Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.
Characterisation of food product innovation with reference to bioactive functional food product development: an Asia-Pacific study

A thesis presented in partial fulfilment of the requirements for the degree of Doctor of Philosophy at

Institute of Food, Nutrition and Human Health
Massey University, New Zealand

by

Rao Sanaullah Khan

July 2014
DECLARATION

The thesis entitled, “Characterisation of food product innovation with reference to bioactive functional food product development: an Asia-Pacific study” is submitted to Massey University for the degree of Doctor of Philosophy. I, Rao Sanaullah Khan, declare that this thesis is the outcome of my research work. The material used from other sources is acknowledged. I also certify that the work contained in the thesis, or any part thereof, has not been previously submitted for a degree, diploma or other qualifications.

Signed……………………

Student ID: 07222191

Full Name: Rao Sanaullah Khan
Acknowledgement
All praise be to Allah/God, the Lord of the worlds!

I would like to express my sincere gratitude to Dr. John Grigor, Dr. Mike Boland, Mr Alan Win and Prof. Dr. Ray Winger for their continuous encouragement, tremendous assistance and guidance in completing this research. As advisors and supervisors, they have provided me with constructive critiques to refine the contents. The completion of this research work would not be possible without their valuable support and guidelines. Their extensive knowledge, strong analytical skills and commitment to the excellence of research and teaching have truly benefited this thesis.

A special thanks to Dr. Jones Beatrix and one of his PhD student (Insha ullah) for guiding me in doing the statistical analysis.

I would also like to acknowledge Massey University for providing excellent research and student facilities.

All the participants of this research (Food Manufacturing companies in New Zealand and Singapore) have provided me with their time and valuable inputs to complete this research project. I extend my sincere gratitude to all of them and wish them best of luck in their future endeavours.

This research has been completed with the financial support of Higher Education Commission of Pakistan and Riddet Institute New Zealand as part of the Riddet CoRE (Centre of Research Excellence) Platform 4.3 Future Foods programme. Other collaborating partners in conducting this research in Singapore were Spring Singapore and Food Innovation Resource Centre, Singapore. Their services cannot be ignored in succeeding this research project to its completion.

Last, but not least, many thanks to all my family members, friends and colleagues for their unconditional love and support throughout my PhD studies.
Publications


   This article was cited in few days of its publication in numerous places such as;

   http://eurobiz.jp/2013/03/proof-positive/


Conference

New Zealand Institute of Food Science Technology (NZIFST) conference 2011. Firm orientation and NPD approaches towards functional food development: A census of New Zealand food manufacturers (Poster Presentation)
Abbreviations

