you need more information, please contact Dr Anita Eves, a Senior Lecturer in Food Management in School of Management Studies for the Service Sector at the University of Surrey on 01483 876337.

Thank you in advance for your help in this study, and I look forward to your reply.

Yours sincerely,

Li Cheng (Miss)
PhD student
School of Management Studies for the Service Sector
University of Surrey
Appendix 5.7  Cover letter of consumer questionnaire

Dear participant,

I am conducting postgraduate research on the subject of 'New Product Development in the Food Industry in the U.K and China' in the School of Management Studies for the Service Sector at the University of Surrey. As part of the study I need to know consumers' views about new food products.

I would be very grateful if you could help me by completing the attached questionnaire and returning it to me in the envelope provided. Any answers you give will be anonymous and used only for the purpose of this research.

As a token of thanks for completing the questionnaire, we will enter you into a prize draw for a £25 voucher of your choice. To be entered into the draw, please complete the slip at the end of this letter and return it with your questionnaire by 30 April. Be assured that the slip and your questionnaire will be separated immediately on receipt and stored apart.

With many thanks in anticipation,

Yours faithfully,

Li Cheng (Miss)
PhD student
School of Management Studies for the Service Sector
University of Surrey

Prize Draw Entry Form

For your chance to be entered into our prize draw for a £25 voucher of your choice, please fill in this slip and return it with your completed questionnaire by 30 April.

Name:

Contact details: (address or telephone number)
Appendix 5.8 Interview Questions

NPD in the Food Industry in Britain and China

Interview main point:

1. Company background
   1) When was your business established?
      Year--------
   2) What is the approximate number of employees currently in your company?
   3) What are the main products or services produced by your business?
   4) What type of organisation / ownership you are? (please circle as appropriate)
      a. Independent
      b. Franchised independent
      c. Chain owned & operates
      d. chain operated by management contract
      e. Others, please specify ------------------------
   5) What position do you hold in your company?--------------------------------------------
   6) How many new products has your company introduced in the last 5 years?
   7) How NPD organised in your company? (please circle as appropriate)
      a. A separated NPD department
      b. internal market research resources
      c. carried out by existing product executive
      d. others, please specify ------------------------
   8) Who takes ultimate responsibility?---------------------------------

2. NPD concept
   1) What form have your new products taken during these 5 years? ( please circle as appropriate)
      a. Distinctly new products
      b. new brand
      c. line extension or product improvement
      d. others, please specify ------------------------
2) Could you give an approximate percentage of your new products during these 5 years in the different categories of new products. (please give the percentage of each category)

a. ---------------- %Completely New Product  
b. ---------------- %Line extension or product improvement  
c. ---------------- %others  

3) What is your current main New Product on the market?  

4) a. How necessary do you think it is to introduce New Food Products into the market:  

b. If necessary, why should products change?  

   Lack of demand  
   To improve convenience  
   To improve 'health'  
   People become bored with existing food  
   Desire to try something new  
   Lack of variety  
   Poor quality of current food  
   Bad taste of some current food  
   High price of current foods  
   Others (please specify).............................  

5) What do you think the consumers needs of New Products?  

6) a. How likely are you to introduce New Products?  

b. What kind of new products are you likely to introduce into the food market? (How likely are you to introduce the following types of new food products)  

   Ethnic foods  
   Natural Foods  
   Convenience foods  
   Functional foods  
   (Food products containing vitamin/dietary supplements that promote health)  

   c. How likely are you to introduce the following kinds of New Products?  

   New brand of a product you currently use  
   New packaging  
   Improved quality  
   Price reduction  
   Healthy version  
   Change of flavour  

7) Did this New Product involved any changes in basic raw material ingredients or other ingredients?  Yes--- or No----
8) Did this New Product involved any changes in processing method, equipment, packaging, or manner of dispensing from packing? Yes---- or No -------

9) Did this New Product permit more efficient use of byproducts from existing processing operations? Yes ---- or No -------

10) Did it permit processing at a lower direct cost than would otherwise be required for an equivalent amount of a similar product? Yes ---- or No -------

11) Please explain any other significant innovative attributes of your New Product.

3. NPD process

1) If we describe the product development process with the following stages:

a. **New product strategy development**: outline goals for new products and define boundaries within which new product can be developed.

b. **Idea generation**: search for new-product ideas that are consistent with the organisation’s objectives.

c. **Screening and evaluation**: reduce those ideas to an attractive, practicable few through screening.

d. **Business analysis**: The surviving ideas are evaluated according to the firm’s requirements for sales, market share, profits and return on investment.

e. **Development**: e.g. build a prototype to achieve a design release for the new product.

f. **Testing**: concern with the use of research techniques to: provide information to reduce risk and improve the odds of success; facilitate the new product introduction process.

g. **Commercialisation**: launch the new product.

Which stages did you apply before starting your new product development? -------------------

Which stage is the most important stage? ----------------------------------------------------------

If this is not the process you followed, can you describe the process that you did follow?
Appendix 5.8

Is this the same for all products? -------------------------------

2) How does the product innovation strategy benefit your company according to the following criteria?
   a. Promote sales
   b. improve company's internal capabilities
   c. access new market
   d. increase profitability
   e. increase size of the company
   f. increase or retain company's customers
   g. others, please specify -----------------------

3) Which types of product innovation do you use?
   a. continued development of existing products
   b. 'first in the field' with a new product
   c. 'follow the leader' with rival products
   d. longer term research into new product ideas
   e. others, please specify ---------------------

4) For your company, what was the source of the idea for the latest new product?
   a. New product survey research conducted by your company, or by external agency or firm on behalf of your company
   b. Discussions with consumers conducted by your company or by an external agency or firm on behalf of your company
   c. Company research and development laboratories
   d. Company sales personnel
   e. Marketing research involving other products, either conducted by your company or by an external agency or firm on behalf of your company
   f. Advertising agency
   g. Trade customers (distributors, retailers, et cetera)
   h. Suppliers
   i. Trade magazines or reports
   j. Consumer magazines or reports
   k. Universities or non-profit research organizations
   l. Outside consultants or market research firms
   m. Government or its agency
n. Competing companies

o. Others, please specify -------------------

5) What distribution channels and what kinds of promotion are used to boost new product sales? How long are new products given before being withdrawn? Please give examples.

4. NPD success

1) What do you think are the main handicaps on your firm in introducing innovative products successfully?
   a. Funding
   b. Lack of expertise
   c. Non-intensive Selling and marketing
   d. Lack of government support
   e. Size of firm
   f. Lack of consumer knowledge
   g. Others, specify ----------------------

2) During the past 5 years, did you have any new products that failed to reach the market or failed in the marketplace? Yes--or No---What is the reason?
   a. difficulties with product design, quality or other product defects were encountered after introduction of the product
   b. development and production costs were higher than anticipated
   c. poor timing; market conditions changed between the time of product conception and to its subsequent introduction to the marketplace
   d. competitors introduced similar or related new products which achieved unanticipated success
   e. insufficient marketing effort was allocated to support introduction of the new product
   f. failure to achieve adequate distribution for the new product
   g. others, please specify ---------
3) What is your success rate of NPD during the last 5 years? (please give the percentage) 
------------------------------------------ %

4) What is the most important thing or aspect for your NPD success?


5. NPD trends

What do you think the main trends of food products will be in the next 10 years?

**Group a**
New brands  
New packaging  
Improved quality  
Attractive appearance  
Lower prices  
Improved flavour  
Increased variety

**Group b**
Ethnic foods  
Convenience foods  
Natural foods  
Functional foods  
‘Healthy’ foods  
Others (please specify)............................

Others (please specify)............................
Appendix 5.9 Interview Questions (Chinese)

访查提纲摘要:

1. 公司背景
   1) 公司建立年代
   2) 现有员工人数
   3) 主要产品及服务
   4) 企业类型（国营、私营、独资、合资等）
   5) 被访人职务
   6) 在过去的五年中贵公司开发了多少新产品
   7) 新产品开发是怎样在贵公司中进行的？有独立的新产品研发部门，内部的市场研究来源，由现有产品负责人开发，其他
   8) 谁最终负有责任？

2. 新产品的概念
   1) 在过去的五年中，你们所开发的新产品是什么形式？（全新的产品，新的品牌，生产线的延伸或是有现有产品的改进，其他）
   2) 您能否给出这五年来所开发的新产品在上何种形式中所占的百分比？
   3) 贵公司现在上市的主要新产品是什么？
   4) 你认为引进新产品上市的必要程度（非常，必要，无所谓，不必要，非常不）如果必要，为什么产品需要改变?
      缺乏需求，
      产品的方便程度需要改进，
      使产品更加有益健康，
      人们对现有产品开始厌恶，
      期望有新的尝试，
      现有食品种类较少，
      现有产品质量差，
      现有产品口味差，
      现有产品价格贵，
      其他（请注明）
   5) 为什么您认为消费者需要新的产品？
   6) 您对开发或引进新产品的态度（非常愿意----------非常不愿意）
   7) 什么种类的新产品贵公司更愿意开发及引进？（域外食品，天然食品，方便食品及功能性食品）
   8) 贵公司更愿意对产品做怎样的改变？

新品牌 新包装 质量改善 价格降低

有益健康的观念 新口味 其他

9) 贵公司的新产品在基本原材料及其他成分上有何改变？
   10) 在加工方法，设备，包装上是否改变？
   11) 新的产品能够提高在现有加工中所产生的副产品的使用效率吗？
   12) 其直接加工成本是否低于以前？
   13) 请讲一下贵公司的新产品的其他改进特性？

3. 新产品开发过程
   1) 如果我们说新产品开发的一般步骤是：
      A. 新产品策略发展：简述新产品目标及明确界定产品发展边际
      B. 创意的产生：寻找与企业目标一致的新产品创意
      C. 审查及评估：通过审查去掉没有吸引力，不切实际的创意
      D. 商业分析：将留下的创意做企业对销售，市场份额，利润及投资回报的需求进行评估
      E. 发展：例如，建立一个标准来更好的推广新产品
      F. 测试：利用研究技术来提供信息以减少风险，提高成功几率，帮助新产品推广
      G. 商业化：发行推广新产品

在你们发展新产品时，你们采取了那些步骤？您能评估一下这些步骤的重要性吗？
如果你们不是按以上步骤，你们是怎样做的？对贵公司的任何产品都一样吗？
Appendix 5.9

2) 依现下标准，产品改进策略对贵公司带来怎样的益处？

促销，改善公司内部容量，接近新的市场，增加利润，扩大企业规模，增加或保留公司客户

3) 您现时的产品改进类型是何？

继续发展现有产品，以一个新产品的初次进入新的领域，随潮流，长期研究

4) 对贵公司而言，什么是您最新产品的信息来源？

A. 贵公司自己内部代理机构或代表贵公司的机构做的新产品市场调查
B. 贵公司自己或内部代理机构或代表贵公司的机构做的与消费者的讨论
C. 公司的研究与发展研究室
D. 公司的销售人员
E. 贵公司自己或内部代理机构或代表贵公司内部的其它产品的市场研究
F. 广告代理
G. 贸易客户（如，零售商）
H. 供应商
I. 贸易杂志或报告
J. 消费者杂志或报告
K. 大学或非盈利研究机构
L. 外面的顾问或市场研究机构
M. 政府或其他代理
N. 竞争公司
O. 其他

5) 在新产品销售的推广中，你们使用什么样的分配渠道，及促销手段？一般新产品的寿命是多久？可以给出例子吗？

4. 新产品发展的成功

1) 您认为什么是贵公司新产品发展成功的障碍？

A. 资金
B. 缺少专家
C. 分散的销售及市场
D. 缺少政府的支持
E. 企业规模
F. 缺乏有关消费者的知识

2) 在过去的五年中，你们有没有经历新产品面市失败或推广失败，原因是什么？

A. 在面市后，发现产品设计，质量缺陷或其它的产品缺陷
B. 发展，生产成本高于期待值
C. 错误的时机：市场环境改变
D. 竞争对手引进了类似的或相关的取得了巨大成功的产品
E. 不充足的市场推广
F. 没有取得足够的新产品分销
G. 其它

1) 在过去的5年中，贵公司的新产品发展成功率是多少？

2) 在如下的观点中，你认为对于新产品的成功的重要性如何？

A. 首先行动者的优势
B. 互补产品的出现
C. 有效的制造能力
D. 品牌及声誉
E. 智力资产的所有权
F. 革新的能力
5. 新产品发展趋势

您认为在未来的十年中，新产品发展的主要趋势是什么？

A 类：

<table>
<thead>
<tr>
<th>新品牌</th>
<th>新包装</th>
<th>改善的质量</th>
</tr>
</thead>
<tbody>
<tr>
<td>有吸引力的外观</td>
<td>低价格</td>
<td>新口味</td>
</tr>
<tr>
<td>多种类，多样性</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B 类：

<table>
<thead>
<tr>
<th>城外食品</th>
</tr>
</thead>
<tbody>
<tr>
<td>方便食品</td>
</tr>
<tr>
<td>天然食品</td>
</tr>
<tr>
<td>功能性食品</td>
</tr>
<tr>
<td>保健食品</td>
</tr>
</tbody>
</table>

其它（请注明）-----------------------------------------------
Appendix 5.10 Short closed-ended questionnaire to some food companies

1. NPD concept

1) What form have your new products taken during these 5 years? (please circle as appropriate)
   a. Distinctly new products
   b. new brand
   c. line extension or product improvement
   d. others, please specify ------------------------

2) Could you give an approximate percentage of your new products during these 5 years in the different categories of new products. (please give the percentage of each category)
   a. %Completely New Product
   b. %Line extension or product improvement
   c. %others

3) What is your current main New Product on the market?

