A Study of the Relationship between Modern Food Retail Penetration and Urban Indonesian Consumers' Food Shopping Behaviour, Consumption and Dietary Patterns

By

Hery Toiba

Thesis submitted to the University of Adelaide in fulfilment of the requirements for the degree of Doctor of Philosophy in Global Food Studies

Global Food Studies

Faculty of the Profession

The University of Adelaide

December 2015

Acknowledgement

Firstly, I would like to thank ALLAH the Almighty, the most beneficent, the most compassionate, and the most merciful for everything. I also would like to acknowledge the Ministry of Education National, Republic of Indonesia who offered me the opportunity to study at the University of Adelaide through a DIKTI scholarship. I would like to thank the University of Adelaide for providing me with an additional scholarship to complete my PhD studies. I also wish to express my sincere gratitude to my University (Brawijaya University) for supporting my study.

I would like to express my deep appreciation to my supervisors, Professor Wendy Umberger and Professor Randy Stringer for their guidance, encouragement and support. Particularly, I am deeply indebted to my principal supervisor, Prof Umberger. She afforded me the opportunity to be involved in the ACIAR project, which provided me with financial support so as to undertake my research. She patiently tutored me the research process and taught me how to become an independent researcher as well as nurtured me how to be a dedicated scholar.

I wish to thank Dr. Nick Minot of the International Food Policy Research Institute (IFPRI) who assisted with the design of the sample, the questionnaire and data analysis. I am grateful to Dr. Kate Cadman for guiding me how to write a solid literature review. I also want to extend my gratitude to my editor, Fiona Johnston and Dr. Handoyo P. Widodo for their help in editing this dissertation.

I would like to thank my colleagues in Global Food Studies for all of their support and encouragement. Especially, thank you, Wahida, for your never-ending friendship, encouragement, support, and advice. Thank you, Wahyu, Suprehatin, Sahara, Bona, Eka, Dias, John, Mark, Poppy, Hoa, Camilo, Anna, Hendrik, Risti, Dale, and Craig, for friendship and support.

Lastly but not least I would like to express my sincere gratitude to my late mom and father for their love, patience, and sacrifice. They just wanted to see their son be a "good person". I would like to thank my wife "Dewi Fatmawati" and my lovely son "Aufa Hafid Defahery", without both of you, I could not finish this PhD program. They greatly contributed to my motivation. The dissertation is dedicated to my brothers and sisters: Mbak Sun, mas Har, mbak Ti, mbak Tien, mbak Sih, mas Manto, dik Siti for all of their support.

Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

I give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying, subject to the provisions of the Copyright Act 1968.

I also give permission for the digital version of my thesis to be made available on the web, via the University's digital version research repository, the Library catalogue and also through web search engines, unless permission has been granted by the University to restrict access for a period of time.

North Terrace Campus, December 2015

Hery Toiba

Abstract

Indonesia is experiencing a dramatic growth in the number of modern food retailers, such as hypermarkets, supermarkets and mini-markets. Given this, policy makers are concerned about the impact of 'modern food retail penetration' or 'supermarket penetration' on Indonesian food chain participants. The primary objective of this thesis is to analyse, in an urban Indonesian context, the relationship between modern food retail penetration and changes in food shopping behaviour and dietary patterns. Data from a survey of 1,180 urban households from three Indonesian cities: Surabaya, Bogor, and Surakarta, are scrutinized to shed light on these issues.

The first analysis focused on factors that help explain consumers' shopping behaviours. In this respect, the frequency of shopping for food at modern versus traditional retail outlet formats was examined. Findings show that traditional food retailers are still used most frequently by the majority of consumers. Consumers who shopped more frequently at modern food retailers tend to have higher incomes, more education, more assets, credit cards, and higher concerns about nutrition information labels and food safety. Conversely, price-sensitive consumers were more likely to shop at traditional food retailers.

The second study expanded upon consumer's choice of food retail format and examined the determinants of consumers' food expenditure shares in both modern and traditional food retail formats. The results of econometric analysis confirm that consumers who had the highest probability in spending more on food in modern food retailers were consumers with children under 5 years old, a high-income, education, and asset as well as concerned about safety. On the other hand, sensitive-price consumers were more likely to patronize in traditional food retailers.