NPD = New Product Development

FFPD = Functional food product development

FF = Functional foods

MNE = multinational enterprise

MO = Market oriented

PDO = Product oriented

PRO = Process oriented

ORO = Organisational oriented

IRGS = To increase range of goods/services

IMS = To increase market share

ENMO = To exploit new market opportunities

IRC = To increase responsiveness to consumers

RC = To reduce cost

IKSC = To increase knowledge sharing with consumers
# Table of contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DECLARATION</td>
<td>II</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>1</td>
</tr>
<tr>
<td>1. INTRODUCTION</td>
<td>3</td>
</tr>
<tr>
<td>1.1. BACKGROUND</td>
<td>3</td>
</tr>
<tr>
<td>1.2. RESEARCH PROBLEM</td>
<td>3</td>
</tr>
<tr>
<td>1.3. RESEARCH QUESTIONS</td>
<td>4</td>
</tr>
<tr>
<td>1.4. AIMS, OBJECTIVES AND HYPOTHESIS</td>
<td>5</td>
</tr>
<tr>
<td>2. REVIEW OF LITERATURE</td>
<td>7</td>
</tr>
<tr>
<td>2.1. INTRODUCTION</td>
<td>7</td>
</tr>
<tr>
<td>2.2. DEFINITION AND HISTORY OF FUNCTIONAL FOODS</td>
<td>7</td>
</tr>
<tr>
<td>2.3. FUNCTIONAL FOODS MARKET</td>
<td>11</td>
</tr>
<tr>
<td>2.3.1. Global Market</td>
<td>11</td>
</tr>
<tr>
<td>2.3.2. USA market</td>
<td>13</td>
</tr>
<tr>
<td>2.3.3. UK, Australia and New Zealand market</td>
<td>14</td>
</tr>
<tr>
<td>2.3.4. The need for functional foods development in New Zealand</td>
<td>15</td>
</tr>
<tr>
<td>2.4. FUNCTIONAL FOOD PRODUCT DEVELOPMENT CONTEXT</td>
<td>16</td>
</tr>
<tr>
<td>2.4.1. A case of Pharmaceutical NPD approach for FFPD</td>
<td>17</td>
</tr>
<tr>
<td>2.5. COMPARISON BETWEEN TRADITIONAL FOOD NPD AND FFPD</td>
<td>20</td>
</tr>
<tr>
<td>2.6.1. Orientation towards NPD/innovation</td>
<td>22</td>
</tr>
<tr>
<td>2.6.2. Knowledge generation in FFPD</td>
<td>23</td>
</tr>
<tr>
<td>2.6.3. Collaborative networks and arrangements</td>
<td>25</td>
</tr>
<tr>
<td>2.6.4. Commercialization of functional foods</td>
<td>33</td>
</tr>
<tr>
<td>2.7. MANAGING COLLABORATIONS</td>
<td>36</td>
</tr>
<tr>
<td>2.8. CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH</td>
<td>37</td>
</tr>
<tr>
<td>3 METHODOLOGY</td>
<td>40</td>
</tr>
<tr>
<td>3.1 INTRODUCTION</td>
<td>40</td>
</tr>
<tr>
<td>A. REVIEW OF METHODOLOGIES AVAILABLE</td>
<td>40</td>
</tr>
<tr>
<td>3.2 RESEARCH APPROACH</td>
<td>40</td>
</tr>
<tr>
<td>3.3 THEORETICAL FRAMEWORK OF RESEARCH &amp; HYPOTHESIS</td>
<td>40</td>
</tr>
<tr>
<td>3.3.1 Hypothesis development</td>
<td>43</td>
</tr>
<tr>
<td>3.4 RESEARCH DESIGN</td>
<td>46</td>
</tr>
<tr>
<td>3.4.1 Principles of mixed-method design</td>
<td>46</td>
</tr>
<tr>
<td>3.4.2 Sequential Explanatory Design (SED)</td>
<td>47</td>
</tr>
<tr>
<td>3.5 DATA COLLECTION</td>
<td>47</td>
</tr>
<tr>
<td>3.5.1 Instruments for data collection</td>
<td>47</td>
</tr>
<tr>
<td>3.5.2 Data analysis techniques</td>
<td>52</td>
</tr>
<tr>
<td>B. METHODOLOGIES USED IN THE THESIS</td>
<td>52</td>
</tr>
<tr>
<td>3.6 THESIS METHODOLOGY</td>
<td>52</td>
</tr>
</tbody>
</table>
3.7 Data Collection and Analysis Techniques .......................................................... 55
3.8 Quantitative Study (New Zealand) ...................................................................... 55
  3.8.1 Design of the quantitative questionnaire ....................................................... 55
  3.8.2 Ethics approval .............................................................................................. 56
  3.8.3 Overall data collection plan .......................................................................... 56
  3.8.4 Target population .......................................................................................... 57
  3.8.5 Sampling Frame ............................................................................................ 57
  3.8.6 Sampling technique ...................................................................................... 57
  3.8.7 Data collection .............................................................................................. 57
3.9 Quantitative Study (Singapore) ........................................................................... 58
  3.9.1 Design of the quantitative questionnaire ....................................................... 58
  3.9.2 Ethics approval .............................................................................................. 58
  3.9.3 Data Collection Plan ..................................................................................... 58
  3.9.4 Sampling Frame ............................................................................................ 59
  3.9.5 Data collection .............................................................................................. 59
3.10 Quantitative Data Analysis .................................................................................. 59
  3.10.1 Reliability and validity of data ..................................................................... 59
  3.10.2 Descriptive statistics ................................................................................... 59
  3.10.3 Comparative analysis .................................................................................. 59
3.11 Qualitative Study .............................................................................................. 60
  3.11.1 Data collection plan ..................................................................................... 60
  3.11.2 Sampling frame ........................................................................................... 60
  3.11.3 Sampling technique .................................................................................... 60
  3.11.4 Data collection tools .................................................................................. 60
  3.11.5 Qualitative questionnaire design ................................................................. 60
3.12 Qualitative Data Analysis .................................................................................... 61