4) a. How necessary do you think it is to introduce New Food Products into the market? (Please circle the appropriate number between 1-5 to reflect your thoughts and feelings)

<table>
<thead>
<tr>
<th>Extremely unnecessary</th>
<th>Unnecessary</th>
<th>Neutral</th>
<th>Necessary</th>
<th>Extremely necessary</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

   b. If necessary, why should products change? The scale ranges from 'strongly disagree'(1) to 'strongly agree'(5)

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of demand</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>To improve convenience</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>To improve 'health'</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>People become bored with existing food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Desire to try something new</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Lack of variety</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Poor quality of current food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Bad taste of some current food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>High price of current foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Others (please specify)</td>
<td>..........................</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5) What do you think the consumers needs of New Products?

6) a. How likely are you to introduce New Products?  

<table>
<thead>
<tr>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

   b. How likely are you to introduce the following types of new food products

<table>
<thead>
<tr>
<th>Ethnic foods</th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Natural Foods</th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Convenience foods</th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Functional foods</th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix 5.10

Li Cheng

( Food products containing vitamin/dietary supplements that promote health )

c. How likely are you to introduce the following kinds of New Products?

<table>
<thead>
<tr>
<th>Kind of New Product</th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>New brand of a product you currently use</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>New packaging</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Improved quality</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Price reduction</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Healthy version</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Change of flavour</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

2. NPD Process

1) How does the product innovation strategy benefit your company according to the following criteria? (please circle as appropriate)
   a. Promote sales
   b. improve company’s internal capabilities
   c. access new market
   d. increase profitability
   e. increase size of the company
   f. increase or retain company’s customers
   g. others, please specify ------------------------

2) Which types of product innovation do you use? (please circle as appropriate)
   a. continued development of existing products
   b. ‘first in the field’ with a new product
   c. ‘follow the leader’ with rival products
   d. longer term research into new product ideas
   e. others, please specify ---------------------

3) For your company, what was the source of the idea for the latest new product? (please circle as appropriate)
   a. New product survey research conducted by your company, or by external agency or firm on behalf of your company
   b. Discussions with consumers conducted by your company or by an external agency or firm on behalf of your company
   c. Company research and development laboratories
   d. Company sales personnel
   e. Marketing research involving other products, either conducted by your company or by an external agency or firm on behalf of your company
f. Advertising agency  
g. Trade customers (distributors, retailers, et cetera)  
h. Suppliers  
i. Trade magazines or reports  
j. Consumer magazines or reports  
k. Universities or non-profit research organizations  
l. Outside consultants or market research firms  
m. Government or its agency  
n. Competing companies  
o. Others, please specify  

3. NPD success  
1) **What do you think are the main handicaps on your firm in introducing innovative products successfully?** (please circle as appropriate)  
   a. Funding  
   b. Lack of expertise  
   c. Non-intensive selling and marketing  
   d. Lack of government support  
   e. Size of firm  
   f. Lack of consumer knowledge  
   g. Others, specify  

2) **During the past 5 years, did you have any new products that failed to reach the market or failed in the marketplace?** Yes--or No---What is the reason? (please circle as appropriate)  
   a. difficulties with product design, quality or other product defects were encountered after introduction of the product  
   b. development and production costs were higher than anticipated  
   c. poor timing; market conditions changed between the time of product conception and to its subsequent introduction to the marketplace  
   d. competitors introduced similar or related new products which achieved unanticipated success  
   e. insufficient marketing effort was allocated to support introduction of the new product  
   f. failure to achieve adequate distribution for the new product  
   g. others, please specify  

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4. NPD trends

What do you think the main trends of food products will be in the next 10 years?
(Please circle the appropriate number between 1-5 to reflect your thoughts and feelings)

<table>
<thead>
<tr>
<th>Group a</th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>New brands</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>New packaging</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Improved quality</td>
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<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Attractive appearance</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Lower prices</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Improved flavour</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Increased variety</td>
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<th>Natural foods</th>
<th>Functional foods</th>
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<tr>
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Appendix 5.11 Letter to the Food Industry (From Student)

Dear Sir /Madam,

I am conducting postgraduate research on the subject of 'New Product Development in the Food Industry in the U.K. and China' in the School of Management Studies at the University of Surrey. As part of my study I wish to compare the views of key persons in R & D departments in the U.K. and China. I have already completed the Chinese part of the study. I am writing to ask you, or a nominated colleague, to assist with any studies by taking part in an interview.

The discussion will be centred on the new product concept, the NPD process, NPD success and trends. A series of questions will be employed to ensure a level of comparison between interviews, but any additional information, thoughts or ideas would be greatly appreciated.

It would be most helpful if I could meet with someone who is in a position related to your NPD. Although I would like to conduct interviews in person, if this is not convenient for you, I may conduct this survey by e-mail or telephone. Interviews would take between 30 minutes and 1 hour. If you were unable to help me I would be grateful if you could pass this on to a suitable colleague.

I must stress that I am conducting this research in such a way that all information derived from the interviews will be treated in strict confidence and no individual or company will be referred to in the thesis.

Due to limits on both time and finance, I will conduct my interviews only from 1st November 2002 to the beginning of January 2003. I do hope this will be convenient for you and I would be most grateful if we could meet as soon as your convenience.

I would like to thank you for any help you are able to give me and look forward to hearing from you soon.

Yours faithfully,

Li Cheng

Ph.D. Student
School of Management Studies
University of Surrey
Guildford, Surrey

GU2 7XH
Appendix 5.12 (a, b) Letters to the food industry (from school)
To whom it may concern,

RE: Miss L. Cheng B.Sc. M.Sc.

I write to confirm that Miss Li Cheng is a university sponsored doctoral research student, currently studying in the School of Management Studies for the Service Sector, at the University of Surrey. Her Ph.D. research is in the area of 'New Product Development in the Food Industry in the U.K. and China', looking both at the process of new product development and the drivers/need for it. As part of her study, she needs to interview R&D directors or senior managers of major food companies, to gain an understanding of how they approach new product development. All interviews will be strictly confidential, and no individual or company will ever be mentioned by name in either the thesis or any publications arising from it. In addition, the interviewee can elect not to answer individual questions if they feel that they are not able to give that information.

Whilst I fully appreciate how busy Senior Executives are, I would be grateful if you could agree to see Miss Cheng to help her with her research, and thus assist in the successful completion of her studies.

Yours faithfully,

Dr Anita Eves (BS.C. Ph.D.)

Senior Lecturer in Food Science
School of Management Studies for the Service Sector
University of Surrey
TO WHOM IT MAY CONCERN

24 October, 2002

Re: Ms Li Cheng

This letter is to introduce Ms Cheng and confirm that she is a full-time student in the School of Management at the University of Surrey reading for a PhD degree. Her course commenced in October 2000 and we expect her to complete by September 2003.

Her research is focusing on new food product development in the UK and China. Any assistance you can provide with her investigation into this topic would be greatly appreciated.

Dr Anita Eves
Research Supervisor
Appendix 5.13 Example of Interview Transcript (British Food Industry)

**Company:** WXXXXX INTERNATIONAL

**Interviewee:** Mr. N. P, National Account Manager

**Date:** 1.14.2002, 200pm to 400pm

CL: Good afternoon, Mr. P! This is Li from University of Surrey. I e-mailed you last week about my research-'New Product Development in the food industry in China and U.K. Thank you for your reply.

NP: You are welcome!

CL: Shall we have a talk now?

NP: Ok!

CL: Before we start, I have a requirement. As after our conversation, I need to sort the ideas from our conversation, would you mind I record our conversation?

NP: Never mind.

CL: Thanks, Let's start. My first question is when was your business established?

NP: It was established 35 years ago.

CL: What is the approximate number of employees currently in your company?

NP: Ah... about 3000 employees.

CL: 3000? It is a big company!

NP: Yes!

CL: What are the main products or services produced by your company?

NP: We are a giant poultry manufacturer. We supply the likes of Burger King throughout Europe, Sainsburys in the U.K. and many more...
CL: Oh, I also want to know what type of organisation or ownership you are?

NP: We are family owned company.

CL: How many new products has your company introduced in the last 5 years?

NP: We...Ah, have a continuing NPD program, developing propose, retail , a food service marketing...Generally,... develop a new product, all together. We...I would say... Ah.... Probably, I do not know...Mun.. It is about 40 to 50 products, forty-something like this.

CL: Muu...It is difficult to estimate...How NPD organised in your company?

NP: We have a separated NPD department.

CL: Who takes ultimate responsibility?

NP: Product executive.

CL: My next question is about your new product concept. What form have your new products taken during these five years? I give you four choice: the first is distinctly new products; the second is new brand, the third is line extension or product improvement. The last one is any other concept do you think?

NP: Ah.. It would be choice one and three.

CL: Would mind to give me the percentage of each group?

NP: Ok! I would say ...It is something like 80% is completely new products, 20% is product improvement, May be, 90% is the first one , Mmm...10% is improving existing product.

CL: So you have a quite large number of totally new products?

NP: Yes.

CL: Now, what is your current main new product on the market?
NP: Current new product on the market? ... We have just produced for the U.K. market a product which is... (I fund you asked me a very good question) a firmed, reformed butterfly chicken breast.

CL: Thank you! How necessary do you think it is to introduce New food products into the market?

NP: Very necessary.

CL: Very? Why? Why should products change? What do you think?

NP: Why should they change?

CL: Yes.

NP: Keep the new interests, and to generate new interest to the public and keep people to spend money on the categories on the products. Otherwise, the people become bored... with same thing.

CL: Yes, What do you think the consumer needs of new products?

NP: What do they need?

CL: Yes.

NP: They are looking for new flavour, Ann... New ideas, new receipts, Mmm..They are looking for new concept, a reduction of cost as well. People looking for healthy product as well.

CL: How likely are you to introduce new product?

NP: Very.

CL: Now, I m grouping four categories of food. I want to know which group of food are you likely to introduce as your new products? The first one is ethnic food.

NP: Ethnic food? Not really! Oh, I am talking about the whole company, we may like...
CL: But for you point of view, not really?

NP: Not really.

CL: How about natural food?

NP: Natural food, Yes, It is likely, very likely!

CL: Convenience food?

NP: Yes, Likely!

CL: How about functional food?

NP: What do you mean functional food?

CL: Functional food is about food products which are containing Vitamin or dietary supplements that promote health.

NP: Ok, Yes... Mmm, for our company? ...not so likely.

CL: Oh, I also want to know how likely are to introduce the following kinds of new products, like new brand? Are you likely to introduce new brand to the market?

NP: No.

CL: New packaging?

NP: Yes, quite likely!

CL: Improved quality?

NP: Yes, we are looking for improved product quality.

CL: How about price?