The third analysis extended to the knowledge the effect of food expenditure shares at modern food retailers on diets and health outcomes. The results of OLS and Instrumental

Variables regressions suggest a negative and significant relationship between the share of food expenditure at modern food retailers and the healthiness of consumer food purchases even after controlling for other characteristics (e.g., age, gender, education, income) that may also contribute to food consumption decisions. The final chapter summarises the key findings and provides policy recommendations and opportunities for future research.

Table of Contents

Acknowledgements i
Declaration iii
Abstract iv
Table of Contents vi
List of Tables viii
Abbreviations x
Chapter 1: Introduction 1
1.1 Background and Overview of Food Retailing in Indonesia 4
1.2 Objectives 6
1.3 Organization of the Thesis 7
Chapter 2: Literature Review 9
2.1 Introduction 9
2.2 Transformation of Food Retailers in Developing Countries 9
2.3 Retail Transformation in Indonesia 12
2.4 Modern Food Retailers' Penetration and Traditional Food Retailers 15
2.5 Consumers' Shopping Behaviour in Relation to Different Food Retailers 18
2.6 The Impact of the Rapid Rise of Supermarkets on Food Expenditure 22
2.7 Supermarket Penetration and Diet Transition 26
2.8 Summary 29
Chapter 3: Research Method and Descriptive Statistics of Survey Responses 32
3.1 Introduction 32
3.2 Questionnaire Development 32
3.3 Sampling Methods 37
3.4 Data Entry and Cleaning 40
3.4.1 Characteristics of participant household members 40
3.4.2 Descriptive statistics for cooking and shopping attitudes and behaviour 44
3.4.3 The descriptive statistics for shopping behaviour 47
3.4.4 Household food consumption and food expenditure 54
3.4.5 Descriptive statistics for non-food expenditure 61
3.4.6 Descriptive statistics for factors in food choice 62
3.4.7 Food and nutrition attitudes 66
3.4.8 Household diet-related health concerns and management 69
3.4.9 Household changes in health status and standard of living 72
3.5 Summary 73
Chapter 4: Indonesian Consumers' Choice of Food Retail Formats: Are Traditional Food Retailers being Crowded Out? 75
4.1 Introduction 75
4.2 Data and Methods 79
4.2.1 Data from the Indonesian survey of urban consumers 79
4.2.2 Empirical model 79
4.2.3 Analytical methods 83
4.3 Results and Discussion 88
4.3.1 Perception of and frequency of use of modern versus traditional retail outlets 91
4.3.2 Multivariate probit model results 94

4.4 Conclusions and Implications 104

Chapter 5: Determinants of Indonesian Urban Household Expenditures Food At Modern And Traditional Food Outlets 107

5.1 Introduction 107
5.2 Methodology 109
5.2.1 Estimation techniques 109
5.2.2 Empirical estimation 112
5.3 Results and Discussion 115
5.3.1 Share of food expenditure by type of food outlet, socio-economic status and region 120
5.3.2 Determinants of household food expenditure shares at modern and traditional food retailers 125
5.4 Conclusions and Implications 135

Chapter 6: Diet Transition and Supermarket Shopping Behaviour: Is there a Link? 138

6.1 Introduction 138
6.2 Data and Methods 140
6.2.1 Data from the Indonesia survey of urban consumers 140
6.2.2 Econometric approach 141
6.2.3 Estimation and instrumental variables 145
6.3 Results 149
6.4 Conclusions and Implications 154

