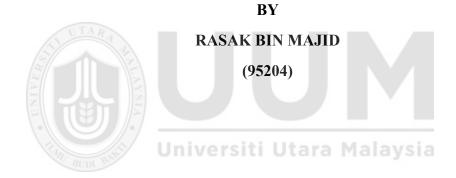
The copyright © of this thesis belongs to its rightful author and/or other copyright owner. Copies can be accessed and downloaded for non-commercial or learning purposes without any charge and permission. The thesis cannot be reproduced or quoted as a whole without the permission from its rightful owner. No alteration or changes in format is allowed without permission from its rightful owner.



ECONOMIC PERFORMANCE OF CONTRACT BROILER FARMING IN MALAYSIA



Thesis Submitted to
School of Economics, Finance and Banking, College of Business,
University Utara Malaysia
In Fulfillment of the Requirement for the Award of Doctor of Philosophy

PERMISSION TO USE

In presenting this thesis as a fulfillment of the requirement for a Post Graduate degree from University Utara Malaysia (UUM), I agree that the library of this university may make it freely available for inspection. I further agree that permission for copying the thesis in any manner (whole or in part) for scholarly purposes may be granted by my supervisor or in their absence, by the Dean School of Economics, Finance and Banking. It is also understood that due recognition shall be given to me and the University Utara Malaysia for any scholarly use of which may be made of any material from my thesis.

Request for permission to copy or to make other use of materials in this thesis, in whole or in part, should be addressed to:

Dean of School of Economics, Finance and Banking

UUM College of Business

University Utara Malaysia

06010 UUM Sintok

ABSTRACT

Integrated broiler contract farming (IBCF) is one of the systems that increase poultry production in Malaysia. Generally, broiler farmers participate in this system to reap some attractive benefits. This study examined the economic performance of the contract broiler farmers (CBFs) and the potential relationship between participation and profit. The survey was conducted in Perak, Johor and Pahang to determine the factors that influence farmers' participation in the IBCF system. The study featured participation as the dependent variable together with independent variables, namely size of farm, the experience of the farmer, age, gross annual income, distance of farm to market center, and capital. The results from logit model indicated that all variables, except age, are statistically significant and have the potential to affect farmers' participation in IBCF. The pooled ordinary least square analysis was used to evaluate the economic performance of the CBFs. Size of farm, feed conversion rate, average body weight, average marketing age, mortality rate, and chicken rearing system are statistically significant and considerably influence the performance of CBF. Also, there is evidence of a positive relationship between participation and profit. Based on these findings, the study suggested that the close house system would be the best option for broiler farming. Thus, the government suggest to provide tax reduction to those who implemented close house system. Besides, it is recommended that the integrators with the cooperation of Department of Veterinary Service or the integrators themselves should provide the technical service to improve participation and the economic performance of the CBFs .This would eventually improve the broiler management and broiler production.

Keywords: Integrated broiler contract farming, contract broiler farmers, economic performance.

Universiti Utara Malaysia

ABSTRAK

Kontrak ayam pedaging bersepadu (IBCF) merupakan satu sistem yang digunakan untuk meningkatkan pengeluaran ayam di Malaysia. Penternak ayam pedaging mendapat banyak manfaat apabila menyertai sistem kontrak ini. Kajian ini dijalankan untuk menyelidik prestasi ekonomi penternak ayam pedaging kontrak dan hubungannya dengan penyertaan dengan penyertaan di dalam system IBCF. Soal selidik telah dijalankan di Perak, Johor dan Pahang. Dalam kajian ini, penyertaan merupakan pemboleh ubah bersandar manakala saiz ladang, pengalaman penternak, umur, pendapatan kasar tahunan, jarak antara ladang ayam dengan tempat pemasaran dan modal pula sebagai pemboleh ubah bebas. Keputusan daripada model logit mendapati bahawa semua pemboleh ubah bebas mempengaruhi penyertaan penternak ke dalam sistem integrasi kontrak ayam kecuali umur, mempengaruhi penyertaan penternak ke dalam system IBCF. Analisis regresi berbilang data terkumpul digunakan untuk menilai tahap prestasi ekonomi penternak ayam pedaging kontrak. Saiz ladang, kadar pertukaran makanan, purata berat badan, purata umur ayam dijual, kadar kematian dan sistem perumahan ayam sebagai adalah signifikan secara statistik mempengaruhi prestasi ekonomi penternak ayam pedaging kontrak. Kajian ini juga membuktikan hubungan positif antara penyertaan penternak dan prestasi ekonomi. Dapatan kajian mencadangkan sistem rumah tertutup merupakan pilihan terbaik kepada penternak ayam pedaging kontrak. Oleh itu,pihak kerajaan dicadangkan untuk memberi penurunan cukai kepada penternak yang menggunakan sistem rumah tertutup ini. Di samping itu, pihak syarikat bersepadu dicadangkan bekerjasama dengan Jabatan Perkhidmatan Veterinar atau pihak syarikat bersepadu disarankan menyediakan perkhidmatan teknikal bagi memperbaiki penyertaan dan prestasi penternak ayam pedaging kontrak . Hal ini akan memperbaiki pengurusan dan pengeluaran ayam pedaging.

Universiti Utara Malaysia

Kata kunci: Kontrak ayam pedaging bersepadu, penternak kontrak ayam, prestasi ekonomi.

ACKNOWLEDGEMENT

First and foremost, my profound gratitude goes to *Allahu Subhanahu Wa Ta'ala* for His infinite mercy, continues guidance and endless blessings on me. Indeed, it goes without saying that the journey of PhD is an unachievable task for me but for the grace of Allah. ALHAMDULILLAH...

The value of inputs I have received during the course of this programme from my main supervisor, Associate Professor Dr. Sallahuddin Hassan and co-supervisor Professor Datuk Dr. Amir Hussin Baharuddin cannot be quantified. They gave me complete and free access to their wealth of knowledge and experience. Their painstakingly guided me from onset to the completion of the programme despite his tight administrative schedules and numerous academic responsibilities. I really benefited immensely from their obvious nature of hard work and thoroughness in reading the work. Indeed, I appreciate all you have done.

I am also indebted to Mr Mohamad Shafiqi Bin Hashim for guided me with constructive comments and observation in improving the quality of the thesis.

My parents, in persons of Late Haji Majid and Late Hajjah Amai deserve to acknowledged. Your spirit and guidance contributed towards whatever success I have made. I pray that my Almighty Allah reward you with *Jannatul-Firdaus*.

I like to appreciate the understanding and moral support I got from my beloved family and friends. Finally, I would like to thank the management and entire staff of University Utara Malaysia for proving an enabling environment during my entire study in this college.

Universiti Utara Malaysia

TABLE OF CONTENTS

		Page
PAC	GE TITLE	i
PER	RMISSION TO USE	ii
CER	RTIFICATION OF THESIS TO USE	iii
ABS	STRACT	iv
TIT	LE PAGE	V
ACI	KNOWLEDGEMENT	vi
TAE	BLE OF CONTENTS	vii
LIST	T OF TABLES	Хi
	T OF FIGURES	xiii
ABI	BREVIATIONS	xiv
CH	APTER 1 INTRODUCTION	
1.0	Introduction	1
1.1	Background of the Study	1
1.2	Statement of Problem	12
1.3	Objectives of the Study	14
1.4	, , , , , , , , , , , , , , , , , , ,	14
1.5	Scope of the Research	15
1.6	Organization by the Chapter	15
CHA	APTER 2 LITERATURE REVIEW	
2.0	Introduction	16
2.1	The Concept and Mechanism of Contract Farming	16
2.2	Theoretical Framework	19
	2.2.1 Principal – Agent Theory	20
	2.2.2 Transaction – Cost Approaches	22
	2.2.3 Uncertainty Theory of Profit	25
2.3	Determinants of Farmer's Participation in the Integration Broiler Contract	27
	Farming	
	2.3.1 Age of Farmer	29
	2.3.2 Farm Size	30
	2.3.3 Capital	32
	2.3.4 Experience	34
	2.3.5 Educational Level	35
	2.3.6 Gross Annual Income	38
	2.3.7 Farm Distance from Market Center	39
2.4	Economic Performance of Contract Broiler Farmer	40
	2.4.1 Feed Conversion Ratio	41
	2.4.2 Mortality Rate	43
	2.4.3 Average Market Age	45
	2.4.4 Average Body Weight	47
2.5	Literature Gap	48
	Conclusion	49