NP: Depend on... the product. If people like some natural product or a commodity product, the demand is high, then the price will be up... Ann... then ...when the demand drops, the more products around, the price goes down... then everybody follows, you are in the same... So, I mean, with commodity product price, depends on the market demand.
CL: How about healthy version? And flavour change?

NP: Healthy version, well, I Mean, we are chicken company, quite healthy products we produced. Now, we would not look for producing more healthy one... (smile) Other companies may want to produce more healthy products. Flavour? No.

CL: Are you producing any new products?

NP: Yes.

CL: So, the flavour has not changed?

NP: No.

CL: Ok, let's go to the next question.

NP: Ok.

CL: Did your new products involved any changes in basic raw material ingredients or other ingredients?

NP: Mmm... Quite interesting question...(Smile) Every company makes some changes to ingredients. We have small amount of change, but no chemical added, no artificial, only improved, like spicy meat.

CL: Did them involved any changes in processing method, equipment, packaging, or manner of dispensing from packing?

NP: Yes, we do have changes. We are looking for alternative packing and we sometimes are looking for new facilities...Yes, we did.

CL: Did it permit more efficient use of by product from processing operation?

NP: Yes.

CL: Did it permit processing at a lower direct cost than would otherwise be required for an equivalent amount of a similar product?

NP: Mmm...Yes, but it depends on the machine, if it is efficient.
CL: Do they have any other significant innovative attribute?

NP: No.

CL: This question is about your NPD process. If we describe the product development process with the following stages:

a. *New product strategy development*: outline goals for new products and define boundaries within which new product can be developed.

b. *Idea generation*: search for new-product ideas that are consistent with the organisation's objectives.

c. *Screening and evaluation*: reduce those ideas to an attractive, practicable few through screening.

d. *Business analysis*: The surviving ideas are evaluated according to the firm's requirements for sales, market share, profits and return on investment.

e. *Development*: e.g. build a prototype to achieve a design release for the new product.

f. *Testing*: concern with the use of research techniques to: provide information to reduce risk and improve the odds of success; facilitate the new product introduction process.

g. *Commercialisation*: launch the new product.

Do you follow these steps?

NP: Would you repeat it?

CL: Yes. (repeated it more clearly and slowly)

NP: It depends what sort of product we are looking for here. Our products, for the U.K., we have been..., We talk with customers what they want, make a specific (one) for them. Mmm... We standard our NPD staff. I need to speak
to NPD person, just NPD only. NPD worked from their knowledge. They
market for the similar product produced, and they will produce some
sample, and screening. A testing panel... and from that point, take a product
analysis..... and then, they take a product trial and from product trial they make
a certainty quality product and give to sales person to show the customers to
see if they like, then they get response. If they got positive responses, then
the product will be launched. If negative, then the product will be dropped.
Mainly, it followed your basic stages.
CL: Oh, which stage do you think is the most important stage?
NP: The feedback from the customers stage is more important. Listen to the
customers feedback and you know what is important to the market. I mean
that everything is important for the whole process, but the beginning and the
end are more important for marketing and launch a new product.
CL: Is this the same for all new products?
NP: It depends... Mainly, it does follow the same process.
CL: How does the product innovation strategy benefit your company
according to the following criteria. I have six criteria as follows:
Does it promote sales?
NP: Yes.
CL: Does it improve company's internal capabilities?
NP: Yes.
CL: Does it access new market?
NP: Yes.
CL: Does it increase profitability?
NP: Yes.
CL: Does it increase size of the company?
NP: Oh... Yes.
CL: Does it increase or retain company's customers?
NP: Oh, Yes!
CL: Any others?
NP: It provides us new customers. You know, the public is always interested in something improved. If you have strong NPD, you can show them your innovative new products to attract the public.
CL: Which types of product innovation do you use? Here I have four choices. I think the first two choices you have mentioned in our previous talk, but I still want to repeat them to make sure. They are 'continued development of existing products' and 'first in the field' with a new product'.
NP: Yes, we do.
CL: the third one is "follow the leader' with rival products'.
NP: Yes.
CL: Do you have a longer term research into new product ideas?
NP: No. I would say...So, so.
CL: For your company, what was the source of the idea for the latest new products?
NP: It was....I think from production director...and ...he have idea about the product.
CL: Do you have a New product survey research conducted by your company, or by external agency or firm on behalf of your company?
NP: No.
CL: Do you make discussions with consumers conducted by your company or by an external agency or firm on behalf of your company?
NP: Yes, we do.
CL: Do you have company research and development laboratories?
NP: Yes.
CL: Do you get some information from Company sales personnel?
NP: Yes.
CL: Do you get the new product information from Marketing research involving other products, either conducted by your company or by an external agency or firm on behalf of your company?
NP: Yes.
CL: How about Advertising agency?
NP: No.
CL: Trade customers?
NP: Yes.
CL: Suppliers?
NP: Yes, possibly!
CL: Trade magazines or reports?
NP: NO.
CL: Consumer magazines or reports?
NP: No.
CL: Universities or non-profit research organizations?
NP: No.
CL: Outside consultants or market research firms?
NP: No.
CL: Government or its agency?
NP: No.

CL: Competing companies?
NP: Yes, sometimes.

CL: Any others?
NP: No.

CL: What distribution channels and what kinds of promotion are used to boost new product sales? How long are new products given before being withdrawn? Please give examples.
NP: When you say distribution channel, you mean...
CL: Wholesale or retail like that...
NP: We are manufacture. The distribution channels are both, direct to the customers which we have our own sale, and we used the third party as well. We also use..., in our foodservice market, we also go through wholesale. So it would be both. 90% direct delivery, 10% wholesale.
CL: How about your promotion?
NP: Different types. They would be advertising, exhibition, reduction of price or something similar.
CL: How long are new products given before being withdrawn?
NP: All right, it depends...(Change type side)
The second type side:
NP: from six months to a year or longer.
CL: Ok. The following questions are about NPD success. What do you think are the main handicaps on your company in introducing new products successfully?
NP: I would say that it is ... Ann... the biggest difficulty is to try to find a new idea. It is hard to find a new flavour that people would be quite interested in it.

CL: Do you have enough funding?

NP: Yes.

CL: Do you think that lack of expertise should be one of the difficulties?

NP: I don't think it is.

CL: Non-intensive selling or marketing?

NP: I don't think so.

CL: How about Lack of government support or Size of firm?

NP: Neither of them.

CL: Lack of consumer knowledge?

NP: May be.

CL: During the past five years, did you have any new products that failed to reach the market or failed in the marketplace?

NP: Yes, Let me think...

CL: What is the reason?

NP: Yes. we developed a new product, which was failed to the market, or it could not reach the end market, as it is more expensive than we anticipated. It is too expensive, the customers would not buy it. Another example is that we produced a new flavour chicken product. The flavour was not quite right for the market. We tried to launch it for two markets. For the polish market, it was quite popular, and we thought it would be successful to launch it in the U.K. market, but the flavour was not quite right. It was too sweet....'

CL: Does it mean that you did not do sufficient marketing research?
NP: We did do sufficient marketing research, I mean, sorry, .. We could not actually launch it into the market. We just in the trail stage, a testing period. We want to launch it, but when took some samples to our customers in the testing. They did not like it. Then, we had to drop it. We would not try.

CL: I see. Would you mind to give me your NPD success rate during the past five years?

NP: It was good. I would not know the exact rate, but very good. I probably say, I am guessing 5% new ideas have been launched.

CL: What is the most important thing for your NPD success?

NP: Listen to customers. Listen to what they want.

CL: Do you mean the information from customers?

NP: Yes. It is so important. I think so.

CL: My last question is about the NPD trends. What do you think the main trends of food new products will be in the next ten years?

NP: In my business?

CL: Mmm..

NP: It would always be raw chicken, commodity products like chillier, frozen...

CL: In general, I grouped two groups of products as follows. Will they be the main trends for the new products? Like new brand, new packaging, improved quality, attractive appearance, lower price, improved flavour, more variety?

NP: I would say new variety, new packaging and new flavour.

CL: The second group foods are ethnic food...?

NP: Ethnic food? I am not sure.

CL: How about convenience food?

NP: I would say yes.
CL: natural food? and functional food?

NP: They are growing. I mean yes.

CL: Healthy food?

NP: Yes, it will be!

CL: That is all. Thank you for your help. Thank you very much!

NP: You are welcome.

CL: If you have any questions about my research, you can contact me.

NP: Ok.
Appendix 5.14 Example of Interview Transcript (Chinese Food Industry Part)

访查中国食品企业新产品开发访问记录
采访食品公司：北京XX食品公司
时间：2002年7月10日
地点：研发经理办公室
被访人：研发经理，王XX
C—采访者，W—被访人
C:嗨，你好！王XX！我在做一个有关中，英两国食品新产品开发的一个课题，XX(生产总监)已经同你们讲过有关我的课题的事情吧，这次，我想问你一些有关你的研发过程，新产品的概念，产品趋势的一些问题。
W:问吧，我尽可能的回答你
C:谢谢！
C:我的第一部分问题是有关你们公司的一些背景资料，你们公司的建立年代，现有员工人数，还有主要产品及服务。
W:我们(北京公司)是1993年建立的，现有正式员工大约250人吧。主要产品是酸奶及乳制品。
C:XX是什么样的企业类型？独资还是合资？
W:合资的。
C:在过去的5年中，贵公司开发了多少新产品？
W:这个种类比较难估算，在过去的几年中，我们的新产品有布丁，"SNACK"，"SPOON BALL"，"UNMELTED CHEESE"奇妙奶...还有不同的酸奶，如"覆盆子"，"芦荟果粒"等等。
C:那新产品的开发是怎样在贵公司进行的呢？
W:我们有独立的研发部门，还备有内部的市场研究来源，或者有现有的产品负责人来开发，等等？谁最终负有责任？
C:在过去的5年中，你们所开发的新产品是何种形式的？例如，完全新的，新品牌，还是生产线的延伸或是对现有产品的改进？
W:大部分是对现有产品的改进或是生产线的延伸。
C:你能给出这种形式的百分比吗？
W:完全新的...占大约4%吧，其他都是改进的。
C:贵公司现在上市的主要新产品是什么？
W:我们目前的新产品主要是酸奶，兰梅口味的，有一种螺旋藻保健性酸奶，这两种是我们的新产品，因为我们的主要产品是酸奶。而北京有我们的很大的市场，可以这么说，自70年代酸奶进入北京，北京现已成为全国最大的酸奶消费城市，所以，我们主要在酸奶上进行改进。另外，我们还为（黄河以北）的麦当劳提供乳制品。
C: 你认为引进新产品上市必要吗？

W: 必要。

C: 为什么产品需要改变？

W: 主要是消费者，我们是依照消费者的需要而改变的，消费者对现有产品厌倦了，
愿意尝试新的产品，而且，现在对消费者来讲，诱惑很多。

C: 你认为消费者需要什么样的新产品呢？

W: 新的，有吸引力的，健康的，有专门职能的产品。

C: 你对开发引进新产品的态度如何呢？

W: 非常愿意。

C: 你们对什么种类的产品更愿意开发引进呢？例如，域外食品，方便食品，天然食品，
保健食品和功能性食品？

W: 天然食品和功能性食品这方面要求较强。

C: 你愿意对产品如下方面进行改变么？如，新品牌，新口味，新包装，低价格，健康的视觉效果等等？

W: 这些都是我们想做的，其中我们愿意做的改进是，降低成本，使产品更有益健康，
还有就是提供新的口味。

C: 贵公司的新产品在基本原料上或其他成分上有何改变？

W: 有一些，如菌种，稳定剂不变，口味原料改变，因为中国消费者对口味和价格的改变比较敏感。

C: 那在加工方法，设备，包装上是否改变呢？

W: 包装会变，例如有8色，有6色。

C: 新的产品能够提高在现有加工中所产生的副产品的使用效率吗？

W: 有改变，例如我们最近为了降低成本，提高效益，把制作干酪时的副产品——
乳清，制成奇妙奶，非常好销。

C: 其直接加工成本是否低于以前？

W: 是的。你知道'VMC'么？指原料成本变化对价格非常敏感。

我们利用开发此类新产品吸引市场，促进销量。

C: 请讲一下贵公司的新产品有什么其他改变特性？

W: 品质，相当重要。现在市场上有3种层次的酸乳，（盒的，杯的，袋的）满足不同层次的消费者需求。

我们KARFT是北京最大的开装酸乳生产厂。

C: 我这个问题是关于你们研发过程的，如果我们说新产品的开发一般步骤是：A. 新产品策略发展，
B. 创意的产生；C. 审查级评估；D. 商业分析；E. 发展；F. 测试；G. 商业化，
你们在发展新产品时，采取了哪些步骤？您能评估一下这些步骤的重要性么？