Chapter 7: Summary, Conclusions and Implications 156

7.1 Summary and Conclusions 156
7.2 Implications 160

Appendix…… 162

List of References 186

List of Tables

Table 3.1 The number of selected kelurahans, RTs and households in three cities 40
Table 3.2 Respondent and household socio-demographics characteristics 42
Table 3.3 Descriptive statistics for housing and assets of respondent households 43
Table 3.4 Descriptive statistics for cooking and shopping attitudes 44
Table 3.5 Household behavior related to use of prepared food and food purchased away from home 46
Table 3.6 Average level of importance respondents placed on retail format attributes when deciding where to purchase food 47
Table 3.7 Descriptive statistics for time (minutes) and distance (km) needed to get to the nearest food retail outlets 48
Table 3.8 Households' (%) food shopping frequency at various retail formats (n=1180) 49
Table 3.9 Households' frequency (%) of shopping for non-food products at various retail formats (n=1180) 50
Table 3.10 Frequency (%) of transport mode getting to the nearest retail formats 50
Table 3.11 The main reasons consumers shopped for food at retail outlets (% indicating reason) 52
Table 3.12 Share (%) of households in sample indicating per capita consumption of food product decreased, remained constant or increased compared to five years ago (2005 vs. 2010) 53
Table 3.13 Retail formats used to purchase various food products 56
Table 3.14 Descriptive statistics for the frequency of purchasing food products during the past month 58
Table 3.15 Descriptive statistics for household expenditure (1000 IDRs) on food products per year 60
Table 3.16 Descriptive statistics for household expenditure on non-food items per year (1000s IDRs) 61
Table 3.17 The most important attributes influencing consumers' food purchasing decisions 63
Table 3.18 Descriptive statistics for type of nutrition information that consumers read 65
Table 3.19 Average level of agreement (0 = strongly disagree and 4 = strongly agree) with statements about diet and nutrition attitudes and behavior 67
Table 3.20 Mean level of agreement with statements regarding food concerns (0=strongly disagree and 4=strongly agree) 68
Table 3.21 Respondents' concerns about various diet-related diseases 70
Table 3.22 Household family health history 71
Table 3.23 Descriptive statistics for duration of time spent watching television and exercising 72
Table 4.1 Descriptive statistics for dependent variable in the multivariate probit (N=1180) 89

Table 4.2 Descriptive statistics for independent variables in multivariate probit (N=1180).....90
Table 4.3 Frequency (%) of shopping for food products at various retail format types.....92
Table 4.4 Percentage of consumers who believe retail format is best for price 93
Table 4.5 Percentage of consumers who believe retail format is best for quality 93
Table 4.6 Percentage of consumers who believe retail format is best for safety.....93
Table 4.7 Percentage of consumers who believe retail format is best for trustworthy product information.....94
Table 4.8 The rotated factor loadings 95
Table 4.9 Results of factor analysis of outlet attributes.....96
Table 4.10 Multivariate probit models: Use of retail outlet to purchase food.....98
Table 4.11 Matrix correlation for multivariate probit models 103
Table 5.1 Descriptive statistics for dependent variables in the fractional logit model of food expenditures at modern and traditional food retailers (N=1180).....117
Table 5.2 Descriptive statistics for independent variables in the fractional logit model of food expenditure at modern and traditional food retailers (N=1180) 118
Table 5.3 Share of expenditure by commodity and type of food retail outlet 121
Table 5.4 Share of food spending by type of food outlet and income (urban food expenditures) .123
Table 5.5 Share of food spending by type of food, type of food outlet and education (years) (Percent of urban food expenditures).....124
Table 5.6 Share of spending by type of food outlet and city (percentage of urban food expenditure) 125
Table 5.7 Partial effects - Fractional logit, by expenditure shares on food, grain and roots and tubers at modern and traditional retailers 129
Table 5.8 Partial effects - Fractional logit, by expenditure shares on pulses, milk and dairy, and meat and fish.....131
Table 5.9 Partial effects - Fractional logit, by expenditure shares on vegetables and fruit at modern and traditional retailers 132
Table 5.10 Partial effects - Fractional logit, by expenditure shares on other foods and meals outside home at modern and traditional retailers 133
Table 6.1 Definitions and descriptive statistics for variables 143
Table 6.2 Regression results: Estimation of expenditure shares on healthy food (HealthyShare) .151

Abbreviations

ACIAR	Australian Centre for International Agricultural Research
ANOVA	Analysis of Variance
BMI	Body Mass Index
FAFH	Food away from home
FAO	Food Agriculture Organization
FDI	Foreign Direct Investment
FFV	Fresh Fruit and Vegetables
GHK	Geweke-Hajivassiliou-Keane
ICASEPS	the Indonesian Centre for Agriculture Socio-Economic Research and Policy Studies
IDR	Indonesia Rupiah
IFPRI	the International Food Policy Research Institute
IMF	the International Monetary Fund
IV	Instrumental Variable
KMO	the Kaiser-Meyer-Olkin
KPPU	Komisi Pengawasan Persaingan Usaha (Commisison for Supervision of Business Competition)
LoI	Letter of Intent
LPG	Liquefied Petroleum Gas
OLS	Ordinary Least Square
QML	Quasi-Maximum Likelihood
NCDs	Non-Communicable Chronic Diseases
SD	Standard Deviation

Susenas	Survey Sosial Ekonomi Nasional (The National Socioeconomic Survey)
UK	the United Kingdom
US	the United States
USDA	the United States Department of Agriculture
WHO	World Health Organization
2SLS	Two Stage Least Square