4. Characterisation of Innovation Process ............................................................... 62
  4.1. Introduction ...................................................................................................... 62
  4.2. Methods ........................................................................................................... 62
  4.3. Results ............................................................................................................. 62
  Descriptive Statistics ............................................................................................. 62
    4.3.1. Demographics of food manufacturing companies ...................................... 62
    4.3.2. Distribution of respondent companies ...................................................... 63
    4.3.3. Demographics of interviewees ................................................................. 64
  4.4. Orientation Towards New Product Development (NPD) ................................. 66
    4.4.1. Innovation characteristics of food companies ......................................... 66
    4.4.2. Major aims of NPD .................................................................................. 67
    4.4.3. Mode of product development ................................................................. 68
    4.4.4. Sources of idea generation for NPD ......................................................... 69
  4.5. Collaborative Arrangements ............................................................................ 69
    4.5.1. Cooperative links ...................................................................................... 69
    4.5.2. Dominant external partners ..................................................................... 70
    4.5.3. Purpose of external collaborations ........................................................... 70
4.6. COMMERCIALIZATION TECHNIQUES ................................................................. 71
  4.6.1. Protection of innovations ........................................................................... 71
  4.6.2. Main marketing tools ................................................................................ 73
  4.6.3. Major barriers to commercialization ......................................................... 76
4.7. RELIABILITY AND VALIDITY OF INSTRUMENT .............................................. 76
4.8. DISCUSSION ......................................................................................................... 80
  4.8.1. Dominant features of NPD/Innovation process ......................................... 80
4.9. CONCLUSION ...................................................................................................... 83

5. FUNCTIONAL FOOD DEVELOPMENT MOTIVATIONS AND CHALLENGES 84

5.1. INTRODUCTION ................................................................................................. 84
5.2. METHODOLOGY ................................................................................................. 85
5.3. RESULTS ............................................................................................................. 85
  5.3.1. Descriptive statistics .................................................................................... 85
  5.3.2. Comparative analysis of innovation process ................................................. 92
  5.3.3. Orientation towards NPD/innovations .......................................................... 93
  5.3.4. Cooperative network .................................................................................... 96
  5.3.5. Commercialization techniques .................................................................. 97
5.4. DISCUSSION ......................................................................................................... 100
  5.4.1. Functional foods development trends and challenges ................................ 100
  5.4.2. Drivers of functional foods development ..................................................... 101
  5.4.3. Barriers to functional foods development .................................................... 101
  5.4.4. Comparative analysis of the innovation process ......................................... 102
5.5. CONCLUSION ................................................................................................... 105

6. QUALITATIVE EXPLORATION OF NPD/INNOVATION FEATURES .......... 107

6.1. INTRODUCTION ................................................................................................. 107
6.2. RESULTS ............................................................................................................. 107
  6.2.1. Salient features of participants and companies ........................................... 107
6.3. MAIN THEMES OF QUALITATIVE DATA ........................................................ 108
  6.3.1. Themes related to new product development process (NPD) ...................... 109
  6.3.2. Themes related to external cooperative arrangements for NPD ................ 111
  6.3.3. Themes related to commercialization tools/techniques ............................ 115
  6.3.4. Themes related to challenges to functional foods development .............. 118
  6.3.5. Themes related to drivers of functional foods development .................... 120
6.4. DISCUSSION ....................................................................................................... 121
  6.4.1. NPD process ............................................................................................... 121
  6.4.2. External collaborations and commercialisation strategies ....................... 122
  6.4.3. Barriers and drivers to functional food development ............................... 123
6.5. CONCLUSIONS ................................................................................................ 123

7. COMPARISON OF THE FOOD INNOVATION PROCESS BETWEEN SINGAPORE & NEW ZEALAND ................................................................. 125
List of Figures