CH	APTER	3 METHODOLOGY	
3.0	Introdu	ction	50
3.1	Concep	otual Framework	50
	3.1.1	Theoretical Framework of Participation	50
	3.1.2	Theoretical Framework of Profit	53
3.2	The M	odel	53
	3.2.1	Participation in Contract Farming	53
	3.2.2	Economic Performance of Contract Farmer's Model	54
	3.2.3	Relationship Between Participation and Economic Performance of	54
		Contract Farmer's Model	
3.3	Justific	ation of the Variables	55
	3.3.1	Age of Farmer	55
	3.3.2	Size of Farm	56
	3.3.3	Size of Capital	57
	3.3.4	Experience of Farmers	58
	3.3.5	Educational Level of Farmers	58
	3.3.6		59
		Distance from Target Market	60
	3.3.8	Feed Conversion Ratio	60
	3.3.9	Mortality Rate	61
		Average Market Age	61
		Average Body Weight	62
3.4		nd Sampling Method	62
	3.4.1	Reliability and Validity Test of variables	64
	3.4.2	Size of Samples	64
3.5		l of Analysis	65
		Logit Model	65
		Pooled Ordinary Least Square	66
3.6	Conclu	V barry W.	67
СН	APTER	4 RESEARCH FINDINGS	
4.0	Introdu		69
		is of Respondents' Profile	69
	4.1.1	Gender of Farmer	69
	4.3.2	Age of Farmers	70
	4.1.3	Marital Status of Respondents	71
	4.1.4	Educational Level of Respondents	72
	4.1.5	Farmer Experience	73
	4.1.6	Occupational of Respondents	74
	4.1.7	Size of Farm	75
	4.1.8	Housing System of Broiler Farming	76
	4.1.9	Distance to Market Center	78
	4.1.10	Farm Ownership	78
	4.1.11	Size of Capital and Capital Source of the Respondents	79
	4.1.12	Gross Annual Income of Respondents	82
	4.1.13	Farmer Reasons for Participating in the IBCF System	83
	4.1.14	Perception of Respondents Toward IBCF System	84
	4.1.15	Reason for not Participate in the IBCF System	84

	4.1.16	Economic Performance of the Respondents	85
	4.1.17	Feed Conversion Rate	86
	4.1.18	Mortality Rate	87
	4.1.19	Average Market Age	87
	4.1.20	Average Body Weight	88
4.2	Descrip	tive Statistics	89
4.3	Correla	tion Analysis	92
4.4	The De	terminants of the IBCF's System Participation	94
	4.4.1	Estimation Results of Participation Model	94
	4.4.2	Marginal Effect and Odd Ratio Estimation on Logit Model	100
	4.4.3	Diagnostic Checking	103
	4.4.4	Robustness Checking	104
4.5	Evaluat	ion of Economic Performance of the CBF	105
	4.5.1	Discussion of Estimation Results	105
	4.5.2	Diagnostic Checking	114
4.6	Relation	nship Between Participation and Economic Performance of the CBF	116
	4.6.1	Discussion of Estimation Results	116
	4.6.2	Marginal Effect and Odd Ratio on Logit Model	118
	4.6.3	Diagnostic Checking	120
	4.6.4	Robustness Checking	121
4.7	Conclus	sion	121
CH	APTER:	5 SUMMARY AND POLICY IMPLICATION	
5.1	Policy 1	Implication	124
5.2	Limitat	ion of Study	125
5.3	Recom	mendation for the Future Study	126
REI	FERENC	CES Universiti Utara Malaysia	128
API	PENDIX	BUDI W	155

LIST OF TABLES

		Page
Table 1.1	Chicken Population by Type in Malaysia, 2006 – 2010	7
Table 1.2	Broiler Consumption, Export, and Import by Malaysia 2012 – 2014	8
Table 1.3	List of Parent Stock Companies	10
Table 1.4	Distribution of Hatcheries in Peninsular Malaysia	10
Table 1.5	Number of Broiler Farms	11
Table 1.6	Number of Broiler Farms in Peninsular Malaysia	12
Table 1.7	CBF : Participants and Withdrawal of CBFs (2012 – 2013)	13
Table 3.1	Size of Sample	65
Table 4.1	Gender of Farmers	70
Table 4.2	Age of Respondents	70
Table 4.3	Tabulation between Ages of Respondents By State	71
Table 4.4	Marital Status of Respondents	72
Table 4.5	Education Level of Respondents	72
Table 4.6	Tabulation between Age and Education Level	73
Table 4.7	Farming Experience	73
Table 4.8	Tabulation between Experience and Respondents' Location	74
Table 4.9	Respondents' Main Occupation	75
Table 4.10	Farm Size of Respondents	75
Table 4.11	Tabulation between Age and Size of Farm	76
Table 4.12	Farm House System	76
Table 4.13	Reason for Choosing CHS	77
Table 4.14	Tabulation between Age and Farm House System	77
Table 4.15	Distance of Respondents' Farm From Marketing Center	78
Table 4.16	Farm Ownership	79
Table 4.17	Relationship Between Age and Farm Ownership	79
Table 4.17	Relationship Between Fige and Farm Ownership Relationship Between Sizes of Capital With Respondents	80
Table 4.19	Capital Sources of Respondents	80
Table 4.20	Relationship between Age and Capital Source of Respondents	81
Table 4.21	Gross Annual Income of Respondents	82
Table 4.22	Relationship of Age with Gross Annual Income	83
Table 4.23	Respondents' Reason for Participating in the IBCF System	83
Table 4.24	Perception of Respondents toward IBCF System	84
Table 4.25	Respondents' Reason to Reject the IBCF System	85
Table 4.26	Economic Performance of the Respondents	86
Table 4.27	Feed Conversion Ratio	86
Table 4.28	Mortality Rate	87
Table 4.29	Average Market Age of Broiler	88
Table 4.30	Average Body Weight of Broiler	88
Table 4.31	Descriptive Statistics for the IBCF System Participation	90
Table 4.32	Descriptive Statistics for Economic Performance	91
Table 4.33	Pearson Correlation Analysis of Variable of the Farmer's	93
m 11 · · · ·	Participation in the IBCF Model	
Table 4.34	Pearson Correlation Analysis of Variable of the Farmer's Economic	94
	Performance in the IBCF Model	

		Page
Table 4.35	Estimation Results of Participation	95
Table 4.36	Marginal effect and Odd Ratio	101
Table 4.37	R-squares and Diagnostic Test	104
Table 4.38	Estimation Results of Economic Performance of Contract Farmers Model	106
Table 4.39	Estimation Result of Economic Performance of Contract Farmers Model(Large)	112
Table 4.40	Estimation Result of Economic Performance of Contract Farmers Model(Medium)	113
Table 4.41	Estimation Result of Economic Performance of Contract Farmers Model(Small)	114
Table 4.42	Heteroscedasticity Test: Breusch-Pagan-Godfrey	115
Table 4.43	Estimation Results of Participation and Economic Performance of Contract Farmers Model	116
Table 4.44	Marginal Effect and Odd Ratio of Participation and Economic Performance of Contract Farm Model	119
Table 4.45	R-squares and Diagnostic Test	120



LIST OF FIGURES

		Page
Figure 1.1	Broiler Supply Chain	8
Figure 3.1	Conceptual Framework	51
Figure 3.2	Multi-stages Sampling of Respondents	64
Figure 4.1	Descriptive Statistics For Symmetrical Distribution	89
Figure 4.2	Descriptive Statistics For Positive Skewed Distribution	90
Figure 4.3	Descriptive Statistics For Negative Skewed Distribution	91
Figure 4.4	Robustness Checking of the Participation Model	105
Figure 4.5	Normality Test	115
Figure 4.6	Robustness Checking of PROFIT with Participation in the IBCF	121
	System	



ABBREVIATIONS

ABW Average Body Weight

AGE Age of farmers

AMA Average Market Age

CAP Capital

CBF Contract Broiler Farmer

CF Contract Farming
CHS Closed House System

DIS Distance

DOC Day Old Chick

DU Dummy

DVS Department of Veterinary Service

EDU Education EXP Experience

EAS Extension and Advisory Services

FCR Feed Conversion Rate

FLFAM Federation of Livestock Farmers' Associations of Malaysia

GAI Gross Annual Income

IBCF Integrated Broiler Contract Farming

IND Individual Farmers

MOA Ministry of Agriculture and Agro-Based Industry of Malaysia

MOR Mortality Rate

MyCC Malaysia Competition Commission

NAP National Agro-food Policy

OHS Open House System

PAR Participation

PROFIT Profit from the economic performance

SIZE Size of Farm

CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

Integration Broiler Contract farming (IBCF) system is an integration program between a company which offers the contract which known as the integrators and a contract broiler farmer (CBF). In this program, the arrangement for the production or supply of broiler is established. The contract requires the CBF to raise the chicks in accordance with the terms and references given by the integrators.