W: 基本上差不多， 一般来讲， 我们先进行市场调研。

外部市场调研很规范，现有市场部请调研公司分成社区调研。 主要用问卷， 访谈的形式，
出思路， 然后分析， 之后， 把思路交给研发部。 我们自己在实验室试验，改进，
Appendix 5.14  

Li Cheng

发展。进行评估，反复评估，试验，看是否能上市。大的可以对外评估，小的在厂内评估，如 60 人的评估组，对品质，色泽，甜度打分。
我们也做三角实验，等等。在手段上，有趋势改进，有原料成分改进。
每月亚太地区统一开新产品会议。总裁，研发，市场，采购有关人员参会。
鉴定新产品，明确目标，责任到人。然后进行新产品研发推广，上市计划，如上市时间，手段，现状如何，实验室工作，包装，设计等。然后，下月检查执行情况。
C：您觉得哪一步重要呢？
W：前期（市场调研），前期工作越细，对后面的工作越有帮助。
C：所有产品都是一样的吗？
W：差不多吧！
C：现有标准，产品改进策略给贵公司带来怎样的益处？促销，改善公司内部容量，接近新的市场，增加利润，扩大企业规模，增加或保留公司客户？
W：新的市场，还有增加利润扩大市场。
C：您现在的产品改进类型是何？继续发展现有产品，以一个新产品初次进入新的领域，随潮流，长期研究？
W：继续发展现有产品。
C：你们新产品的消息来源是什么？
W：调研公司做调查，还有就是与消费者讨论，一些信息是我们的供应商那得到的。
还有就是国际会议，展览。每年 4 月有个国际配料会议，有讲座，信息很多。
C：在新产品销售的推广中，你们使用什么样的分配渠道，及促销手段？一般新产品的寿命是多久？可以给出例子吗？
W：批发。我们有自己的销售网，有批发商，有的直接批发给超市，促销主要是广告，电视广告。还有市场上的推广。一般寿命难说，大约 2 年？有 30% 的增长率吧！其他的... 酸乳比较稳定，一年四季都有需求，所以新产品的寿命不太好说。
C：您认为什么是贵公司新产品发展成功的障碍？例如：资金，缺少专家，分散的销售及市场，缺少政府的支持，企业规模，缺乏有关消费者的知识？
W：都不是。嗯... 消费者知识还是需要的吧！可能。
因为我们缺少直接同消费者接触的机会，缺少直接从消费者那来的消息来源。其实，主要障碍是时间，时间太紧，以至于工作程度做得不够。
C：在过去的五年中，你们有没有经历新产品面市失败或推广失败，原因是什么？
W：有，主要是市场定位不好，供大于求，例如：2，3 月份，我们曾上市了 TOFFE E 奶，定位于儿童，结果供大于求，这个算失败了！成本也比预计的高，没有取得足够的市场分销也是吧。
C：成功率是多少？
Appendix 5.14  
Li Cheng

W：挺高的！ 大约 80%。

C：你认为什么使促成新产品成功的关键因素？

W：有效的创造力。最重要的是看产品是否迎合消费者的需求。例如我们现在卖的挺好的芦荟果粒酸奶就迎合了消费者的健康需求。

C：你认为在未来的 10 年中，食品的发展趋势是什么？例如：新品牌 新包装 改善的质量有吸引力的外观 低价格 新口味 多种类 多样性？

W：改善质量最重要，低价格不太可能。其它的都有可能。

C：对于海外食品，方便食品，天然食品，功能性食品和保健食品的发展呢？

W：都会有发展。其中，天然食品一定会的，因为它迎合了（消费者）更健康，更环保的需求。

C：我的问题就这么多，好，非常感谢您！

W：不客气！
Appendix 5.15 English Translation Copy of the Chinese Transcript

(Appendix 5.14)

Company: Beijing XX Food

Interviewee: Mr. Wang XX, NPD Manager

Date: 10.07.2002, 200pm to 400pm

Place: NPD Manager's Office

C—interviewer    W—interviewee

C: Hi, Good afternoon, Mr XX, I am conducting postgraduate research on the subject of 'New Product Development in the Food Industry in the U.K. and China'. I think that XXX (production director) had told you my topic before. This time, I want to ask you some questions on your new product concept, NPD process, success and trends.

W: Ok, I will try my best (to answer you).

C: Thank you!

C: The first part of my questions is about your company's background, such as when was your business established? What is the approximate number of employees currently in your company? What are the main products or services produced by your company?

W: we (Beijing division) established the business in 1993. We have about 250 employees and our main products are yoghurt and dairy products.

C: What type of organisation or ownership you are?

W: Joint venture.

C: How many new products has your company introduced in the last 5 years?

W: It is difficult to count..., in the past a few years, we have some new products, such as (Milk) budding, snack, spoon ball, un-melted cheese, other milk products and different kind of yoghurt.
C: How NPD organised in your company? Who takes ultimate responsibility?

W: We have our independent NPD department, and sometimes, we have some internal and external market research resources. Additionally, external market research is important. NPD manager takes ultimate responsibility.

C: My next question is about your new product concept. What form have your new products taken during these five years? I give you four choice: the first is distinctly new products; the second is new brand, the third is line extension or product improvement. The last one is any other concept do you think?

W: The majority is ‘improvement products’ or ‘line extensions’.

C: Would you mind to give the percentage of your new product types?

W: The percentage of completely new product is about 4%, others are product improvement or line extensions.

C: What is your current main new product on the market?

W: Our current new products are xx flavour yoghurt and XX healthy yoghurt. Because our main products are yoghurt, and we have a huge market in Beijing. Beijing now has become the biggest yoghurt consumed market in China, since 1970’s. Thus, our main product innovation is for yoghurt. Moreover, we are also providing dairy products to McDonald (from Yellow river to northern China).

C: How necessary do you think it is to introduce New food products into the market?

W: Very necessary.

C: Why should products change? What do you think?

W: We are based on consumer’s demand to change. Consumers are bored with current products and desire to try something new.
C: What do you think the consumer needs of new products?
C: How likely are you to introduce new product?
W: Very likely!
C: I'm grouping four categories of food, such as ethnic foods, convenience foods, natural foods, healthy foods and functional foods. I want to know which group of food are you likely to introduce as your new products?
W: the demands for natural foods and functional (or healthy) food are very strong.
C: Oh, I also want to know how likely are to introduce the following kinds of new products, such as new brand, new flavour, new package, low price and healthy version? Are you likely to introduce new brand to the market?
W: All of them are that we want to introduce, but we are more likely to reduce cost, produce more healthy products and provide more new flavour.
C: Did your new products involved any changes in basic raw material ingredients or other ingredients?
W: Yes, basic ingredients have not been changed, but ingredients for taste have been changed, because Chinese consumers are more sensitive to the change of price and taste.
C: Did them involved any changes in processing method, equipment, packaging, or manner of dispensing from packing?
W: Package has been changed, for example, eight-colour or six-colour.
C: Did it permit more efficient use of by product from processing operation?
W: Yes. For example, recently, in order to reduce cost, we have used the by-product from cheese to make a new dairy drink. It is very popular in the market.

C: Did it permit processing at a lower direct cost than would otherwise be required for an equivalent amount of a similar product?

W: Yes. Do you know 'VMC', It is said that the change of material cost is sensitive to product price.

C: Do they have any other significant innovative attribute?

W: Quality—it is very important. There three kinds of yoghurt in current market (in box, in cup and in plastic bag) to meet different consumer's demands. We are the biggest yoghurt (in cup) factory in Beijing.

C: This question is about your NPD process, If we describe the product development process with the following stages:

a. *New product strategy development*: outline goals for new products and define boundaries within which new product can be developed.

b. *Idea generation*: search for new-product ideas that are consistent with the organisation's objectives.

c. *Screening and evaluation*: reduce those ideas to an attractive, practicable few through screening.

d. *Business analysis*: The surviving ideas are evaluated according to the firm's requirements for sales, market share, profits and return on investment.

e. *Development*: e.g. build a prototype to achieve a design release for the new product.
f. **Testing**: concern with the use of research techniques to: provide
   - information to reduce risk and improve the odds of success; facilitate the
   - new product introduction process.

g. **Commercialisation**: launch the new product

Do you follow these steps?

W: Yes, basically. Generally, Marketing contributes to new product
   concepts/ideas and product definition/specification. R & D people use these
   contributions to create prototypes, and develop it by reducing the number of
   experimental formulation and increase the chances that the new product will
   finally be accepted by the food market. Technical people produce the samples
   for testing and provide their suggestion to R & D. R & D considers these
   views, and use knowledge of the existing products and production process in
   its NPD process from both internal and external. Then, we make test trials
   both technology and marketing. After that, new products will be launched by
   commercialisation. For example, generally, we do market research at first.
   Because external market research agency is very sophisticated. Sometimes,
   our marketing department invites them to do the research, mainly by
   questionnaire or interviews to make out some idea and then do analysis.
   Then, They give us the result (e.g. ideas), we make sample in our lab, then
   improvement, evaluation, then again and again, evaluation, test.... to see if
   the new product can be launch. For some big projects, we do outside
   evaluation, but for small ones, we do our internal evaluation. We have a-sixty-
   people panel to evaluate new products, by sensory evaluation. We also do
   some triangle-test and so on. There are some product tendency innovation
   and some ingredient innovation.
Every month, we have a new product conference around Asia-Pacific area. Our president, R & D personnel, (including marketing personnel), procurement personnel and other NPD relevant personnel attend the meeting. The aim of the meeting is to identify new products and new objectives, to make plans to new product launch including launch time, promotion, lab work, package, design and so on. The next month will check the launch procedure.

C: Oh, which stage do you think is the most important stage?
W: The early stages (market research). The more refined previous NPD stages, the better NPD results.

C: Is this the same for all new products?
W: Almost.

C: How does the product innovation strategy benefit your company according to the following criteria. I have six criteria as follows:
Does it promotes sales, improves company's internal capabilities, accesses new market, increases profitability, increases size of the company, increases or retains company's customers or any others?
W: Accessing new market and increasing profits and markets.

C: Which types of product innovation do you use? Here I have four choices. They are 'continued development of existing products', 'first in the field with a new product', 'follow the leader' with rival products and 'longer term research into new product ideas'.
W: 'continued development of existing products'.

C: For your company, what was the source of the idea for the latest new products?
W: market research from a external research company and discussion with consumers. We got some information from our suppliers. International conference and exhibitions would give us much information. For example, every April, there is a international food ingredient conference. There are some lectures and workshops during the conference.

C: What distribution channels and what kinds of promotion are used to boost new product sales?

W: Wholesale. We have our retail-net. Our promotions mainly are advertisement (TV), and in-store promotion.

C: How long are new products given before being withdrawn? Please give examples.

W: Hardly to say. About two years? We have 30% increase rate! We provide yoghurt around whole year. It is not easy to say.

C: Ok. The following questions are about NPD success. What do you think are the main handicaps on your company in introducing new products successfully? Such as Funding, Lack of expertise, Non-intensive Selling and marketing, Lack of government support, Size of firm, and Lack of consumer knowledge.

W: None of them. Oh, Probably... Lack of consumer knowledge..., because we lack of opportunity to contact our consumers directly... lack of direct information channel from consumers. In fact, I think that the biggest handicap is time. Tight time always causes a rough work.

C: During the past five years, did you have any new products that failed to reach the market or failed in the marketplace?

W: Yes.

C: What is the reason?
W: Mainly because of poor market research. Supply more than requirement. For example, This February and March, We have launched a toffee milk, our target consumers are children, but we failed to catch the market, as 'the supply was more than the requirement'. The cost was also higher than our anticipated (cost). In addition, we could not get enough distribution channel.

C: Would you mind to give me your NPD success rate during the past five years?

W: Fairy high! About 80%.

C: What is the most important thing for your NPD success?