FIGURE 2. 2. GLOBAL RETAIL SALE VALUE OF FUNCTIONAL FOODS ((EUROMONITOR, 2010A, 2010C)) ................................................................. 12
FIGURE 2. 3. COMPARATIVE MARKET SIZE OF VARIOUS ASIAN COUNTRIES OVER THE LAST FIVE YEARS (EUROMONITOR, 2013A) ................................................................. 12
FIGURE 2. 4. FORECAST GROWTH OF FUNCTIONAL FOOD MARKET IN ASIA (EUROMONITOR, 2013A) ................................................................. 12
FIGURE 2. 5. FUNCTIONAL FOOD MARKET IN THE USA (EUROMONITOR, 2013A) ................................................................. 13
FIGURE 2. 6. HEALTH & WELLNESS AS % OF TOTAL MARKET IN USA (EUROMONITOR, 2013A) ................................................................. 13
FIGURE 2. 7. COMPARATIVE PROJECTED FORECAST OF THE VALUE OF THE FUNCTIONAL FOOD MARKET IN CHINA AND USA (EUROMONITOR, 2013A) ................................................................. 14
FIGURE 2. 8. COMPARATIVE FUNCTIONAL FOOD MARKET IN UK, AUSTRALIA AND NEW ZEALAND (EUROMONITOR, 2009A, 2010B, 2013A) ................................................................. 14
FIGURE 2. 9. COMPARATIVE FORECASTED RETAIL VALUE OF FUNCTIONAL FOOD MARKET (EUROMONITOR, 2013A) ................................................................. 14
FIGURE 2. 1. CONCEPTUAL PRESENTATION OF FUNCTIONAL FOODS DEVELOPMENT (FREWER ET AL., 2003) ................................................................. 18
FIGURE 2. 10. GENERAL PATTERN OF NEW FUNCTIONAL FOOD DEVELOPMENT (JONES & JEW, 2007) ................................................................. 24
FIGURE 2. 11. FOOD INGREDIENT SUPPLIERS AND FULL-SERVICE PROVIDERS (SADLER, 2005) ................................................................. 26
FIGURE 2. 12. POTENTIAL NEW COLLABORATORS/COMPETITORS IN FUNCTIONAL FOOD INDUSTRY (RAY, 2004; SARKAR & COSTA, 2008) ................................................................. 29
FIGURE 3. 1. CORNERSTONES OF SUCCESSFUL NEW FUNCTIONAL FOOD PRODUCT DEVELOPMENT PROGRAM ................................................................. 42
FIGURE 3. 2. THEORETICAL FRAMEWORK OF RESEARCH ................................................................. 43
FIGURE 3. 3. APPROACHES TO MIXED-METHOD RESEARCH DESIGN (GREENE ET AL., 1989) ................................................................. 47
FIGURE 3. 4. OVERVIEW OF THE DATA COLLECTION PLAN FOR QUANTITATIVE SURVEY ................................................................. 57
FIGURE 4. 1. PARTICIPANTS EXPERIENCE (YEARS) IN FUNCTIONAL FOOD PRODUCT DEVELOPMENT ................................................................. 65
FIGURE 4. 2. EXPERIENCE IN NEW PRODUCT DEVELOPMENT BASED UPON NUMBER OF NPs DEVELOPED ................................................................. 65
FIGURE 4. 3. VARIOUS SOURCES OF IDEA OF GENERATION IN NEW FUNCTIONAL FOODS DEVELOPMENT ................................................................. 69
FIGURE 4. 4. PROPORTION OF COOPERATIVE LINKS FOR NPD ................................................................. 70
FIGURE 4. 5. TYPES OF EXTERNAL PARTNERS IN THE FOOD MANUFACTURING INDUSTRY ................................................................. 70
FIGURE 4. 6. PURPOSES OF COOPERATIVE ARRANGEMENTS AMONG THE FOOD MANUFACTURING COMPANIES ................................................................. 71
FIGURE 4. 7. COMMERCIALIZATION TOOLS FOR PROTECTING THE INNOVATIONS ................................................................. 72
FIGURE 4. 8. MAJOR MARKETING TOOL FOR NPD/INNOVATIONS ................................................................. 73
| Table 2.1 | Definition of functional foods as defined by various governing bodies in Japan, USA and Europe (H. H. Butchko et al., 2005) | 9 |
| Table 2.2 | A summarized comparison of major factors influencing traditional food NPD and FFPD in the light of current literature | 21 |
| Table 2.3 | Reorientation of portfolio towards long-term H&W commitment (Euromonitor, 2009b) | 23 |
| Table 2.4 | Emerging trends in collaborative NPD arrangements in the food industry | 27 |
| Table 2.5 | Commercialization trends in new functional food products (Sadler, 2005; Sarkar & Costa, 2008) | 35 |
| Table 3.1 | Types of questionnaire and their salient features (Beri, 2008) | 48 |
| Table 3.2 | Comparison of online data collection tools (Gordon & McNew, 2008) | 49 |