For instance, the price of chicken is fixed by the integrator. If the CBFs agree with the terms and references, they are required to sign the letter of agreement or memorandum of understanding (MOU) with the integrators. In the CF, establish an agreement between integrators and CBF to make a commitment to supply broilers, at a particular price level for a certain period (Wainaina, Okello & Nzuma, 2012). For further discussion, this chapter discusses the background of the study, statement of the problem, the justification for the study and objectives.

1.1 BACKGROUND OF THE STUDY

Generally, the impressive progress in the poultry sector and particularly in this broiler business is because of the improvement of the technology inbreeding, disease control, feeds and increase investment in the private sector in the livestock industry, especially in the IBCF system. Poultry farming is singularly the most important livestock industry in Malaysia. The production of chicken probably increased because of poultry meat has

The contents of the thesis is for internal user only

REFERENCES

- Abdul, A.A. & Norhlilmatun, N. S., (2013), Factors that influence the interest of youths in agricultural entrepreneurship, *International Journal of Business and Social Science*, **4(3)**, 288 302.
- Adrian, A.M., Norwood, S.H. & Mask, P.L. (2005). Producer's perception and attitudes is towards precision agriculture technologies. *Journal Computer Technology Agriculture*, **48(20)**, 256 271.
- Agarwal, I., Priya, S. & Bhuvaneswai, S. (2005), Contract farming venture in cotton: A case study in Tamilnadu. *Indian Journal of Agricultural Marketing*, **19(2)**, 153 161.
- Amakiri, A.O. & Monsi, A. (1992), Effects of nocturnal variations in lighting regimes on broiler performance in a humid tropical environment. *Delta Agriculture*, **1**, 37 42.
- Amakiri, A.O., Owen, O.J. and Etokeren, E.S. (2011), Broiler chicken's growth rate in three different nocturnal lighting regimes, *African Journal of Food, Agriculture, Nutrition and Development*, **11(2)**, 1 8.
- Alessandra, A. & Ray, D.B. (2009), Off-farm work by farmers: The importance of rural labour markets, *Rural and Small Town Canada Analysis Bulletin*, **8(1)**, 1 31.
- Allen, D.W. & Lueck, D. (1995). Risk preferences and the economics of the contract.

 The American Economics Review, 85(2), 447 451.
- Ariffin, A. S., Lamsali, H., & Mohtar, S. (2013). Linkages between integrator, grower involvement and business performance: An excerpt from preliminary findings.

 *International Journal of Supply Chain Management, 2(3), 14 20.
- Arumugam, N., Arshad F. M., Chiew, E. & Mohamed, Z. (2011). Determinants of fresh fruits and vegetables (FFV) farmers' participation in contract farming in

- Peninsular Malaysia, *International Journal of Agricultural Management and Development*, **1(2)**, 65 71.
- Asaniyan, E. K. (2014). Growth performance, feed intake and slaughter characteristics of broiler chicken under three different stocking densities, *Journal Animal Production Advance*, **4(2)**, 348 354
- Asian Development Bank (2015). Contract farming for better farmer–enterprise partnerships, ADB's experience in the People's Republic of China, Project Research on Enterprise– Household Partnership and Cooperation Model in New Type of Agricultural Management System report, Asian Development Bank Publisher, Philippines.
- Asenso-Okyere, K., Davis, K., & Aredo, D., (2008). Advancing Agriculture in Developing Countries through Knowledge and Innovation. Synopsis of an International Conference. Paper prepared for International Food Policy Research Institute.
- Ayako, A.B. (1989). Contract farming and out-grower schemes in Kenya: Case studies in Ayako, AB and ill Glover, *Eastern Africa Economic Review*. Special Issue, 4 14.
- Babatunde, R.O. (2013). On-farm and off-farm works: Complement or substitute?

 Evidence from rural Nigeria, 4th International Conference of the African Association of Agricultural Economists, Hammamet, Tunisia.
- Babin, B. J., Zikmund, W.G., Carr, & Griffin, M. (2013). Business research methods, South-Western: New York, USA.
- Barrett, C. B. and Swallow, B. M. (2006). Fractal poverty traps. *World Development*, **34**, 1–15.

- Bass, F.M. & Wittink, D.R. (1975). Pooling issues and methods in regression analysis with examples in marketing research, *Journal of Marketing Research*, **12(4)**, 414 425.
- Begum, I.A, (2005). An assessment of vertically integrated contract poultry farming: A case study in Bangladesh, *International Journal of Poultry Science*, **4(3)**, 167 176.
- Begum, I. A., Alam, M. J., Buysse, J., Frija, A. & Van Huylenbroeck, G. (2012).

 Contract farmer and poultry farm efficiency in Bangladesh: A data envelopment analysis, *Applied Economics*, **44(28)**, 3737 3747.
- Behrooz, H. (2013). Determining the optimal size and economic efficiency of paddy farms in KB Province, Iran, *International Journal of Agriculture and Crop Sciences*, **5(19)**, 2318 2321.
- Bellemare, M. F. (2012). As you sow, so shall you reap: The welfare impacts of contract farming, *World Development*, **40(7)**, 1418 –1434.
- Bhalla, G. S. & Singh, G. (1996). Impact of GATT on Punjab Agriculture, Ajanta, Delhi.
- Bijman, J. (2008). Contract farming in developing countries: An overview, Working Paper, Wageningen University.
- Binswanger, H.P. & Rosenzweig M.R. (1986). Behavioural and material determinants of production relations in agriculture. *Journal of Development Studies*, **22(3)**, 503 539.
- Bisant, K., Fatimah, M.A & Tan, H.B. (2010). Spatial integration in the broiler market in Peninsular Malaysia, *Journal of International Food & Agribusiness Marketing*, **22**, 94 107.

- Boehlje, M. & Schrader, L.F. (1988). The industrialization of agriculture: Questions of coordination, *Agribusiness*, **11(6)**, 493 500.
- Boon, A. (1999). Capabilities, transaction cost and vertical coordination in the food system. *In vertical relationships and coordination in the food system*, ed. Galizi,
 G. and Venturini, L., 21 35
- Burch, D. & Pritchard, B. (1996). The uneasy transition to globalisation: Restructuring of the Australian tomato processing industry in Burch, D., Rickson, R. E. & Lawrence, G. (Eds.): Globalisation and Agri-Food Restructuring Perspectives from the Australasia Region, Brookfield (USA), Avebury, 107 126.
- Byelyenkova, O.Y. & Antropov, Y.V. (2013). Economic sustainability of small construction enterprises of Ukraine: Assessment, tendencies and prospects, the problems of economy, 3, 51 62.
- Cahyadi, E. R. & Waibel, H. (2013). Contract farming in the Indonesian oil palm industry pro-poor. *Journal of Southeast Asian Economies*, **30 (1)**, 62-76.
- Cai, J., Ung, L., Setboonsarng, S. & Leung, P. (2008). Rice contract farming in Cambodia: Empowering farmers to move beyond the contract toward independence, ADBI Discussion Paper 109. Tokyo: Asian Development Bank Institute.http://www.adbi.org/discussion-paper/2008/06/05/2582.rice.contract. farming.cambodia/
- Carstensen, P. (2003). The roles of antitrust and market regulation law in markets for agricultural products, *The Antitrust Bulletin*, **53(2)**, 271 275.
- Casey, R. (2011). Environmental benefits in poultry houses through the use of a plenum flooring system, Conservation Innovation Grant Program (USDA), The University of Georgia. UK.