W: Efficient manufacturing capabilities! The most important thing is to see if new products meet consumer's demand. For example, our current new product xx yoghurt is quite popular in the market, because it meets consumer's demand for healthy eating.

C: What do you think the main trends of food products will be in the next 10 years? Such as New brands, New packaging, Improved quality, Attractive appearance, Lower prices, Improved flavour, and Increased variety.

W: All of them are likely, except lower prices. Additionally, 'improved quality' is very likely.

C: How about ethnic foods, convenience foods, natural foods, functional foods and healthy foods?

W: All are likely, and natural foods are very likely! As it meets consumer's demands for more healthy.

C: That is it! Thank you very much!

W: My pleasure.
## Appendix 5.16 Coding Scheme for Interviews

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<th>Dimensions</th>
<th>Attributes</th>
<th>Code</th>
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<td>Others</td>
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<td>Consumer magazine or report</td>
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**NPD Success**

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</tr>
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<td>Non-intensive selling</td>
<td>Handica 3</td>
</tr>
<tr>
<td>Lack of government support</td>
<td>Handica 4</td>
</tr>
<tr>
<td>Size of firm</td>
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</tr>
<tr>
<td>Lack of consumer knowledge</td>
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<td>Others</td>
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**Reason for NPD failed**

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<td>High cost</td>
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<td>Strong Competitors</td>
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<td>Insufficient Marketing research</td>
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<td>Insufficient distribution</td>
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<td>Others</td>
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**NPD Trends**

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<td>Likely</td>
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</tr>
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<td>Natural foods</td>
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<tr>
<td>Unlikely</td>
<td>TrendN 2</td>
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</tr>
<tr>
<td>Likely</td>
<td>TrendN 4</td>
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<tr>
<td>Very likely</td>
<td>TrendN 5</td>
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<td>Convenience Foods</td>
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<tr>
<td>Likely</td>
<td>TrendC 4</td>
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<tr>
<td>Very likely</td>
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<tr>
<td>Unlikely</td>
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<tr>
<td>Likely</td>
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<td>Likely</td>
<td>TrendH 4</td>
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<td>Attractive appearance</td>
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<td>TrendLp 1</td>
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<td>Improved flavor</td>
<td>TrendFl 1</td>
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<tr>
<td>Increased variety</td>
<td>TrendV 1</td>
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<td>Statement</td>
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<td>Lack of Demand</td>
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</tr>
<tr>
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<td>3.67</td>
</tr>
<tr>
<td>To Improve Health</td>
<td>4.27</td>
</tr>
<tr>
<td>Bored with Existing Food</td>
<td>3.68</td>
</tr>
<tr>
<td>Try Something New</td>
<td>4.05</td>
</tr>
<tr>
<td>Lack of Variety</td>
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<tr>
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<tr>
<td>Bad taste</td>
<td>3.47</td>
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<tr>
<td>High Price</td>
<td>3.54</td>
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</table>

Note:
M=Mean  SD= Std. Deviation  
A~34 or below, B~ 35-54,  C~ 55 or above

Measure on 5-point scale
The result of one-way ANOVA test, * p<0.05, ** p<0.01, *** p<0.001 (at one-tailed)
### Appendix 6.2 Reasons for Product change—Mean Difference by Education (British Consumer Study)

<table>
<thead>
<tr>
<th>Statement</th>
<th>A M SD</th>
<th>B M SD</th>
<th>C M SD</th>
<th>D M SD</th>
<th>E M SD</th>
<th>Statistic Test F Ratio</th>
<th>Sig. (one-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Demand</td>
<td>3.67</td>
<td>0.86</td>
<td>3.72</td>
<td>0.89</td>
<td>3.73</td>
<td>0.88</td>
<td>0.49</td>
</tr>
<tr>
<td>To Improve Convenience</td>
<td>3.63</td>
<td>0.82</td>
<td>3.42</td>
<td>0.9</td>
<td>3.63</td>
<td>0.81</td>
<td>0.39</td>
</tr>
<tr>
<td>To Improve Health</td>
<td>4.27</td>
<td>0.74</td>
<td>4.17</td>
<td>0.79</td>
<td>4.1</td>
<td>0.77</td>
<td>4.45</td>
</tr>
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<td>Bored with Existing Food</td>
<td>3.69</td>
<td>0.83</td>
<td>3.46</td>
<td>0.92</td>
<td>3.55</td>
<td>1.04</td>
<td>3.98</td>
</tr>
<tr>
<td>Try Something New</td>
<td>3.81</td>
<td>0.84</td>
<td>4</td>
<td>0.7</td>
<td>3.86</td>
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<tr>
<td>Lack of Variety</td>
<td>3.6</td>
<td>0.84</td>
<td>3.48</td>
<td>0.77</td>
<td>3.47</td>
<td>0.98</td>
<td>3.52</td>
</tr>
<tr>
<td>Poor Quality</td>
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<td>0.96</td>
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<td>3.57</td>
<td>1.06</td>
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<tr>
<td>Bad taste</td>
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<td>0.98</td>
<td>3.5</td>
<td>0.84</td>
<td>3.42</td>
<td>0.96</td>
<td>3.79</td>
</tr>
<tr>
<td>High Price</td>
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<td>3.51</td>
<td>0.95</td>
<td>3.33</td>
<td>0.83</td>
<td>3.81</td>
</tr>
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</table>

Note:
- M=Mean SD= Std. Deviation
- A=below A’ Level, B~ A’Level or equivalent, C~ bachelor’s degree or equivalent, D~ diploma or professional qualification
- E~ Postgraduate degree or above
- Measure on 5-point scale
- The result of one-way ANOVA test, * p<0.05, ** p<0.01, *** p<0.001 (at one-tailed)

### Appendix 6.3 Reasons for Product change—Mean Difference by Income (British Consumer Study)

<table>
<thead>
<tr>
<th>Statement</th>
<th>A M SD</th>
<th>B M SD</th>
<th>C M SD</th>
<th>D M SD</th>
<th>E M SD</th>
<th>F M SD</th>
<th>Statistic Test F Ratio</th>
<th>Sig. (one-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Demand</td>
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<td>1</td>
<td>3.71</td>
<td>0.86</td>
<td>3.68</td>
<td>0.78</td>
<td>3.71</td>
<td>0.69</td>
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<tr>
<td>To Improve Convenience</td>
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<td>0.77</td>
<td>3.31</td>
<td>0.83</td>
<td>3.81</td>
<td>0.76</td>
<td>3.52</td>
<td>0.72</td>
</tr>
<tr>
<td>To Improve Health</td>
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<td>0.91</td>
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<td>0.79</td>
<td>4.27</td>
<td>0.65</td>
<td>4.32</td>
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<td>0.89</td>
<td>3.26</td>
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<tr>
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<td>1.06</td>
<td>3.97</td>
<td>0.86</td>
<td>4.05</td>
<td>0.81</td>
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<td>0.84</td>
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<tr>
<td>Poor Quality</td>
<td>3.64</td>
<td>0.99</td>
<td>3.83</td>
<td>0.95</td>
<td>3.7</td>
<td>0.88</td>
<td>3.61</td>
<td>0.99</td>
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<tr>
<td>Bad taste</td>
<td>3.56</td>
<td>0.92</td>
<td>3.74</td>
<td>0.85</td>
<td>3.67</td>
<td>0.88</td>
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<td>3.7</td>
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Note:
- M=Mean SD= Std. Deviation
- A=below 10000, B~ 10001-20000, C~ 20001-30000, D~ 30001-40000, E~ 40001-50000
- F~ 50001 or above
- Measure on 5-point scale
- The result of one-way ANOVA test, * p<0.05, ** p<0.01, *** p<0.001 (at one-tailed)
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<th>df</th>
<th>Sig</th>
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### Appendix 6.5 Factors Influencing British Consumers Purchase Behaviour--Mean Difference by Age

<table>
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<th>Statement</th>
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<th>SD</th>
<th>B</th>
<th>SD</th>
<th>C</th>
<th>SD</th>
<th>Statistict Test</th>
<th>Sig. (one-tailed)</th>
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<td>2.59</td>
<td>1.09</td>
<td>2.61</td>
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<td>0.028*</td>
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<td>3.84</td>
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<td>0.96</td>
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<td>0.94</td>
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<td>0.99</td>
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**Note:**
M=Mean SD= Std. Deviation
A~34 or below, B~35-54, C~ 55 or above

Measure on 5-point scale
The result of one-way ANOVA test, * p<0.05, ** p<0.01, *** p<0.001 (at one-tailed)
### Appendix 6.6 Main Factors Influencing British Consumer Purchase Behaviour – Mean Difference by Education

<table>
<thead>
<tr>
<th>Statement</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Statistic Test</th>
<th>Sig. (one-tailed)</th>
</tr>
</thead>
<tbody>
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<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>F Ratio</td>
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<td>1.06</td>
<td>3.56</td>
<td>0.98</td>
<td>3.94</td>
</tr>
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<td>3.59</td>
<td>0.89</td>
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<tr>
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</tr>
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<td>0.82</td>
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<tr>
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<td>3.86</td>
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<td>3.65</td>
<td>0.99</td>
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<tr>
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<td>0.88</td>
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<td>0.95</td>
<td>3.49</td>
</tr>
</tbody>
</table>

Note:
- M=Mean SD= Std. Deviation
- A~below A' Level, B~A'Level or equivalent, C~bachelor's degree or equivalent, D~diploma or professional qualification
- E~Postgraduate degree or above
- Measure on 5-point scale
- The result of one-way ANOVA test, *p<0.05, **p<0.01, ***p<0.001 (at one-tailed)

### Appendix 6.7 Main Factors Influencing British Consumer Purchase Behaviour – Mean Difference by Income

<table>
<thead>
<tr>
<th>Statement</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Statistic Test</th>
<th>Sig. (one-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>F Ratio</td>
<td></td>
</tr>
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<td>3.89</td>
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<td>3.85</td>
<td>0.91</td>
<td>4.03</td>
</tr>
<tr>
<td>Belief</td>
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<td>1.17</td>
<td>2.4</td>
<td>1.09</td>
<td>2.29</td>
<td>1.18</td>
<td>2.32</td>
</tr>
<tr>
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<td>0.88</td>
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<td>0.87</td>
<td>3.67</td>
</tr>
<tr>
<td>Promotion</td>
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<td>1.22</td>
<td>3.37</td>
<td>0.97</td>
<td>3.02</td>
<td>0.91</td>
<td>3.22</td>
</tr>
<tr>
<td>Quality</td>
<td>4.07</td>
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<td>3.89</td>
<td>0.83</td>
<td>3.92</td>
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<td>1.07</td>
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</tr>
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<td>3.77</td>
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<td>3.85</td>
<td>0.79</td>
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<tr>
<td>Media</td>
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<td>3.37</td>
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<td>3.61</td>
</tr>
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</table>

Note:
- M=Mean SD= Std. Deviation
- A~below 10000, B~10001-20000, C~20001-30000, D~30001-40000, E~40001-50000
- F~50001 or above
- Measure on 5-point scale
- The result of one-way ANOVA test, *p<0.05, **p<0.01, ***p<0.001 (at one-tailed)
### Appendix 6.8 British Consumers' Willingness to try different food –Mean Difference by Education

<table>
<thead>
<tr>
<th>Statement</th>
<th>A M SD</th>
<th>B M SD</th>
<th>C M SD</th>
<th>D M SD</th>
<th>E M SD</th>
<th>Statistic Test</th>
<th>Sig. (one-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnic Food</td>
<td>3.02 1.17</td>
<td>3.27 1.16</td>
<td>3.58 1.05</td>
<td>3.43 0.92</td>
<td>4 0.8</td>
<td>4.164</td>
<td>0.003**</td>
</tr>
<tr>
<td>Natural Food</td>
<td>3.56 0.94</td>
<td>3.85 0.89</td>
<td>3.81 0.97</td>
<td>3.94 0.8</td>
<td>4.04 0.77</td>
<td>1.558</td>
<td>0.187</td>
</tr>
<tr>
<td>Convenience Food</td>
<td>3.44 0.94</td>
<td>3.25 1.13</td>
<td>3.21 1.09</td>
<td>3.17 1.04</td>
<td>3 1.09</td>
<td>0.788</td>
<td>0.534</td>
</tr>
<tr>
<td>Functional Food</td>
<td>3.42 1.03</td>
<td>3.39 1.05</td>
<td>3.25 1.06</td>
<td>3.43 0.92</td>
<td>3.31 1.05</td>
<td>0.253</td>
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</tr>
</tbody>
</table>