| Table 3.3 | A presentation of sequential mixed method design (Ivankova et al., 2006) | 54 |
| Table 3.4 | Summary of data collection techniques and analysis | 55 |
| Table 4.1 | Region-wide distribution of food companies across New Zealand | 63 |
| Table 4.2 | Distribution of respondent companies across population based upon employee size | 64 |
| Table 4.3 | Salient features of sampled companies and respective participants | 66 |
| Table 4.4 | Frequency score of ranking order for orientation towards NPD/Innovation | 67 |
| Table 4.5 | Main aims of NPD (2008-11) | 67 |
| Table 4.6 | Overall mode of NPD (2008-11) | 68 |
| Table 4.7 | Frequency score of ranking order for “Protection of Innovations” | 73 |
| Table 4.8 | Frequency score of ranking order for “Main marketing tools” | 75 |
| Table 4.9 | Frequency score of ranking order for “Major barriers to commercialization” | 76 |
| Table 4.10 | Measures of the instrument and their Cronbach’s Alpha values | 77 |
| Table 4.11 | Factor analysis for construct measures | 79 |
| Table 4.12 | Comparative size distribution of food and beverage manufacturing enterprises (2007) | 80 |
| Table 5.1 | Frequency score of ranking order for “Major drivers of FFPD” | 87 |
| Table 5.2 | Frequency score of ranking order for “Major barriers to FFPD” | 89 |
| Table 5.3 | Frequency score of ranking order for “Desired characteristics of a new bioactive food ingredient” | 91 |
| Table 5.4 | Salient features of sampled companies and respective participants | 93 |
| Table 5.5 | Firm orientation towards innovation/NPD | 95 |
| Table 5.6 | Comparative collaborative NPD external partners for various related activities | 97 |
| Table 5.7 | Comparative commercialization techniques of food companies | 99 |
| Table 6.1 | Salient features participants and companies | 108 |
| Table 6.2 | Summary of main themes/codes | 109 |
| Table 7.1 | Comparison of Singapore and New Zealand | 126 |
TABLE 7. 2. SALIENT FEATURES OF SAMPLED COMPANIES AND RESPECTIVE PARTICIPANTS ... 128
TABLE 7. 3. FREQUENCY SCORE OF RANKING ORDER FOR ORIENTATION TOWARDS
NPD/INNOVATION ............................................................................................................... 129
TABLE 7. 4. MAIN AIMS OF NPD (2009-12) ........................................................................ 129
TABLE 7. 5. OVERALL MODE OF NPD (2009-12) ................................................................. 130
TABLE 7. 6. FREQUENCY SCORE OF RANKING ORDER FOR INGREDIENT SUPPLIERS”, AS SOURCES
OF NEW IDEAS .................................................................................................................. 131
TABLE 7. 7. FREQUENCY SCORE OF RANKING ORDER FOR “EXTERNAL COOPERATIVE LINKS FOR
CONDUCTING NPD” ........................................................................................................ 133
TABLE 7. 8. FREQUENCY SCORE OF RANKING ORDER FOR “PURSPOE OF EXTERNAL COOPERATIVE
LINKS” ............................................................................................................................ 134
TABLE 7. 9. FREQUENCY SCORE OF RANKING ORDER FOR “PROTECTION OF INNOVATIONS” ... 135
TABLE 7. 10. FREQUENCY SCORE OF RANKING ORDER FOR “MAIN MARKETING TOOLS” ........ 136
TABLE 7. 11. FREQUENCY SCORE OF RANKING ORDER FOR “MAJOR BARRIERS TO
COMMERCIALIZATION” ................................................................................................... 137
TABLE 7. 12. FREQUENCY SCORE OF RANKING ORDER FOR “MAJOR DRIVERS OF FFPD” ...... 140
TABLE 7. 13. FREQUENCY SCORE OF RANKING ORDER FOR “MAJOR BARRIERS TO FFPD” ....... 142
TABLE 7. 14. FREQUENCY SCORE OF RANKING ORDER FOR “DESIRED CHARACTERISTICS OF A
NEW BIOACTIVE FOOD INGREDIENT” ............................................................................. 144
TABLE 7. 15. SALIENT FEATURES OF SAMPLED COMPANIES AND RESPECTIVE PARTICIPANTS ... 146
TABLE 7. 16. FIRM ORIENTATION TOWARDS INNOVATION/NPD .............................................. 148
TABLE 7. 17. COMPARATIVE COLLABORATIVE NPD EXTERNAL PARTNERS FOR VARIOUS
RELATED ACTIVITIES ....................................................................................................... 149
TABLE 7. 18. COMPARATIVE COMMERCIALIZATION TECHNIQUES OF FOOD COMPANIES ........ 151
TABLE 7. 19. COMPARISON OF INNOVATION PROCESS CHARACTERISTICS OF NEW ZEALAND AND
SINGAPORE .................................................................................................................. 153
Abstract