- CDC (1989). Review of smallholder agricultural program: final report, Vols. 1 and 2.

 London: Commonwealth Development Corporation.
- Cheung and Steven, N. S. (1987). Economic organization and transaction costs.

 The New Palgrave: A Dictionary of Economics, 2, 55 58.
- Chiriboga, M., Chehab, C., Vazquez, E., Salgado, V., & Recalde, O. (2007).

 Mecanismos de articulación de pequeños products rule and Empresas private

 PPR-EP. Informe Nacional Ecuador Rimisp. Plataforma Regional Andina.

 Quito, Ecuador. 7 64
- Cochrane, W. W. (1979). The development of American agriculture: A historical analysis, University of Minnesota Press, Minneapolis, USA.
- Coulter, J., Goodland, A. & Tallontire, A. (1999). Marrying farmer cooperation and contract farming: provision in a liberalising sub-Saharan Africa. Overseas Development Institute, ISSN 1356-9338. Also available as 'Marrying farmer cooperation and contract farming for agricultural service provision in sub-Saharan Africa at http://www.worldbank.org/essd/essd.nsf/agroenterprise/marrying Council on Food, Agriculture and Resource Economics (Cfare), 1994. Industrialisation of US agriculture: policy, research and education needs. Washington, DC: C-Fare.
- Datta, R.K., Islam, M.S., Md Ashraful & Kabir, M.A. (2012). Assessment of the production performance and economic efficiencies of available chicken breeds (Gallus domestic L.) in Rajshahi, Bangladesh, *Journal of Zoology Rajshahi Universiti*, **31**, 13 18.
- Delgado, C. L., Narrod, C. A. & Tiongco, M. M. (2008). Policy, Technical, and Environmental Determinants and Implications of the Scaling-Up of Livestock Production in Four Fast-Growing Developing Countries: A Synthesis and Final

- Research Report of Phase II, FAO Document Repository, Annual Report of Food and Agriculture Organization of the United Nations.
- Dhewa C. (2016), Pros and cons of contract farming, *The Herald*, (1), http://www.herald.co.zw/pros-and-cons-of-contract-farming/, 23/5/2017.
- Dileep, B. K., Grover, R. K. & Rai, K. N. (2002). Contract farming in tomato: An economic analysis. *Indian Journal of Agricultural Economics*, **57(2)**, 197 210.
- D'Silva, J.L., Shaffril, H.A.M., Uli, J. & Samah, B.A. (2009). A review of contract farming and factors that impinge youth's acceptance to contract to farm. *European Journal of Social Sciences*, **11(2)**, 328 – 338.
- D'Silva, J.L., Shaffril, H.A.M., Uli, J. & Samah, B.A. (2010). Acceptance and sustainability of contract farming among youth in Malaysia. *American Journal Agriculture Biology Science*, **5**, 350 356
- Duffy, M. (2009). Economies of size in production agriculture, *Journal of Hunger and Environmental Nutrition*, **4(3-4)**, 375 392.
- Duffy, M. & Nanhou, V. (2003). Factors in the success of farms and the relationship between financial success and perceived success. Ames: Iowa State University, Staff General Research Papers; 2003.
- Dupuis, E.M. (2000). Not in my body: RBGH and the rise of organic milk, *Agriculture* and Human Values, 17, 285 295.
- Eaton, C. & Shepherd, A.W. (2001). Contract farming: Partnerships for growth. FAO Agricultural Services Bulletin, 145, Rome, FAO.
- Eagly, A. H., & Chaiken, S. (1998). Attitude structure and function. in the Handbook of Social Psychology, ed. Gilbert, D.T., Susan, T. F. and Lindzey, G., McGraw-Hill, New York: The USA.

- Ekwere, G. E. and Edem I. D. (2014), Evaluation of Agricultural Credit Facility in Agricultural Production and Rural Development, Global Journal of human-social science: Geography, Geo-Sciences, Environmental Disaster Management, 14 (3), 18 25.
- Etlin, A.W. & Barbuto, J.E. (2002). *Globalizing colleges of agriculture*. Proceedings of the 18th Annual Conference, Association for International Agricultural and Extension, Raleigh, North Carolina, USA.
- Fariafilho, D.E., Rosa, P.S. Torres, K.A.A., Macari, M. & Furlan, R.L. (2008). Response surface models to predict broiler performance and applications for economic analysis, *Revista. Brasileira. Deciencia. Avicola*, **10** (2), 178 182.
- Farooq, M., Mian, M.A. & Asghar, A. (2001). Factors affecting the cost of production and net profit per broiler in the subtropics, *Livestock Research for Rural Development*, 13, 1-7.
- Faturoti, E.O. (1989). Effect of supplementary feeding on the production of African Catfish, *Journal West of Africa Fish*, **4**, 187 195.
- Fiani, R. (2000). A theory of transaction cost in D.Kupfer and L.Hasenclever, *Economia Industrial*, 276 – 306.
- Figueiredo, A.M, Santos, P.A, Santolin, R. & Reis, B.S. (2006). Integração na criação de frangos de corte na microrregião de Viçosa MG: viabilidade econômica e análise de risco. *Revista Engenharia Rural*, **44(4)**, 713 730.
- Fraser, I. (2005). Micro-econometric analysis of wine grape supply contracts in Australia. *Australian Journal of Agricultural and Resources Economics*, **49**, 23 26.
- Friedberg, S. E. (2003). Culture, conventions and colonial constructs of rurality in South-North horticultural trades, *Journal of Rural Studies*, **19**, 97 109.

- Fritz, H., Saïd, S.& Renaud, P.C., (2003), The effects of agricultural fields and human settlements on the use of rivers by wildlife in the mid-Zambezi valley, Zimbabwe, *Landscape Ecology*, **18(3)**, 293 302
- Fulton, A. L. A. & Clark, R.J. (1996). Farmer decision making under contract farming in Northern Tasmania in Burch, D., Rickson, R. E. and Lawrence, G. (eds.):

 Globalisation and Agri-Food Restructuring Perspectives from the Australasia Region, Brookfield, USA), Amesbury.
- Ghee, L.T. & Dorral, R. (1992). Contract farming in Malaysia: With special reference to FELDA scheme in Glover, D. and Ghee, L.T. *Contract farming in Southeast Asia: Three country case studies*, Kuala Lumpur: University Malaya.
- Gibb, A. A. (2005). The entrepreneur as the core competence of the firm: Implications for management educators, The newsletter of EFMD"s Entrepreneurship, Innovation and Small Business Network, Issue 2, 3.
- Gidarakou, I. (1999). Young women's attitudes towards agriculture and women's new roles in the Greek countryside: A first approach. *Journal of Rural Study*, **15**, 147 158
- Glatz, P.C. (2012). Sustainable small-scale poultry production: are local feeds a viable option for the pacific region? knowledge of development, CTA, Technical Centre for Agricultural and Rural Cooperation ACP EU S & T Strategies, Australia.
- Glover, D. (1984). Contract farming and smallholder out-grower schemes in less developed countries, *World Development*, **12**, 1143 1157.
- Glover, D. (1987). Increasing the benefits to smallholders from contract farming: problems for farmer's organization and policy makers. *World Development*, **15(4)**, 441 448.

- Glover, D. (1990). Contract farm and out-grower schemes in the East and Southern Africa, *Journal of Agricultural Economics*, **41(3)**, 303 315.
- Glover, D. & Kusterer, K. (1990). Small farmers, big business: Contract farming and rural development. New York: St. Martin's Press
- Goldsmith, A. (1985). The private sector and rural development: Can agribusiness help the small farmer? *World Development*, **13(10/11)**, 1125 1138
- Goodhue, R. (2000). Broiler production contract as a multi-agent problem: Common risk, incentives, and heterogeneity. *American Journal of Agricultural Economics*, **82(3)**, 602 622.
- The Government of Malaysia (2012). *Livestock Statistics 2011*, Putrajaya: Department of Veterinary Services (DVS), Ministry of Agriculture and Agro-Based Industry Malaysia.
- The Government of Malaysia (2012). *Agrofood Statistics 2011*. Putrajaya: Ministry of Agriculture and Agro-Based Industry Malaysia.
- Gow, H.R., Streeter, D.H. & Swinnen, J. F. M. (2000). How private contract enforcement mechanisms can succeed where public institutions fail: the case of Juhocukor, *Agricultural Economics*, **23**, 253 265.
- Gow, H.R. & Swinnen, J. F. M. (2001). Private enforcement capital and contracts enforcement in transition economies, *American Journal Agriculture*. *Economics*. **83(30)**, 686 690.
- Granger, C. W. J. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometric*, **37(3)**, 424 438.
- Gray, A.W. & Boehlje, M. (2005). Risk sharing and transactions costs in producer-processor supply chains, *Choices*, **20(4)**, 281 286.