**Note:**
- M=Mean SD= Std. Deviation
- A= below A' Level, B= A'Level or equivalent, C= bachelor's degree or equivalent, D= diploma or professional qualification
- E= Postgraduate degree or above
- Measure on 5-point scale
- The result of one-way ANOVA test, * p<0.05, ** p<0.01, *** p<0.001 (at one-tailed)
### Appendix 6.9 British Consumers’ Willingness to Try New Products—Mean Difference by Age

<table>
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<tr>
<th>Statement</th>
<th>A M</th>
<th>SD</th>
<th>B M</th>
<th>SD</th>
<th>C M</th>
<th>SD</th>
<th>Statistic Test F Ratio</th>
<th>Sig. (one-tailed)</th>
</tr>
</thead>
<tbody>
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<td>New Products</td>
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<td>3.91</td>
<td>0.66</td>
<td>3.67</td>
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</tr>
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<td>Ethnic Foods</td>
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<td>3.48</td>
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<td>1.16</td>
<td>9.674</td>
<td>0.000***</td>
</tr>
<tr>
<td>Natural Foods</td>
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<td>0.96</td>
<td>0.021</td>
<td>0.979</td>
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<tr>
<td>Convenience Foods</td>
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<td>3.16</td>
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<td>2.85</td>
<td>1.11</td>
<td>6.052</td>
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<td>3.37</td>
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<td>3.37</td>
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<td>0</td>
<td>1</td>
</tr>
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<td>New Brand</td>
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<td>3.58</td>
<td>0.88</td>
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<td>1.09</td>
<td>5.972</td>
<td>0.003**</td>
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<td>0.81</td>
<td>3.72</td>
<td>0.86</td>
<td>0.789</td>
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<td>Price Reduction</td>
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<td>1.01</td>
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<td>10.081</td>
<td>0.000***</td>
</tr>
</tbody>
</table>

**Note:**
- M=Mean SD= Std. Deviation
- A=34 or below, B=35-54, C=55 or above
- Measure on 5-point scale
- The result of one-way ANOVA test, * p<0.05, ** p<0.01, *** p<0.001 (at one-tailed)
## Appendix 6.10 NPD Trends—Mean Difference by Age (British Consumer Study)

<table>
<thead>
<tr>
<th>Statement</th>
<th>A</th>
<th></th>
<th>B</th>
<th></th>
<th>C</th>
<th></th>
<th>Statistic Test</th>
<th>Sig. (one-tailed)</th>
</tr>
</thead>
<tbody>
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<td>New Brand</td>
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<td>0.82</td>
<td>3.91</td>
<td>0.84</td>
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<td>4.02</td>
<td>0.88</td>
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<td>0.82</td>
<td>2.545</td>
<td>0.081</td>
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<td>1.1</td>
<td>3.472</td>
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<td>1.13</td>
<td>7.085</td>
<td>0.001**</td>
</tr>
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</table>

**Note:**
- M=Mean SD=Std. Deviation
- A~34 or below, B~35-54, C~55 or above
- Measure on 5-point scale
- The result of one-way ANOVA test, *p<0.05, **p<0.01, ***p<0.001 (at one-tailed)
### Appendix 6.11 NPD Trends—Mean Difference by Education (British Consumer Study)

<table>
<thead>
<tr>
<th>Statement</th>
<th>A M</th>
<th>SD</th>
<th>B M</th>
<th>SD</th>
<th>C M</th>
<th>SD</th>
<th>D M</th>
<th>SD</th>
<th>E M</th>
<th>SD</th>
<th>Statistic Test F Ratio</th>
<th>Sig. (one-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Brand</td>
<td>3.98</td>
<td>0.89</td>
<td>3.86</td>
<td>0.94</td>
<td>3.9</td>
<td>0.82</td>
<td>4.11</td>
<td>0.83</td>
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<td>0.94</td>
<td>3.77</td>
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<td>3.65</td>
<td>0.89</td>
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<td>0.77</td>
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<td>0.82</td>
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<td>1.16</td>
<td>0.33</td>
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<tr>
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<td>1.25</td>
<td>3</td>
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<td>2.81</td>
<td>1.06</td>
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<td>0.678</td>
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</table>

Note:
M=Mean SD= Std. Deviation
A~below A' Level, B~ A'Level or equivalent, C~ bachelor's degree or equivalent, D~ diploma or professional qualification
E~ Postgraduate degree or above
Measure on 5-point scale
The result of one-way ANOVA test, * p<0.05, ** p<0.01, *** p<0.001 (at one-tailed)

### Appendix 6.12 NPD Trends—Mean Difference by Income (British Consumer Study)

<table>
<thead>
<tr>
<th>Statement</th>
<th>A M</th>
<th>SD</th>
<th>B M</th>
<th>SD</th>
<th>C M</th>
<th>SD</th>
<th>D M</th>
<th>SD</th>
<th>E M</th>
<th>SD</th>
<th>F M</th>
<th>SD</th>
<th>Statistic Test F Ratio</th>
<th>Sig. (one-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Brand</td>
<td>3.63</td>
<td>1</td>
<td>3.91</td>
<td>0.87</td>
<td>4.09</td>
<td>0.74</td>
<td>4.09</td>
<td>0.6</td>
<td>4.08</td>
<td>0.97</td>
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<td>0.78</td>
<td>3.78</td>
<td>0.76</td>
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<td>4.39</td>
<td>0.73</td>
<td>4.52</td>
<td>0.63</td>
<td>4.5</td>
<td>0.78</td>
<td>4.44</td>
<td>0.61</td>
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</tr>
<tr>
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<td>3.97</td>
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<tr>
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<td>2.91</td>
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<td>2.87</td>
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<td>0.86</td>
<td>3.74</td>
<td>0.68</td>
<td>3.5</td>
<td>0.93</td>
<td>3.53</td>
<td>0.87</td>
<td>0.736</td>
<td>0.598</td>
</tr>
<tr>
<td>Variety</td>
<td>3.9</td>
<td>0.84</td>
<td>4.06</td>
<td>0.78</td>
<td>4.2</td>
<td>0.71</td>
<td>4.03</td>
<td>0.71</td>
<td>4.08</td>
<td>0.65</td>
<td>4.22</td>
<td>0.68</td>
<td>0.857</td>
<td>0.511</td>
</tr>
<tr>
<td>Ethnic foods</td>
<td>3.7</td>
<td>1.05</td>
<td>3.82</td>
<td>0.72</td>
<td>4</td>
<td>1</td>
<td>3.96</td>
<td>0.75</td>
<td>4.17</td>
<td>0.56</td>
<td>4.3</td>
<td>0.75</td>
<td>2.259</td>
<td>0.053</td>
</tr>
<tr>
<td>Convenience Foods</td>
<td>3.93</td>
<td>0.91</td>
<td>4</td>
<td>0.85</td>
<td>4.41</td>
<td>0.81</td>
<td>4.48</td>
<td>0.63</td>
<td>4.33</td>
<td>0.7</td>
<td>4.47</td>
<td>0.61</td>
<td>3.355</td>
<td>0.006**</td>
</tr>
<tr>
<td>Natural foods</td>
<td>3.97</td>
<td>0.93</td>
<td>4.17</td>
<td>0.72</td>
<td>4.1</td>
<td>0.86</td>
<td>4.32</td>
<td>0.65</td>
<td>4.29</td>
<td>0.62</td>
<td>4.5</td>
<td>0.56</td>
<td>2.141</td>
<td>0.062</td>
</tr>
<tr>
<td>Functional foods</td>
<td>3.9</td>
<td>0.76</td>
<td>4.09</td>
<td>0.75</td>
<td>3.97</td>
<td>0.82</td>
<td>4.06</td>
<td>0.81</td>
<td>4</td>
<td>0.66</td>
<td>4.31</td>
<td>0.75</td>
<td>1.136</td>
<td>0.343</td>
</tr>
<tr>
<td>Healthy Foods</td>
<td>4.13</td>
<td>0.68</td>
<td>4.18</td>
<td>0.76</td>
<td>4.17</td>
<td>0.77</td>
<td>4.19</td>
<td>0.65</td>
<td>4.29</td>
<td>0.55</td>
<td>4.47</td>
<td>0.65</td>
<td>1.148</td>
<td>0.337</td>
</tr>
</tbody>
</table>

Note:
M=Mean SD= Std. Deviation
A~below 10000, B~ 10001-20000, C~ 20001-30000, D~ 30001-40000, E~ 40001-50000
F~ 50001 or above
Measure on 5-point scale
The result of one-way ANOVA test, * p<0.05, ** p<0.01, *** p<0.001 (at one-tailed)
## Appendix 7.1 Reasons for Product Change--Mean Difference by Age (British Consumer Study)

<table>
<thead>
<tr>
<th>Statement</th>
<th>A M</th>
<th>A SD</th>
<th>B M</th>
<th>B SD</th>
<th>C M</th>
<th>C SD</th>
<th>Statistic Test</th>
<th>Sig. (one-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Demand</td>
<td>3.78</td>
<td>1.14</td>
<td>3.1</td>
<td>1.49</td>
<td>3.25</td>
<td>1.62</td>
<td>3.627</td>
<td>0.029*</td>
</tr>
<tr>
<td>To Improve Convenience</td>
<td>3.95</td>
<td>0.78</td>
<td>3.87</td>
<td>0.72</td>
<td>3.54</td>
<td>1.13</td>
<td>2.477</td>
<td>0.088</td>
</tr>
<tr>
<td>To Improve Health</td>
<td>4.23</td>
<td>0.78</td>
<td>4.19</td>
<td>1.04</td>
<td>4.46</td>
<td>0.92</td>
<td>0.899</td>
<td>0.409</td>
</tr>
<tr>
<td>Bored with Existing Food</td>
<td>4.28</td>
<td>4.36</td>
<td>3.68</td>
<td>0.98</td>
<td>3.46</td>
<td>1.17</td>
<td>0.745</td>
<td>0.477</td>
</tr>
<tr>
<td>Try Something New</td>
<td>4</td>
<td>0.87</td>
<td>3.97</td>
<td>0.8</td>
<td>3.68</td>
<td>1.02</td>
<td>1.401</td>
<td>0.25</td>
</tr>
<tr>
<td>Lack of Variety</td>
<td>3.5</td>
<td>1.06</td>
<td>3.32</td>
<td>1.22</td>
<td>3.5</td>
<td>1.07</td>
<td>0.315</td>
<td>0.73</td>
</tr>
<tr>
<td>Poor Quality</td>
<td>3.73</td>
<td>1.12</td>
<td>3.01</td>
<td>1.14</td>
<td>3.75</td>
<td>1.35</td>
<td>0.127</td>
<td>0.881</td>
</tr>
<tr>
<td>Bad taste</td>
<td>3.59</td>
<td>1</td>
<td>3.35</td>
<td>0.98</td>
<td>3.42</td>
<td>1.23</td>
<td>0.641</td>
<td>0.529</td>
</tr>
<tr>
<td>High Price</td>
<td>3.54</td>
<td>1.08</td>
<td>3.32</td>
<td>1.42</td>
<td>3.61</td>
<td>1.37</td>
<td>0.471</td>
<td>0.625</td>
</tr>
</tbody>
</table>

Note:
M=Mean SD=Std. Deviation
A~34 or below, B~35-54, C~55 or above

Measure on 5-point scale
The result of one-way ANOVA test, *p<0.05, **p<0.01, ***p<0.001 (at one-tailed)
### Appendix 7.2 Main Factors Influencing Chinese Consumer Purchase Behaviour -- Mean Difference by Education

