WORKING PAPER 6

Conceptual framework of the Determinants of the Indonesian farmers' decision to participate in the global coffee certification programs

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As presented in conceptual framework (Figure 1), we hypothesize that the variables within economic, social-demographic, psychological, and institutional factors determine the Indonesian smallholder participation in the coffee certifications. The variables can have either positive or negative influence on the participation. The hypothesized effects of the variables are presented in Table 1.
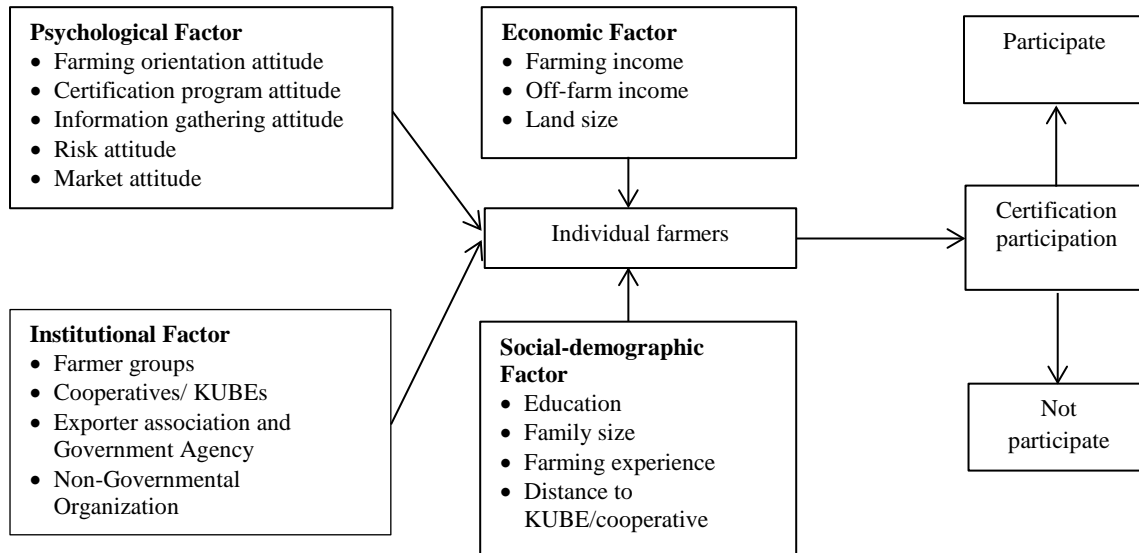

Figure 1. Conceptual framework of sustainable standard participation

Table 1. Hypothesized effects of explanatory variables on certification participation

	Variables	Definition	Hypothesized effect on participation
X1	Farming income	Income obtained from farming activities in Rupiah	(+)
X2	Off-farm income	Income obtained from non-farming activities in Rupiah	(+)
X3	Farm size	The size of land for coffee cultivation in hectares	(+)
X4	Family size	The number of people in farmers' household	(+)
X5	Education	Formal education of farmers in years	(+)
X6	Farming Experience	Coffee farming experience in years	(+)
X7	Distance to cooperative/KUBE	Distance to cooperative/KUBE in kilometres	(-)
X8	Farming orientation attitude	Farmers' attitude toward farming orientation, measured through the attitude index	(+) (-)
X9	Joining certification program attitude	Farmers' attitude toward joining certification, measured through the attitude index	(+)
X10	Information gathering attitude	Farmers' attitude toward seeking information, measured through the attitude index	(+)
X11	Risk attitude	Farmers' attitude toward risks , measured through the attitude index	(+) (-)
X12	Market attitude	Farmers' attitude toward market, measured through the attitude index	(+) (-)
X13	Roles of farmer group	The degree of roles of farmer group	(+)
X14	Roles of cooperative/KUBE	The degree of roles of cooperative/KUBE	(+)
X15	Exporter Association and Research Institute	Support from Exporter Association (e.g. AEKI) and Research Institute (e.g. ICCRI)	(+)
X16	Government Agency	Support from government agency	(+)

| X17 | Non-Governmental Organization | Support from NGO | (+) |

The proposed economic factor includes farming income, off-farm income and farm size, whereas the proposed social-demographic factor includes education, farming experience, family size, and distance to cooperative/KUBE. As indicated in Table 1, the variables (except for distance to cooperative/KUBE) are expected to have a positive influence on farmer participation. For example, the more educated farmers the more they are likely to participate in the program. On the contrary, the farther the distance to cooperative/KUBE the more unlikely they particpate in certification because of less information and support they receive from the organizations.

In term of psychological factor, we assume that farmer attitudes determine certification participation through the relative strength of the attitudes in influencing actual behaviours or real practices. Positive attitudes toward joining certification, gathering information, and cooperative/KUBE are likely to enhance farmer participation, whereas a positive attitude toward local market may have an opposing influence. Attitude toward farming orientation and risks can have either positive or negative influence. For example, a farmer who is very cautious about risk, and a farmer who solely looks for financial profit by ignoring environmental conditions are unlikely to participate in the standard. On the contrary, the one who dare to take a risk, and the one who appreciate the environmental condition are likely to participate in the program.