- Gulati, A. (2008). Fragmenting bottom and consolidating top: India's changing food system and implications for smallholders in India: some aspects of economic and social development (Eds.) Mahendra D. S. and Babu, K. S., Academic Foundation, India.
- Guo, H., Jolly, R.W. & Zhu, J. (2006). Contract farming in China: Perspectives of smallholders in Curtiss, J., Baumann, A., Dautzenberg, K. and Happe, K. (eds.), Agriculture in the Face of Changing Markets, Institutions and Policies Challenges and Strategies, Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO) Study on the Agricultural and Food Sector in Central and Eastern Europe, 33.
- Hamish, R., Gowa, B., Deborah, H. S. & Johan, F. M. S. (2000). How private contract enforcement mechanisms can succeed where public institutions fail: The case of Juhocukor A.S., *Agricultural Economics*, **23**, 253 265
- Hanan, A. & Gehan, R. (2013). Enhancing diversity of poultry products by producing high-quality brown eggs, *European Scientific Journal*, 9(24), 230 240.
- Haque, T. (2000). A contractual arrangement in land and labour markets in rural India, Indian Journal of Agriculture Economics, **55(3)**, 233 – 252.
- Hargreave, G. (2012). *Adopting new technologies in broiler production*, www.thepoultryfederation.com/.../Adopting%20New%20Technologies%20in%20Broiler%20Producti, 29/9/2014.
- Hartmann, B. & Boyce, J. K. (1983). A quiet violence: View from a Bangladesh village, London: Zed Books.
- Hassan, M.S. & Shaffril, H.A.M. (2009). Internet usage among agro-based entrepreneurs: Can it affect productivity? *Journal of Agriculture. Extension Social Science*, **5**, 61 66

- Hegrenes, A. & Borgen, S.O. (2003). *Deregulation and new contractual farms: the case*of the Norwegian potato sector, Paper presented at 81st EAAE seminar,

 Copenhagen.
- Hennessey, D.A. & Lawrenc, J. D. E. (1999). Contractual relation, control, and quality in the hog sector. *Review of Agricultural Economics*, **21(1)**, 52 67.
- Hobbs, J. E. & Young, L. M. (2001). Vertical linkages in agri-food supply chains in Canada and the United States, Agriculture and Agri-Food Canada.
- Hossain, M. R., Ali, A., Rahman, H. M. S. & Apu, A. S. (2008). Analysis of economic loss of flood victim broiler farms, *Bangladesh Journal of Animal Science*, **37(1)**, 23 31
- Hrabovszky, J. P. (1981). Livestock development: Toward 2000 with special reference to developing countries. *World Animal Review*, **40**, 2 16.
- Hu, W. (2012). Effect of contract farming on the farmers' average return: the case of the grain industry in the USA, Paper presented at the Agricultural and Applied Economics Association 2012 Annual Meeting, August 12 14, Seattle, Washington.
- Humphrey, J. & Memedovic, O. (2006). Global value chains in the agrifood sector, *Working Paper*, And United Nations Industrial Development Organization.
- Hyttia, N. & Kola, J. (2006). Finnish citizen's attitude towards multifunctional agriculture. *Journal of International Food Agribusiness Management* Review, 9, 1-22
- Ike, P.C. & Ugwumba, C.O.A. (2011). Profitability of small-scale broiler production in Onitsha north local government area of Anambra State, Nigeria, *International Journal of Poultry Science*, **10(2)**, 106 – 109.

- Indarsih, B, Tamsil, M. H., & Nugroho, M. P. (2010). A study of contract broiler production in Lombok, NTB: An opportunity of introducing Syariah partnership, *Media Peternakan-Journal of Animal Science and Technology*, 33(2), 124 130.
- Ito, J., Bao, Z. & Sun, Q. (2012). Distributional effects of agricultural cooperatives in China: Exclusion of smallholders and potential gains on participation, *Food Policy*, **37(6)**, 700 709.
- Jabbar M. A., Rahman, M.H., Talukder, R.K., & Raha, S.K. (2007). Alternative institutional arrangements for contract farming in poultry production in Bangladesh and their impacts on equity. Research Report 7. ILRI (International Livestock Research Institute), Nairobi, Kenya, 98
- Jabeen, S., Salim, M. & Akhtar, P. (2004). Feed conversion ratio of major carp cirrus mrigal fingerlings fed on cottonseed meal, fish meal and barley, *Pakistan Veterinary Journal*, **24(1)**, 42 45.
- Jan, O., Ing, B. T., Heng, K., & Chen, S. (2012). Rice Farming and Microcredit in Takeo Province: Uppsala University, Department of Cultural Anthropology and Ethnology.
- Jeffrey, G. & Ashok, M. (2011). Off-farm employment and reasons for entering farming as determinants of production enterprise selection in US agriculture, *Australian Journal of Agricultural and Resource Economics*, **55(3)**, 411 428.
- Jensen, M. & Meckling, W. (1976). Theory of the firm: Managerial behaviour, agency costs and ownership structure, *Journal of Financial Economics*, (3), 304 360.
- Jones, S. & Gibbon, P. (2011). Developing agricultural markets in Sub-Saharan Africa:

 Organic cocoa in rural Uganda. *The Journal of Development Studies*, **47 (10)**,

 1595–1618.

- Julie, J. E., Nonogaki, H., Allen, R. & Russell, T.H., (2006). Microbial diversity associated with odour modification for production of fertilizers from chicken litter, *Application Environmental Microbiology*, **72(6)**, 4105 411.
- Kakade, V.B., Suryavanshi, S.S. & Shikalgar, A.A. (2015). Employment and income generation under contract farming: A case study of poultry, 54th Annual Conference, New Delhi, India: The Indian Society of Labour Economics.
- Kalamkar, S.S. (2012). Inputs and services delivery system under contract farming: A case of broiler farming, *Agricultural Economics Research Review*, **25**, 515 521.
- Kaplinsky, R. & Morris, M. (2000). Spreading the gains from globalisation: What can be learned from value chain analysis? *IDS Working Paper*, No 110, IDS, Brighton.
- Katchova, A. I. & Miranda, M. J. (2004). Two-step econometric estimation of farm characteristics affecting marketing contract decisions, *American Journal of Agricultural Economics*, **86(1)**, 88-102.
- The key, N. & Runsten, D. (1999). Contract farming, smallholders, and rural development in Latin America: The organization of agro-processing firms and the scale of outgrow production. *World Development*, **27**, 381 401.
- The key, N. & McBrider, W. (2003). Production contracts and productivity in the U.S. hog sector, *American Journal of Agricultural Economics*, **85**, 121–133.
- Kherallah, M. (2000). Access of smallholder farmers to the fruits and vegetables market in Kenya. Mimeograph, August. Washington, DC: International Food Policy Research Institute.