<table>
<thead>
<tr>
<th>Statement</th>
<th>A M</th>
<th>A SD</th>
<th>B M</th>
<th>B SD</th>
<th>C M</th>
<th>C SD</th>
<th>D M</th>
<th>D SD</th>
<th>E M</th>
<th>E SD</th>
<th>Statistic Test F Ratio</th>
<th>Sig. (one-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>3.12</td>
<td>1.24</td>
<td>3.33</td>
<td>1.12</td>
<td>2.71</td>
<td>1.37</td>
<td>3.26</td>
<td>1.21</td>
<td>3.33</td>
<td>1.14</td>
<td>1.285</td>
<td>0.279</td>
</tr>
<tr>
<td>Belief</td>
<td>2.38</td>
<td>1.5</td>
<td>2.78</td>
<td>0.97</td>
<td>1.94</td>
<td>1</td>
<td>1.78</td>
<td>0.94</td>
<td>1.67</td>
<td>1.13</td>
<td>2.615</td>
<td>0.038*</td>
</tr>
<tr>
<td>Variety</td>
<td>3.5</td>
<td>0.76</td>
<td>4.11</td>
<td>1.26</td>
<td>3.29</td>
<td>1.1</td>
<td>3.37</td>
<td>1.09</td>
<td>3.33</td>
<td>0.6</td>
<td>1.182</td>
<td>0.322</td>
</tr>
<tr>
<td>Promotion</td>
<td>3.37</td>
<td>0.52</td>
<td>3</td>
<td>1.22</td>
<td>3.06</td>
<td>1.18</td>
<td>3.12</td>
<td>1.26</td>
<td>3</td>
<td>1.03</td>
<td>0.17</td>
<td>0.953</td>
</tr>
<tr>
<td>Quality</td>
<td>4.37</td>
<td>0.52</td>
<td>4.55</td>
<td>0.53</td>
<td>4.09</td>
<td>1.1</td>
<td>4.18</td>
<td>0.86</td>
<td>4.33</td>
<td>0.97</td>
<td>0.613</td>
<td>0.654</td>
</tr>
<tr>
<td>Appearance</td>
<td>3.75</td>
<td>1.03</td>
<td>3.78</td>
<td>0.97</td>
<td>3.52</td>
<td>1.06</td>
<td>3.42</td>
<td>1.05</td>
<td>3.5</td>
<td>0.79</td>
<td>0.406</td>
<td>0.804</td>
</tr>
<tr>
<td>Suggestion</td>
<td>4</td>
<td>0.76</td>
<td>3.78</td>
<td>1.39</td>
<td>3.87</td>
<td>0.96</td>
<td>3.69</td>
<td>0.91</td>
<td>3.5</td>
<td>0.62</td>
<td>0.667</td>
<td>0.616</td>
</tr>
<tr>
<td>Recommendation</td>
<td>4</td>
<td>0.76</td>
<td>3.88</td>
<td>0.93</td>
<td>3.58</td>
<td>1.17</td>
<td>3.59</td>
<td>1.04</td>
<td>3.5</td>
<td>0.92</td>
<td>0.495</td>
<td>0.739</td>
</tr>
<tr>
<td>Media</td>
<td>3.25</td>
<td>1.04</td>
<td>3.89</td>
<td>1.26</td>
<td>3.39</td>
<td>1.08</td>
<td>3.33</td>
<td>1.16</td>
<td>3.72</td>
<td>1.02</td>
<td>0.868</td>
<td>0.485</td>
</tr>
</tbody>
</table>

**Note:**
- M=Mean SD= Std. Deviation
- A-below A' Level, B~ A' Level or equivalent, C~ bachelor's degree or equivalent, D~ diploma or professional qualification
- E= Postgraduate degree or above
- Measure on 5-point scale
- The result of one-way ANOVA test, * p<0.05, ** p<0.01, *** p<0.001 (at one-tailed)
### Appendix 7.3 Main Factors Influencing Chinese Consumers Purchase Behaviour--Mean Difference by Age

<table>
<thead>
<tr>
<th>Statement</th>
<th>A M</th>
<th>SD</th>
<th>B M</th>
<th>SD</th>
<th>C M</th>
<th>SD</th>
<th>Statistic Test F Ratio</th>
<th>Sig. (one-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>3.1</td>
<td>1.13</td>
<td>3.19</td>
<td>1.49</td>
<td>3.18</td>
<td>1.27</td>
<td>0.082</td>
<td>0.921</td>
</tr>
<tr>
<td>Belief</td>
<td>1.96</td>
<td>1.02</td>
<td>1.81</td>
<td>1.01</td>
<td>1.82</td>
<td>1.23</td>
<td>0.348</td>
<td>0.707</td>
</tr>
<tr>
<td>Variety</td>
<td>3.45</td>
<td>1.03</td>
<td>3.42</td>
<td>1.06</td>
<td>3.28</td>
<td>1.08</td>
<td>0.257</td>
<td>0.774</td>
</tr>
<tr>
<td>Promotion</td>
<td>3.25</td>
<td>1.09</td>
<td>3.06</td>
<td>1.31</td>
<td>2.68</td>
<td>1.18</td>
<td>2.529</td>
<td>0.083</td>
</tr>
<tr>
<td>Quality</td>
<td>4.11</td>
<td>0.92</td>
<td>4.32</td>
<td>0.7</td>
<td>4.39</td>
<td>0.99</td>
<td>1.295</td>
<td>0.277</td>
</tr>
<tr>
<td>Appearance</td>
<td>3.64</td>
<td>0.9</td>
<td>3.68</td>
<td>1.07</td>
<td>2.89</td>
<td>1.03</td>
<td>6.807</td>
<td>0.002**</td>
</tr>
<tr>
<td>Suggestion</td>
<td>3.83</td>
<td>0.81</td>
<td>3.65</td>
<td>1.05</td>
<td>3.57</td>
<td>1.03</td>
<td>0.987</td>
<td>0.375</td>
</tr>
<tr>
<td>Recommendation</td>
<td>3.64</td>
<td>0.98</td>
<td>3.65</td>
<td>1.08</td>
<td>3.57</td>
<td>1.13</td>
<td>0.049</td>
<td>0.952</td>
</tr>
<tr>
<td>Media</td>
<td>3.56</td>
<td>0.99</td>
<td>3.45</td>
<td>1.2</td>
<td>3.03</td>
<td>1.31</td>
<td>2.332</td>
<td>0.101</td>
</tr>
</tbody>
</table>

Note:
- M=Mean SD= Std. Deviation
- A=34 or below, B=35-54, C=55 or above
- Measure on 5-point scale
- The result of one-way ANOVA test, * p<0.05, ** p<0.01, *** p<0.001 (at one-tailed)
<table>
<thead>
<tr>
<th>Statement</th>
<th>Female (n=153)</th>
<th>Male (n=39)</th>
<th>Levene's Test for Equality of Variances</th>
<th>t</th>
<th>df</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Try New Brand</td>
<td>3.34 (0.93)</td>
<td>3.22 (1.08)</td>
<td>1.04/ (0.308)</td>
<td>0.73</td>
<td>137</td>
<td>0.465</td>
</tr>
<tr>
<td>New Packaging</td>
<td>2.83 (0.9)</td>
<td>2.87 (1.09)</td>
<td>0.3 (0.585)</td>
<td>-0.254</td>
<td>137</td>
<td>0.8</td>
</tr>
<tr>
<td>Quality</td>
<td>4.18 (0.71)</td>
<td>4.1 (0.81)</td>
<td>0.244 (0.622)</td>
<td>0.514</td>
<td>137</td>
<td>0.514</td>
</tr>
<tr>
<td>Price</td>
<td>3.93 (0.87)</td>
<td>3.9 (0.97)</td>
<td>0.698 (0.345)</td>
<td>-0.345</td>
<td>137</td>
<td>0.73</td>
</tr>
<tr>
<td>Healthy Version</td>
<td>4.29 (0.66)</td>
<td>4.34 (1.03)</td>
<td>0.488 (0.036)</td>
<td>3.018</td>
<td>137</td>
<td>0.003**</td>
</tr>
<tr>
<td>Taste</td>
<td>4 (0.7)</td>
<td>4 (0.73)</td>
<td></td>
<td>3.921</td>
<td>0</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Note: M=Mean SD=Std Deviation * P<0.05
Appendix 7.5. Chinese Consumers' Willingness to try different food --Mean Difference by Education

<table>
<thead>
<tr>
<th>Statement</th>
<th>A M</th>
<th>SD</th>
<th>B M</th>
<th>SD</th>
<th>C M</th>
<th>SD</th>
<th>D M</th>
<th>SD</th>
<th>E M</th>
<th>SD</th>
<th>Statistic Test F Ratio</th>
<th>Sig. (one -tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnic Food</td>
<td>2</td>
<td>1.07</td>
<td>3.44</td>
<td>1.42</td>
<td>3.26</td>
<td>1.46</td>
<td>3.5</td>
<td>1.11</td>
<td>3.61</td>
<td>0.98</td>
<td>3.061</td>
<td>0.019**</td>
</tr>
<tr>
<td>Natural Food</td>
<td>3.37</td>
<td>1.06</td>
<td>4.67</td>
<td>0.5</td>
<td>4.35</td>
<td>0.98</td>
<td>4.41</td>
<td>0.74</td>
<td>4</td>
<td>0.84</td>
<td>3.949</td>
<td>0.005**</td>
</tr>
<tr>
<td>Convenience Food</td>
<td>3.37</td>
<td>0.74</td>
<td>4</td>
<td>1</td>
<td>2.9</td>
<td>1.22</td>
<td>3.16</td>
<td>1.02</td>
<td>3.16</td>
<td>0.86</td>
<td>2.152</td>
<td>0.078</td>
</tr>
<tr>
<td>Functional Food</td>
<td>2.87</td>
<td>1.24</td>
<td>3.55</td>
<td>1.33</td>
<td>3.22</td>
<td>1.14</td>
<td>3.53</td>
<td>1.02</td>
<td>3.61</td>
<td>0.92</td>
<td>1.126</td>
<td>0.347</td>
</tr>
</tbody>
</table>

Note:
M=Mean SD= Std. Deviation
A~below A’ Level, B~ A’Level or equivalent, C~ bachelor’s degree or equivalent, D~ diploma or professional qualification
E~ Postgraduate degree or above
Measure on 5-point scale
The result of one-way ANOVA test, * p<0.05, ** p<0.01, *** p<0.001 ( at one-tailed)

Appendix 7.6 Chinese Consumers' Willingness to Try New Products--Mean Difference by Age

<table>
<thead>
<tr>
<th>Statement</th>
<th>A M</th>
<th>SD</th>
<th>B M</th>
<th>SD</th>
<th>C M</th>
<th>SD</th>
<th>Statistic Test F Ratio</th>
<th>Sig. (one -tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Products</td>
<td>3.95</td>
<td>0.69</td>
<td>3.77</td>
<td>0.56</td>
<td>3.57</td>
<td>0.69</td>
<td>3.529</td>
<td>0.032*</td>
</tr>
<tr>
<td>Ethnic Foods</td>
<td>3.49</td>
<td>1.11</td>
<td>3.61</td>
<td>1.38</td>
<td>2.78</td>
<td>1.25</td>
<td>4.288</td>
<td>0.016**</td>
</tr>
<tr>
<td>Natural Foods</td>
<td>4.31</td>
<td>0.84</td>
<td>4.19</td>
<td>1.04</td>
<td>4.43</td>
<td>0.69</td>
<td>0.549</td>
<td>0.579</td>
</tr>
<tr>
<td>Convenience Foods</td>
<td>3.15</td>
<td>1.05</td>
<td>3.35</td>
<td>1.05</td>
<td>3.07</td>
<td>0.9</td>
<td>0.641</td>
<td>0.528</td>
</tr>
<tr>
<td>Functional Foods</td>
<td>3.56</td>
<td>0.94</td>
<td>3.19</td>
<td>1.3</td>
<td>3.36</td>
<td>1.12</td>
<td>1.437</td>
<td>0.241</td>
</tr>
</tbody>
</table>

Note:
M=Mean SD= Std. Deviation
A~34 or below, B~ 35-54, C~ 55 or above
Measure on 5-point scale
The result of one-way ANOVA test, * p<0.05, ** p<0.01, *** p<0.001 ( at one-tailed)
### British Food Company List