Functional foods, being one of the major food categories of the global health and wellness market, are becoming a major focus of new product development (NPD) in the food industry. These food products are associated with a higher return on investment by securing competitive advantage. The development of functional foods is more complex than traditional food New Product Development (NPD), calling for a concerted effort from researchers and NPD experts to explore and understand the functional food product development (FFPD) process in more detail. The current review in this field has reported that there is a need to evolve from a traditional NPD approach, towards an integrative and innovative approach involving cooperative networks and techniques of commercialization. However there is little practical evidence on how much progress has been made to date. Therefore this research was designed to investigate the food product innovation process of food manufacturing in the Asia-Pacific region (New Zealand and Singapore) with reference to functional foods development by applying a mixed-method approach i.e., quantitative and qualitative techniques.

Results showed (22% response in New Zealand) that overall a market oriented NPD approach dominated most of the factors of the innovation process in the food manufacturing sector. Major aims and mode of product development indicated a closed NPD approach (>80% NPD done alone) where increasing the range of goods and service to increase the responsiveness to customers and consumers was ranked the highest. Similarly cooperative networks seem to be dominated by ingredient suppliers and customers. These kinds of approaches are again an indication of a traditional NPD approach which was also evident in the commercialization strategies of NPD where a lower preference for protecting intellectual property rights existed. Attaining competitive edge and creating market opportunity are major drivers for FFPD. This is reflective of the business challenges in domestic markets as well as international markets where most food manufacturers fall short of attaining and maintaining competitive edge due to fierce competition in rapidly changing food markets.

A comparative account of NPD practices between registered New Zealand food companies that are doing some sort of functional foods development (Group 1) and those that are not (Group 2) showed a significant difference (P<0.05) in the aims and mode of NPD between Group 1 and Group 2. Further it was observed that food companies in Group 1 have significantly (P<0.05) more diverse external collaborations with broader aims to collaborate,
in comparison with food companies in Group 2. This is a positive step toward developing an external resource base, which is essential in developing functional foods. This attitude should be encouraged in future innovation polices as being critical to value-added food product innovations in New Zealand. Apart from these differences, food companies are still pursuing a traditional NPD approach (independent and closed NPD); with loose Intellectual Property (IP) protection practices irrespective of type of innovation activity. Similar comparative analysis showed that there was no difference in the innovation process of food companies in Singapore. Hence it can be inferred that in New Zealand and Singapore the food manufacturing sector needs to identify the factors of sustained competitive advantage. According to a resource-based view (RBV) of attaining competitive advantage, heterogeneity in resources and capabilities is essential at a national level of innovation system to create competitive behaviour among stakeholders. The prevalent scenario of homogeneous resources and capabilities can be changed by facilitating the development of technological collaborations among the stakeholders at a national level. In relation to this change, there is a need to create awareness among the stakeholders about the factors needed for developing unique and inimitable resources, and dynamic capabilities in food manufacturing.

Overall it can be concluded that the current closed NPD model is suited to incremental innovations and is exposed to exploitation by the powerful retailers (customers). Further the emerging health wellness market segment requires a change in NPD attitude where futuristic needs and demands of consumers are met through understanding consumer attitudes towards foods and their life-style. Therefore a change in NPD approach from a closed and linear model to an open and interactive NPD model is suggested to perform better in future. Research-oriented collaborations need to be strengthened in their scope and content to develop the innovative capabilities and capacities of Small & Medium Enterprises SME’s with future value-added food production. However, this is a challenging task for food companies who are small enough to employ NPD professionals to develop that interactive NPD model where internal capabilities are leveraged with external resources to enhance the novelty of product innovations. Government may have to work in close collaboration with manufacturers of functional foods to evolve a regulatory framework that is compatible with domestic and international market regulations.