- Kirsten, J. & Sartorious, K.I. (2002). Linking agribusiness and small farmers in developing countries: Is there a new role for contract farming? *Development Southern Africa*, **19(4)**, 503 529.
- Klein, B. (1996). Why hold-ups occur: The self-enforcing range of contractual relationships, *Economic Inquiry*, **34(3)**, 444 463.
- Knoeber, C.R. & Thurman, W.N. (1995). Don't count your chickens, risk and risk shifting in the broiler industry. *American Journal of Agricultural Economics*, 77, 486 496.
- Kumar, S., Puran, C. & Singh, P. (2005). Contract farming in Haryana State: An economic investigation. Project Report No. 01, Division of Agricultural Economics, Indian Agricultural Research Institute, New Delhi.
- Kumar S., Devende, C., Kavita, C., Puran & Dabas, J.P.S. (2007). Mode of operation and performance of contract farming of cottonseed in Haryana, *Agricultural Economics Research Review*, **20**, 99 116.
- Lee, Y.P., Chiang, P.L., & Huang, H.H. (1997). A study on the optimal marketing age of Taiwan country chicken, *Journal of China Society Animal Science*, **26**, 285 296.
- Leung, P., Sethboonsarng, S. & Stefan, A. (2008). Rice contract farming in Laos PDR:

 Moving from subsistence to commercial agriculture, No. 90, ADB Institute

 Discussion Paper.
- Le Roy, S.F. and Singell, D. (1987) Knight on risk and uncertainty, *The Journal of Political Economy*, **95**, 394 406.
- Little, P. D. & Watts, M. J. (1994). Living under contract: Contract farming and agrarian transformation in Sub-Saharan Africa. Madison, WI: University of Wisconsin Press, USA.

- Lukefahr, S.D. (2007). Strategies for the development of small- and medium-scale rabbit farming in South-East Asia, *Livestock Research for Rural Development* **19(9)**, 34 40.
- MacDonald, J.M., (2014). Financial risks and incomes in contract broiler production, technology, Organization, and Financial Performance in U.S. Broiler Production, USDA, Economic Research Service.
- MacDonald, J.M. & Korb, P, (2004). *Contracts, markets, and prices: Organizing the production and use of agricultural commodities*. Agricultural Economic Report no. 837. The United States Department of Agriculture.
- Mackintosh, M. (1989). Gender Class and Rural Transition: Agribusiness and the Food Crisis in Senegal, London: Zed Books.
- Mahoney, J.T. (1992). The choice of the organizational form: Vertical financial ownership versus other methods of vertical integration, *Strategic Management Journal*, **13**, 559 584.
- Mairead, E. D., Terry, L. W., Drona, P. R., & Vic, A. D.(2007). Warm weather transport of broiler chickens in Manitoba. I. Farm management factors associated with death loss in transit to slaughter, *Canada Veterinary Journal*, **48(1)**, 76 80.
- Martin, L. L. (1997). Production contracts, risk shifting, and relative performance payments in the pork industry, *Journal of Agricultural and Applied Economics*, **29(2)**, 267 278.
- Masakure, O & Henson, S. (2005). Why do small-scale producers choose to produce under contract? Lessons from non-traditional vegetable exports from Zimbabwe, *World Development*, **33(10)**, 1721 1733.

- May, S. & Aikman, S. (2003). Indigenous education: Addressing current issues and developments. *Comparative Education*, **39(2)**, 139 145.
- Md. Salleh, H., Hayrol, A.M.S., Bahaman, A.S., Musa A.H. and Narimah I. (2009).,Internet Usage and Its Contribution Towards Agri-Based Productivity in Peninsular Malaysia, *Journal Ilmu-ilmu Sosial*, 10, 1-9.
- Mehta, R., Nambiar, R.G., Delgado, C. & Subramanian, S. (2003). *Policy, technical and environmental determinants and implications of the scaling-up of broiler and egg production in India*. Annex II of the IFPRI-FAO Final Report Livestock Industrialization, Trade and Social-Health-Environmental Impacts in Developing Countries, Phase II, International food Policy Research Institute, Washington DC.
- Mendes, A. S, Gudoski, D. C., Cargnelutti, E. A., Silva, F. J., Carvalho, E. H. & Morello, G. M. (2014). Factor that impact the financial performance of broiler production in Southern States of Paraná, Brazil, *Review Brasil Science Avian*, 16 (1), 113 120.
- Meshesha, J.G (2011), Impact of contract farming on household income of smallholder farmers: The case of organic honey production in South Western Ethiopia, Sheka Zone.
- Michael, R.D. (2010). *Concentration and competition in the poultry industries, a* 2nd joint public workshop on Competition and Regulatory issues in an agriculture, Alabama's Ernest l. Knight Reception Center, A & M University.
- Minot, N. (1986), Contract farming and its effect on small farmers in less developed countries, Working Paper No.31, Dept. of Agricultural Economics, Michigan State University.

- Minot, N. (2007). Contract farming in developing countries: Patterns, impact, and policy implications, Case Study 6 3 of the Program, Food Policy for Developing Countries: The Role of Government in the Global Food System, Cornel University.
- Minot, N. & Ngigi, M. (2010). Are horticultural exports a replicable success story?
 Evidence from Kenya and Côte d'Ivoire. Environment and Production
 Technology Division Discussion Paper No. 120/Markets, Trade, and Institutions
 Division Discussion Paper No. 73. Washington, DC: International Food Policy
 Research Institute.
- Minten, B.,Randrianarison,L. & Swinnen, J.F.M.,(2009), Global retail chains and poor farmers: evidence from Madagascar, *World Development*, **37(11)**, 1728 1741.
- Mitnick, B. M., (1975). The theory of agency: The policing "paradox" and regulatory behaviour. *Public Choice*, **24**: 27-42.
- Miyata, S., Minot, N. & Hu, D. (2009). The impact of contract farming on income:

 Linking small farmers, packers, and supermarkets in China. *World*Development, 37(11), 1781 1790.
- Murray, C. (1987). Class, gender and the household the developmental cycle in Southern-Africa, *Development and Change*, **18(2)**, 235 249.
- Murdoch, J. & Micle, M. (1999). Back to nature: Changing the world of production in the food sector, *Sociologia Ruralis*, **39**, 465 483.
- Murdoch, J., Marsden, T. & Banks, J. (2000). Quality, nature and embeddedness; some theoretical consideration in the context of the food sector, *Economic Geography*, **76**, 107 125.

- MyCC (2014). Review of domestic broiler market: Final report, Kuala Lumpur. http://mycc.gov.my/sites/default/files/media-review/Broiler-Market-Review-FINAL.pdf.
- Narayanan, S. (2014). Profits from participation in high value agriculture: Evidence of heterogeneous benefits in contract farming schemes in Southern India. *Food Policy*, **44**, 142–157.
- Narrod, C., Devesh, R., Okello, J.J., Avendano, B., Rich, K., & Thorat, A. (2009). Role of 17 public- private partnerships in ensuring smallholder participation in high valued fruit and vegetable supply chains, *Food Policy*, **34**, 8-15.
- Nungsari, R. (2011). *Changing the agro-food sector*, The Edge Malaysia, Tues 13/12/2011.
- Nyaga, R. (2007). Poultry sector country review, FAO Animal production and health division, ftp://ftp.fao.org/docrep/fao/011/ai379e/ai379e00.pdf.
- Norsida, M., (2007). The Agricultural Community, 50 Years of Malaysia Agriculture:

 Transformational Issues, Challenges and Direction, Serdang, Selangor, UPM
 Publisher 128-143.
- Odunze D., Van Niekerk J. A. & Ndlovu S. (2015), Assessment of factors that impact on the viability of contract farming: A case study of maize and soya beans in Mashonaland West and Central Provinces in Zimbabwe, *The South African Journal of Agricultural Extension*, **43(2)**, 78 90
- Ogbanje, E. C., Yahaya, M.A. & Kolawole, F. (2012), Effect of Commercial Banks' Loan On Agricultural Gross Domestic Product (GDP) In Nigeria From 1981 To 2007, *PAT*, 8 (2), 88 100.