<table>
<thead>
<tr>
<th>Company No.</th>
<th>Nature of Food Company</th>
<th>Established Year</th>
<th>No. of Employee</th>
<th>Main Product</th>
<th>Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A Large Dairy Company</td>
<td>1864</td>
<td>5200</td>
<td>Fresh custard, dairy</td>
<td>private</td>
</tr>
<tr>
<td>2</td>
<td>A Large Confectionary Company</td>
<td>1866</td>
<td>&gt;1000</td>
<td>Confectionary</td>
<td>independent</td>
</tr>
<tr>
<td>3</td>
<td>A Large Biscuit Company</td>
<td>1948</td>
<td>10000</td>
<td>Biscuits</td>
<td>private</td>
</tr>
<tr>
<td>4</td>
<td>A Large Poultry Company</td>
<td>1967</td>
<td>3000</td>
<td>reform chicken, poultry</td>
<td>private</td>
</tr>
<tr>
<td>5</td>
<td>A Small Dried Fruit Company</td>
<td>1952</td>
<td>100</td>
<td>Cereal, dried fruit</td>
<td>independent</td>
</tr>
<tr>
<td>6</td>
<td>A Medium Bakery</td>
<td>1887</td>
<td>720</td>
<td>Muffin and Cake</td>
<td>private</td>
</tr>
<tr>
<td>7</td>
<td>A Medium Soya Product Company</td>
<td>1975</td>
<td>700</td>
<td>Soya product</td>
<td>private</td>
</tr>
<tr>
<td>8</td>
<td>A Large Frozen Food Company</td>
<td>/</td>
<td>&gt;1000</td>
<td>Frozen foods</td>
<td>independent</td>
</tr>
<tr>
<td>9</td>
<td>A Small Sauce Company</td>
<td>1887</td>
<td>100</td>
<td>Sauce, dressing</td>
<td>limited</td>
</tr>
<tr>
<td>10</td>
<td>A Larger Dairy Company</td>
<td>1972</td>
<td>&gt;6000</td>
<td>Dairy products</td>
<td>/</td>
</tr>
<tr>
<td>11</td>
<td>A Small Beverage Company</td>
<td>1985</td>
<td>60</td>
<td>Beverage, confectionery</td>
<td>independent</td>
</tr>
<tr>
<td>12</td>
<td>A Large Bakery</td>
<td>1980</td>
<td>4500</td>
<td>Pie, pastry, bakery</td>
<td>private</td>
</tr>
<tr>
<td>13</td>
<td>A Medium Sauce Company</td>
<td>1989</td>
<td>250</td>
<td>Pasta Sauce</td>
<td>private</td>
</tr>
</tbody>
</table>

### Chinese Food Company List

<table>
<thead>
<tr>
<th>Company No.</th>
<th>Nature of Food Company</th>
<th>Established Year</th>
<th>No. of Employee</th>
<th>Main Product</th>
<th>Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A Medium Dairy Company</td>
<td>1993</td>
<td>250</td>
<td>Dairy product</td>
<td>joint-venture</td>
</tr>
<tr>
<td>2</td>
<td>A Medium Biscuits Company</td>
<td>1995</td>
<td>500</td>
<td>Pie, biscuits</td>
<td>joint-venture</td>
</tr>
<tr>
<td>3</td>
<td>A Small Canned Food Company</td>
<td>1996</td>
<td>80</td>
<td>Canned food</td>
<td>private</td>
</tr>
<tr>
<td>4</td>
<td>A Large Tea Company</td>
<td>2000</td>
<td>5000</td>
<td>Tea products</td>
<td>private</td>
</tr>
<tr>
<td>5</td>
<td>A Medium Confectionary Company</td>
<td>1995</td>
<td>500</td>
<td>Confectionary</td>
<td>foreign invest.</td>
</tr>
<tr>
<td>6</td>
<td>A Large Bean Curd Company</td>
<td>1669</td>
<td>3000</td>
<td>Bean Curd</td>
<td>state owned</td>
</tr>
<tr>
<td>7</td>
<td>A Small Beverage Company</td>
<td>2000</td>
<td>100</td>
<td>Beverage</td>
<td>private</td>
</tr>
<tr>
<td>8</td>
<td>A Large Coffee Product Company</td>
<td>1990's</td>
<td>5000-6000</td>
<td>Coffee</td>
<td>foreign invest.</td>
</tr>
<tr>
<td>9</td>
<td>A Medium Catering Company</td>
<td>1996</td>
<td>406</td>
<td>Meal</td>
<td>joint-venture</td>
</tr>
<tr>
<td>10</td>
<td>A Large Biscuit Company</td>
<td>1988</td>
<td>1000</td>
<td>Biscuits</td>
<td>joint-venture</td>
</tr>
<tr>
<td>11</td>
<td>A Medium Infant Food Company</td>
<td>1990</td>
<td>200</td>
<td>Infant food</td>
<td>joint-venture</td>
</tr>
<tr>
<td>12</td>
<td>A Small Beverage Company</td>
<td>1997</td>
<td>60</td>
<td>Fruit juice</td>
<td>foreign invest.</td>
</tr>
<tr>
<td>13</td>
<td>A Medium Bakery</td>
<td>1993</td>
<td>280</td>
<td>Cake, bakery</td>
<td>Taiwanese</td>
</tr>
</tbody>
</table>
Further literature of sample food company background

British Food Companies

1. **A Large Dairy Company**
   The Company was established in XX in 1864. Milk was transported into London by rail, and delivered to homes. This company was formed as a separate company selling dairy equipment such as the milk churn which was invented by its owner. The firm also ran teashops, cafes and bakery and became a Limited Company. Currently, it has 5200 employees and its main products are fresh custard and other dairy products. They have a separate NPD centre to carry on their New Product Development.

2. **A Large Confectionary Company**
   This company was founded in 1866 and is one of the world’s biggest food and beverage company. Sales at the end of 2003 were CHF 88 bn, with a net profit of CHF 6.2 bn. They employ around 253,000 people and have factories or operations in almost every country in the world. They have their R&D research centre based in XXX and XXX to carry their NPD research.

3. **A Large Biscuit Company**
   It was founded in 1948 following the merger of the family business. In 1960, it added to its portfolio with the acquisition of two big brands. In 2000, it was bought by a consortium of investors, and reverted to private limited company status. Their main products are biscuits, serving around the world. Their NPD department is based in their manufacture site and links to their production sector closely.

4. **A Large Poultry Company**
   It is a giant poultry manufacturer. The main products of this company are reformed chicken, and other poultry products. They supply the likes of Burger King throughout Europe, Sainsbury’s in the UK and many more areas. Currently, the Marketing Director is charging for their NPD.

5. **A Small Dried Fruit Company**
   It is a small dried fruit company located in Cheshire. They supply cereals and dried fruits around England. They undertake product development on an ad-hoc basis.
6. **A Medium Bakery**
For more than 100 years, the XX family have been producing some of the finest bakery products from its home in the heart of rural XXX. It now operates two bakeries at XXX in XXX. It was established in 1887 and is now a main regional manufacturer of sliced bread and morning goods, along with scones and muffins. It employs around 720 people from the XXX area.

7. **A Medium Soya Product Company**
It is a Family owned company which was established in 1975. It is based in Northeast England and is producing a range of Soya products for this region. Their NPD is mainly from internal market research resources.

8. **A large Frozen Food Company**
Every day, XX provides millions of people in over 100 countries with brands they know and trust in foods. In the UK xx has been serving consumers for more than a century, and their brands can be found in nine out of every ten households. They have 12,000 UK employees and a portfolio of the country’s best-loved and most talked about. Their products range from confectionary to frozen foods. Their UK-based research facilities in XXX and XXX are world leaders in food technology. Overall, with annual UK sales of over £2.5 billion and an unsurprised track record of brand innovation, they are established themselves as one of the UK's biggest and most dynamic providers of branded consumer goods. NPD in this frozen food company is taken under the Brand Department.

9. **A Small Sauce Company**
It is the design and manufacture of salad dressings, dips, stir-fry sauces, sauces for fish, marinades and vinaigrettes (all chilled) at the Birmingham site. They have a small NPD group to take their product development.

10. **A large Dairy Company**
XX UK Plc. is the UK’s leading dairy company processing about 2.4 billion litres of milk a year and employing over 6000 people. With a combine turnover of £ 1.4 billion, they have some of the popular dairy brands and their products range extends across all dairy categories: from cream, flavoured milk, butter and spreads, cheese, yoghurts to fresh
added valued dairy products. They currently operate 13 dairies and 13 distribution centres throughout the UK.

11. **A Small Beverage Company**

It is a small beverage manufacturer, which has about 20 years’ history. It is based in xx and produces a range of beverage products. They are using internal market research resources to develop new product.

12. **A Large Bakery**

XX is a privately owned family business and a leading UK player in the production of sweet food products. The group is made up of 12 operating companies split between XX and XX, and boasts a turnover in excess of £ 250 million, employing over 4000 staff. Using only the finest ingredients, they produce products across a number of different categories from sandwiches to desserts (e.g., Pie Pastry) for many of UK’s leading retailers under their brands.

13. **A Medium Sauce Company**

The business started in 1989 with Mexican, Enchilada and Creole sauces using recipes from a wonderfully charismatic Texan chef who had worked his way around kitchens in the Deep South. It is a family owned business, with the growth from the original three employees to the current total of almost 300. Currently, their NPD group belongs to the Brand Department.

**Chinese Food Companies**

1. **A Medium Dairy Company**

It is a joint-venture with two main shareholders. One is a Chinese state owned farm located in XXX; the other is a leading American food company. It was established in 1993 and serving their products to the northern China areas. The main products are yoghurts and flavoured milk products. Their R&D centre includes marketing division, technology division and two key labs.
2. **A Medium Biscuit Company**
   It is Sino-Japanese joint-venture based in Southeast suburb of XX. They supply biscuits, dessert and beverage around China. The main products of them are biscuits and fruit pies. Currently, they have about 500 employees.

3. **A Small Canned Food Company**
   This newly established company is based in North China, providing preserved fruits and vegetables. It is a family owned company, which has only 80 employees. Currently, they have not any NPD facility, their product ideas mainly from external resources (Magazines or agency).

4. **A Large Tea Company**
   It was established in 2000 and based in XX Province, North China. It has its own tea plants and employs 5000 staff working at their Shandong and Beijing site. They invite external research agencies to carry on their product development.

5. **A Medium Confectionary Company**
   XX China is located in xx County. It develops, produces and markets a range of snack foods and pet food products for sale in China (including Hong Kong) and for export to Japan. Their confectionary brands include XXX, Xxx, Xxx and Xxx. Xx China has over 500 associates in their manufacture site and further 300 sales around China. They have 5 cities' focuses: Beijing, Shanghai, Guangzhou, Shenyang and Chengdu.

6. **A Large Bean Curd Company**
   It is a Chinese traditional food company which has more than 300 years' history and produces Chinese traditional food products-bean curd. Originally, it was a family owned firm and in the middle of the last century, it converted into a state owned company. Currently, it has over 3000 employees. It holds the most famous Chinese brand. They have their own R&D centre and also have some cooperations with some state owned institutes.

7. **A Small Beverage Company**
   This newly established (2000) private company produces fruit juice and fruit juice drinks, serving the capital market.
8. **A Large Confectionary and Coffee Company**

This company was founded in 1866 and is one of the world's biggest food and beverage company. Sales at the end of 2003 were CHF 88 bn, with a net profit of CHF 6.2 bn. They employ around 253,000 people and have factories or operations in almost every country in the world. **XX China headquarter is based in XX and their R&D centre is in XX**.

9. **A Medium Catering Company**

This is one of major Chinese air-catering company, producing meals and supplements for the domestic and international airlines. It has over 400 staff and was established in 1996.

10. **A Large Biscuits Company**

The recent acquisition of **XX catapults XX to a leadership position in the biscuit market**, adding some of the world's most well-known brand to XX international portfolio, making it a leading manufacturer of sweet cookies and savoury crackers. **XX China has its headquarter in XX and serving for the national markets.**

11. **A Medium Infant Food Company**

This is a medium size Sino-American food company. Their main products are baby foods including a range of fruit and vegetable powder. Its research centre is based in XX, but has reached both national and international markets.

12. **A Small Beverage Company**

This small beverage company only produces fruit juice to serve the regional market- Northern China.

13. **A Medium Bakery**

This is a Taiwanese food company, based in XX. It provides a range of cakes and Bakery products around China. It has its NPD groups in both Taiwan and mainland China. Total 280 employees work at XX site.