According to Ajzen (1991), Bayard and Jolly (2007), Carr and Tait (1991), Chen, Fan, and Farn (2007), Luzar and Diagne (1999), Ojedokun (2011), and Willock et al. (1999), behaviour is significantly driven by attitude, and attitude is largely influenced by belief and/or perception. Based on this premise, we can evaluate the relative strength of attitude in driving actual behaviour. We propose measuring the relative strength of the hypothesized attitudes through indexes which, in a simple mathematical equation, are calculated as the ratio between actual practices (i.e. what farmers actually did or experienced) and belief and/or perception of the ideal practices. For example, we measure how strong attitude toward seeking information driving the actual behaviour of seeking information by comparing farmers' actual effort to seek information with their belief and/or perception of seeking information. The indexes give quantitative measures signalling the relative strength of attitudes in shaping famer behaviours (Chien & Devaney, 2001; Kaufman-Scarborough & Lindquist, 1999; Milliman, Czaplewski, & Ferguson, 2003; Priester & Petty, 2003; Suyes, Abrahams, & Labbok, 2008). Kebede et al. (1990) argues that constructing an index accommodate the need to capture the influences from variables and at the same time to reduce the number of variables.

Furthermore, exporters and research institutes, government agencies, NGOs, and producer groups and cooperatives/KUBEs are assumed playing roles as institutional factor that can positively influence farmer participation in the certification. Farmers groups, cooperatives and KUBEs are rural organizations that have demonstrated their roles in Indonesian coffee sector (Arifin, 2010; Neilson, 2008). For example, individual producers collectively deliver their coffee beans to the KUBEs through their respective groups, and then the KUBEs transport the beans to exporting firms after conducting the final processing of cleaning and drying. The rural organizations can also have other roles such as educator, facilitator, and problem solver. We however assume that the degrees of the organizations can play their roles are varied. Therefore, we propose to measure the influence of these rural institutions through the degrees of their roles in farmer communities.

Based on our interviews with their informants, the leading coffee exporter association (i.e. the Association of Indonesian Coffee Exporters - AEKI) and research institute (i.e. the Indonesian Coffee and Cocoa Research Institute - ICCRI) have contributed to the coffee sector by frequently providing training, seminar, workshop, and consultation as well as distributing new varieties of coffee plants to farmers. Our previous survey also found that NGO, for example Watala (i.e. a local NGO that actively promote natural conservation), helped a farmer group in West Lampung to comply with administrative procedures of the Indonesian Organic Certification (Inofice). According to Deptan (2014), government agency (i.e. the Ministry of Agriculture) has launched *Pengembangan Usaha*

Agribisnis Perdesaan (PUAP) which is a national-type program intended for supporting individual farmers, by providing financial capital delivered through farmer groups, to develop their farming business. However, the institutions' programs and supports are unlikely to reach the whole Indonesian coffee farmers.

Method

We assume that the proposed variables can distinctively contribute and simultaneously determine participation decision. As suggested by many scholars (Adrian, Norwood, & Mask, 2005; Babatunde et al., 2010; Clancy, Breen, Moran, Thorne, & Wallace, 2011; Edwards-Jones, 2006; Feder et al., 1985; Kebede et al., 1990), we develop a simultaneous participation model to analysis the relative importance of the variables. We evaluate two respondent categories (i.e., certified and uncertified) and the model therefore has two categorical dependent variables or outcomes. According to O'Connell (2006) and Strano and Colosimo (2006), logistic regression is a strong and robust method for predicting categorical outcomes influenced by a set of independent variables which have different scales of measure. One of the advantages of logistic regression is it allows predicting a discrete outcome, from a set of variables that may be continuous, discrete, dichotomous, or a mix of any of them (Strano & Colosimo, 2006). In recent years, the method has become the standard of analysis for binary predictor variables (Allison, 1999).

Respondent selection and characteristics

This research was conducted in two provinces of Indonesia, namely Aceh (i.e., Bandar District) and Lampung (i.e., Tanggamus and West Lampung Districts). Both provinces are known as coffee producing regions where the farmers are mainly cultivating Arabica and Robusta coffee respectively. The Arabica farmers in Bandar District mostly join Fair trade whereas the Robusta producers participate in Rainforest Alliance, Utz, and 4C certifications. The competition among the schemes in the regions is low that there is only one scheme presents in a village. The farmers were randomly surveyed in various sub-districts and villages, and we equally took 80 samples of both certified and uncertified farmers, resulted in 160 respondents in total. The sample of 80 certified farmers consist of the producers certified with Fair Trade, 4C, Utz, and Rainforest Alliance (i.e., 20 individual farmers from each scheme). The distribution of respondents is presented in Table 2.