- Onemolease, E. A. & Ikheloa, E. E. (2005). Production constraints and mortality rate in poultry farms in Esan West LGA of Edo State, Nigeria, *International Journal of Agriculture and Rural Development*, **6**, 136 141.
- Onibi, G.E., Oluwatoyin, E., Adebowale, A., Fajemisin, N. & Ayodeji, V. A. (2009. Response of broiler chickens in terms of performance and meat quality to garlic (Allium sativum) supplementation, *African Journal of Agricultural Research*, 4 (5), 511 517.
- Patricio, I. S., Mendes, A. A., Ramosa, A. A. & Pereira, D. F. (2012). Overview of the performance of Brazilian Broilers (1990 to 2009), *Review Brasil Science Avian*, **14(4)**, 23 34.
- Paul, C. M., Nehring, R., Banke, D. & Somwaru, A. (2004). Productivity, economies, and efficiency in US agriculture: A look at contracts, *American journal of Agricultural Economics*, **86(5)**, 1308 1314.
- Palmarudi, M. & Jusni, S.E. (2012). Entrepreneurial quality of small scale (SMEs) broiler farming with an independent business model in Maros district of South Sulawesi Province, Indonesia, *International Journal of Business and Social* Science, **3(6)**, 74 81.
- Perry, J., Banker, D. & Green, R. (1999). Broiler farms: Organization, management, and performance. ERS, USDA, 41.
- Philip, L. (2007), The measurement of farm size and the meaning of part-time farming:

 the areas countries, ARES 2007 Conference: Queenstown, New Zealand, 13 –

 16.
- Poapongsakorn, N., NaRanong, V., Delgado, C., Narrod, C., Siriprapanukul, P., Srianant, N., Goolchai, P., Ruangchan, S., Methrsuraruk, S., Jittreekhun, T., Chalermpao, N., Tiongco, M. & Suwankiri, B.(2003). *Livestock*

- industrialization project: phase ii policy, technical, and environmental determinants and implications of the scaling-up of swine, broiler, layer and milk production in Thailand, IFPRI-FAO project entitled Livestock Industrialization, Trade and Social-Health-Environment Impacts in Developing Countries, U.K.
- Prowse, M. (2012). Contract farming in developing countries: A review. *A savoir*, (12), 1-4.
- Ramanathan, R. (2002). *Introductory econometrics with applications*. Philadelphia: USA, Harcourt College Publishers.
- Ramaswami, B., Birthal, P.S. & Joshi, P.K. (2006). Efficiency and distribution in contract farming: The case study of Indian poultry growers, MTID Discussion Paper 91.
- Randall, K. (2013), Poultry profits checked by rising production costs, *Farmer weekly, Poultry World.net*, December issue. 23/12/2013.
- Rehber, E. (1998). Vertical integration in agriculture and contract farming. Regional Research Project No. NE-165: Private strategies, public policies, and food system performance. Department of Resource Economics. Amherst, MA: University of Massachusetts.
- Rehber, E. (2007). *Contract farming: Theory and practice*, Hyderabad, India,ICFAI University Press.
- Richardson, G.B. (1972). The organization of industry, *The Economic Journal*, **82**, 883 896.
- Rohani, S. (2002). Calculation the optimal size of farm land in rural production cooperatives in Hamedan Province. *The Journal of Agricultural Science*, **12(2)**, 97 107

- Romina, C., Mario, G., Paul, W., Jorge, A.P., Patricio, E. & Graham, T. (2011). Linking smallholders to the new agricultural economy: an evaluation of the platforms program in Ecuador, *The Journal of Development Studies*, **47(10)**, 1545 1573.
- Ross, S. (1973). The economic theory of agency: The principle's problem, *American Economic Review*, **63(2)**, 134 139.
- Roy, E. P. (1972). Contract farming and economic integration. Interstate, Danville, Illinois: USA.
- Sáenz,S. F., Marijke, D. & Ruerd, R. (2007). Contract farming in Costa Rica: A case study on contracts in pepper farming". In: Per Pinstrup-Andersen and Fuzhi Cheng (editors), Food Policy for Developing Countries: Case Studies, 11.
- Sakomura, N.K., Longo, F.A., Oviedo-Rondón, E.O., Boa-Viagem, C. & Ferraudo, A. (2005). Modeling energy utilization and growth parameter description for broiler chickens, *Poultry Science*, **84**, 1363 –1369.
- Samah, B. A., D'Silva, J. L., Shaffril, H. A. M. & Uli, J. (2010). Acceptance, attitude and knowledge towards agriculture economic activity between rural and urban youth: The case of contract farming. *Journal of Application Science*, **10**, 2310 2315.
- Sambuo, D. (2014). Tobacco Contract Farming Participation and Income in Urambo; Heckman's Selection Model, *Journal of Economics and Sustainable Development*, **5(28)**, 230 237.
- Samarakoon, S.M.R. & Samarasinghe, K. (2012). Strategies to improve the cost effectiveness of broiler production, *Tropical Agricultural Research*, **23(4)**, 338 346.

- Saraswati, M., Devaraj, M. & Mohan, C.N. (2010). Broiler Production under Contract Farming a Study of VHL Company in Mysore, Contract Farming in India: Present Scenario and Future Prospects, New Delhi, Excel India Publishers,
- Saran, S. S., P.V.K., Sastry, K.V.H. & Singh, R. (2005). Indian poultry industry: Current scenario and future prospects. *Indian Journal of Animal Sciences*, **75(8)**, 992 998.
- Sasidhar, P.V.K., & Suvedi, M.(2015). Integrated contract broiler farming: An evaluation case study in India. Modernizing Extension and Advisory Services, www.meas.illinois.edu
- Schwartz, A. (2002). Contract theory and theories of contract regulation, the economics of contracts, Cambridge: UK, Cambridge University Press.
- Schmidt, G.S. (2008). The effect of broiler market age on performance parameters and economics, *Review Brasil Science Avian*, **10(4)**, 223 225.
- Setboonsarng, S. (2008). Global partnership in poverty reduction: Contract farming and regional cooperation, ADB Institute Discussion Papers, 89, http://hdl.handle.net/10419/53517
- Setboonsarng, S., Leung, P. & Stefan, A. (2008). Rice contract farming in Lao PDR: moving from subsistence to commercial agriculture, ADBI Discussion Paper, 90, Tokyo: Asian Development Bank Institute.
- Shaffril, H.A.M., D'Silva, J.L., Uli, J. & Samah, B.A. (2010). Socio-demographic factor that impinges youth acceptance towards agriculture: The case of contract farming in Malaysia. *Journal of Agriculture. Environment Science*, 7, 242 246.
- Shaikh, A.S. & Zala, Y.C. (2011). Production performance and economic appraisal of broiler farms in Anand District of Gujarat, *Agricultural Economics Research Review*, **24**, 317 323.

- Shanin, T. (1987). Peasants and Peasant Societies: Selected Readings, Oxford: UK, Basil Blackwell.
- Sharma, S. (2003). Performance evaluation of broiler contract growers in Fiji, *Production of Australian Poultry Science Symposium*, **15**, 164 – 167.
- Sharma, V.P. (2008). India's agrarian crisis and corporate-led contract farming: Socio-economic implications for smallholder producers, *International Food and Agribusiness Management Review*, **11(4)**, 25 48.
- Sharavari, K. & Harald, G. (2009). *Does contract farming benefit farming community?:*A comparative study of contract and non-contract farmers in India, Biophysical and socio-economic frame conditions for the sustainable management of natural resources, Tropentag, Hamburg.
- Sharzei, G.H., Qatmiry, M.A. & Rastifar, M. (2002). Rice production and cost structure:

 A case study in the province, *Journal of Science and Technology of Agriculture*and Natural Resources, 1, 45 56.
- Simmons, P., Winters, P. & Patrick, I. (2005). An analysis of contract farming in East Java, Bali, and Lombok, Indonesia, *Agricultural Economics*, **33(3)**, 513 525.
- Singh, S. (2002). Multi-national corporations and agricultural development: A study of contract farming in the Indian Punjab, *Journal of International Development*, **14**, 181 194.
- Singh, S. (2002). Contracting out solutions: Political economy of contract farming in the India Punjab. *World Development*, **30**, 1621 1638.
- Singh, S. (2005). The role of the state in contract farming in Thailand: Experience and lessons. *ASEAN Economic Bulletin*, **22(2)**, 217 228.
- Sokchea, A. & Culas, R.J. (2015). The impact of contract farming with farmer organizations on farmers' income: a case study of Ramsey Stung Sen

- Agricultural Development Cooperative in Cambodia, *Australasian Agribusiness* Review, 1, 1-11.
- Schultz, T.W. (1964). *Transforming Traditional Agriculture*, New Haven: USA, Yale University Press.
- Sridharan, A. & Saravanan, R. (2013). A study of motivating factors to enter into poultry farming with special reference to Suguna broiler contract farms in Coimbatore district, *International Journal of Marketing, Financial Services & Management Research*, **2(4)**, 109 117.
- Susilowati, S.H, Patrick, I., Iqbal, M. & Jubb, T. (2013). The characteristics of the farm and the farmer that affect the adoption of biosecurity on smallholder poultry farms in Indonesia, Livestock *Research for Rural Development*, **25**, 5.
- Tabler, G.T., Berry I.L. & Mendenhall, A.M. (2004). Mortality Patterns Associated with Commercial Broiler Production, http://www.thepoultrysite.com/articles/253/mortality-patterns-associated-with-commercial-broiler-production/
- Tahir, H., Masroor, A. B., Ferhat, A., Sahota, A.W., Tariq, M.M., Sohail, H.K. & Bokhari, F.A. (2012). Effect of housing system on production performances of different broiler breeder strains, *Pakistan Journal of Zool*ogy, **44(6)**, 1683 1687.
- Tapsir, S. & Sarmin, S. (2008). Ekonomi pengeluaran dan pemasaran dalam panduan penternakan ayam pedaging, Edisi Kedua, Serdang, Selangor.
- Tapsir, S., Mokhdzir, H. L., Nor, R. S. and Jalil, N. (2011). Issue and impact in broiler contract farming in Peninsular Malaysia, *Economic and Technology Management Review*, **6**, 33 57.

- Todsadee, A., Kameyama, H., Ngamsomsuk, K. & Yamauchi, K. (2012). Economic efficiency of broiler farms in Thailand: Data envelopment analysis approach, British Journal of Economics, Finance and Management Sciences, 5(1), 33 – 43.
- Tripathi, R.S., Singh, R. & Singh, S. (2005). Contract farming in potato production: An alternative for managing risk and uncertainty. *Agricultural Economics Research Review*, **18**, 47 60.
- USDA GAIN (2014). Malaysia Broiler Meat Sector, *The poultry site*, http://www.thepoultrysite.com/reports/?id=3567.3/7/2016.
- Venu, P.H.D., Singh, P., Kumar, S. & Singh, B.K. (2013). Performance and constraints of gherkin contract farming, *Indian Resource Journal of Extension Edu*cation, **13(1)**, 112 116.
- Vermeulen, S. & Cotula. L. (2010). Making the most of the agricultural investment: A survey of business models that provide opportunities for smallholders. Food and Agriculture Organization of the United Nations (FAO) and the International Institute for Environment and Development (IIED), London/Rome/Bern. 106.
- Von Braun, J. & Kennedy, E. (1994). *Agricultural commercialization, economic development, and nutrition*, USA, Johns Hopkins University Press,
- Vukina, T. (2001). Vertical integration and contracting in the U.S. poultry sector, Journal of Food Distribution Research, 32, 29 – 38.
- Wainaina, P. W., Okello, J.J. & Nzuma, J. (2012). *The impact of contract farming on smallholder poultry farmers' income in Kenya*, Contributed paper presented at the 2012 Triennial Conference of International Association of Agricultural Economists, Foz do Iguacu, Brazil, August 18 24.

- Wald, A. (1943). Tests of a statistical hypothesis concerning several parameters when the number of observation is large. *Transaction of the American Mathematical Society*, **54(3)**, 426 482.
- Waller, A. (2007). Take a fresh look at broiler nutrition. *Poultry International*, 12 13.
- Wang B.Y., Chien L.H. & Roan S.W. (2012). POMA-BROILER: A computer simulation model to evaluate the optimal market of broilers, *Journal of Animal and Veterinary Advances*, **11 (14)**, 2493 2502.
- Wang, H.H., Zhang, Y. & Wu, L. (2011). Is contract farming a risk management instrument for Chinese farmers? Evidence from a survey of vegetable farmers in Shandong. *China Agricultural Economic Review*, **3(4)**, 489 505.
- Wang, H.H., Wang, Y. & Delgado, M.S.(2014). The transition to modern agriculture: Contract farming in developing economies, *American Journal of Agricultural Economics*, **96(5)**, 1257 1271.
- Warning, M. & Key, N. (2002). The social performance and distributional consequences of contract farming: an equilibrium analysis of the *ara chide de bouche* program in Senegal, *World Development*, **30(2)**, 255 263.
- Williamson, O.E. (1979). Transaction cost economics: The governance of contractual relations, *Journal of Law and Economics*, **22**, 233 262.
- Williamson, O.E. (1983). Credible commitments: Using hostages to support exchange, American Economics Review, 73, 519 – 540.
- Wilson, J. (1986). The political economy of contract farming, *Review of Radical Political Economics*, **18(4)**, 47–70.
- Winson, A. (1990). Capitalist coordination of agriculture: Food processing firms and farming in Central Canada, *Rural Sociology*, **55(3)**, 376 394.

- Zaleha M. N. (2007). Labour in Agriculture. In Fatimah Arshad et al. (Eds.). 50 Years of Malaysian Agriculture: Transformational Issues, Challenges and Direction, Serdang, Selangor: UPM Publisher, 652-658.
- Zaiton, O. & Nooraini, O., (2015), A literatural review on work discrimination among women employees, *Asian Social Science*, **11(4)**, 26 32.



APPENDIX

QUESTIONNAIRE

1	Gender
	Male Female
2.	Age of respondent
	Below 30 years
	31 – 40 years
	41-50 years
	Above 50 years
3.	Marital status
	Single
	Married
	Divorced
	Widowed
4.	Education level of respondent
	No education
	Primary school
	Secondary school
	Diploma/Degree/Postgraduate
5.	Years of farming experience
	<5 years
	5-10 years
	> 10 years
6.	Why do you participate in CF
	In sufficient capital
	Marketing problem
	Less risk
7.	Why do you think about CF?
	Generate good income
	Less risky

8.	State where doing the farming
	Johor
	Pahang
	Perak
9.	What is your main occupation?
	Broiler farming
	Non-farming
10.	What is your another occupation?
100	Please specify:
11.	What is your average annual off-income?
	< RM50,000
	RM50,000 – 100,000
	RM100,000 – 150,000
	> RM150,000
12.	Number of broiler rear per cycle?
	< 10,000 birds
	10,001 – 20,000 birds
	20,001 – 20,000 birds
	30,001 – 40,000 birds
	40,001 – 50,000 birds
	> 50,000 birds
	Buni
13.	Ownership status of farm
	Own
	Rented
14.	What is your source of your capital?
	Sales of property
	Personal saving or from other business
	Loan from friends/family/relatives
	Loan from integrators
	Loan from commercial bank/insurance
	Loan from government initiative financing programme
15	Size of conital when start the business?
15.	Size of capital when start the business?

16.	Type of chicke	en hou	ise?				
	Close ho	ouse s	ystem				
	Open ho	ouse sy	ystem				
17.	Why do you cl	hoose	this house sy	ystem?			
	Econom	nic					
	Disease	preve	ntion				
	Perform	ance r	nore better				
	Base on	capita	al on hand				
18.	What do you t	hink a	bout contrac	t farming	?		
	Remain	as CF	system.				
	Will ext	tend fa	rming and re	ear more c	hicken.		
	Not con	fidenc	e in CF and	change to	other busines	ss or to other j	ob.
19.	Distance from	mark	et centre or p	processing	plant		
	< 20 K ₁	m					
	21 – 40	Km					
	41 - 60	Km					
	61 - 80	Km					
	> 80 Kn	n					
R E	VALUATION (OF E	CONOMIC	PERFOR	RMANCE.		
D.L	VILLOITION				ara Mala	ovsia	
20.			Jillvel	3111 01	ara mar	2 9 3 1 0	
	PROF	IT	Size of farm	FCR	Mortality rate (%)	Average Market	Average market
			1 1 0	1	1ate (70)	IVIAIKCE	market

	PROFIT	Size of	FCR	Mortality	Average	Average
		farm		rate (%)	Market	market
		(number of			Age (days)	weight
		birds)				(kg)
Cycle 1						
Cycle 2						

21. Cost of production

Items	Cycle 1(RM)	Cycle 2(RM)
Feed cost		
DOC		
Medication, Vaccination & Disinfectant		
Utility		
Maintenance		
Transportation		
Manpower		
Housing Depreciation		
Bank Interest based on 7%		

22. Revenue

Revenue	Cycle 1(RM)	Cycle 2(RM)
Sales of broiler		
Sale of Chicken Manure	Utara Malaysi	а