Table 2. Sample sizes and respondent distributions

Distribution of respondents groups	Distribution of individual respondents based on certification schemes
1. Certified farmers = 80 respondents 2. Uncertified farmers = 80 respondents	1. Fair Trade = 20 respondents 2. 4C = 20 respondents 3. Utz = 20 respondents 4. Rainforest Alliance = 20 respondents

Conceptual model

We propose a certification participation model which is specified as a function of economic, social-demographic, psychological and institutional factors as follows:

$$CP_i = f(X1, …, X17) \tag{1}$$

Where the economic factor includes:
X1   farming income (Rupiah)
X2   off-farm (outside own farm) income (Rupiah)
X3   total farm size (hectare)
The social-demographic factor includes:

X4   family sizes (people)
X5   education (years)
X6   farming experience (years)
X7   distance to cooperative/ KUBE (kilometres)
The psychological factor includes:
X8   index of farming orientation attitude
X9   index of certification program attitude
X10   index of information gathering attitude
X11   index of risk attitude
X12   index of market attitude
The institutional factor includes:
X13   degree of the roles of farmer groups
X14   degree of the roles of cooperative or KUBE
X15   Supports from government agencies (recorded as 1 if receives any support, and 0 if otherwise)
X16   Supports from Exporter and Research Institution (recorded as 1 if receives any support, and 0 if otherwise)
X17   Supports from NGOs (recorded as 1 if receives any support, and 0 if otherwise)

In the model, CP_i represents the certification participation where $CP_i = 1$ for participate/certified, $CP_i = 2$ for not participate/uncertified. Regarding the psychological factor, we measure the indexes of attitudes by proposing the equation below:

Indexes of attitudes = EnV_{1-n} / EpV_{1-n}   (2)

Where EnV_{1-n} is the total value of real-practice components and EpV_{1-n} is the total value of perceived ideal conditions and beliefs components. The values are obtained by asking farmers to rate a set of items in Appendix A using a five-point-Likert-type Scale.

In the case of institutional factor, we propose the following equations to measure X13 and X14:

Degree of roles of farmer groups (X13) = (G1 +G2 +G3+ G4 +G5 +G6+G7)/18   (3)

In the equation, the numerator of the ratio is the total value of groups' roles, and denominator is the highest-possible total value of the roles. We define three values for measuring groups' roles: value 2 = often to regularly do the roles; value 1 = sometimes do the roles; and value 0 = very rare to almost never do the roles. Several roles of producer groups are defined below:

G1 = Groups organize periodic informal meeting to discuss farming-related issues and to share knowledge and information
G2 = Groups support collective actions, for example, collectively buying farm inputs (e.g. fertilizers, seeds, and tools), and sharing cost (e.g. to buy hulling coffee machine)
G3 = Groups organize community gathering *arisan* or alike to strengthen the emotional bond of members
G4 = Group encourage members to help one another, for example, by organizing *gotong royong* (i.e. a form of communal work or mutual aid) to build terrace, drain terrace, and ridge in coffee plantations
G5 = Groups collect, processes and controls the quality of coffee harvests, and represents its member to bargain with cooperative or KUBE
G6 = Groups manage financial saving of members
G7 = Groups give credit or loan to its members
G8 = Groups facilitate trainings, seminars, workshops, or field visits to other plantations
G9 = Groups contact extension specialists, universities or other institutional supports to obtain necessary advices

Degree of roles of cooperative or KUBE (X14) = (K1 +K2 +K3+ K4 +K5 +K6+K7)/18   (4)

Similar with the previous equation, the numerator of the ratio is the total value of the institutions' roles, and denominator is the highest-possible total value of their roles. We also define three values for measuring the roles: value 2 = often to regularly do the roles; value 1 = sometimes do the roles; and value 0 = very rare to almost never do the roles. Several roles of producer groups are defined below:

K1 = Cooperative or KUBE provides information (e.g. coffee certification program, new technology, and market information) clearly and transparently
K2 = Cooperative or KUBEs have personnel (e.g. Internal controlling system officer) who visit and interact with farmers
K3 = Cooperative or KUBEs facilitate farmers to buy fertilizers, seeds, tools and other farm inputs
K4 = Cooperative or KUBE facilitate farmers to improve knowledge and skills, for example, by contacting extension agents or universities to give advices, training, seminar and workshop
K5 = Cooperative or KUBE solve marketing problems and improved market access to exporting firms
K6 = Cooperative or KUBE provide a better market option than selling to intermediaries or conventional markets
K7 = Cooperative or KUBE manage financial saving of members
K8 = Cooperative or KUBE give credit or loan to its members
K9 = Cooperative or KUBE manage to solve farmers' problems, for example financial problems by managing credit and saving, and paying farmers on time

Adesina, A. A., & Zinnah, M. M. (1993). Technology characteristics, farmers' perceptions and adoption decisions: A Tobit model application in Sierra Leone. *Agricultural economics, 9*(4), 297-311.

AEKI (*Asosiasi Eksportir Kopi Indonesia/*Association of Indonesian Coffee Exporter). 2013. *Luas areal dan produksi*. Retrieved February 1, 2014, from http://www.aeki-aice.org/page/areal-dan-produksi/id.

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes, 50*(2), 179-211.

Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological bulletin, 84*(5), 888.

Allison, P. D. (1999). Comparing logit and probit coefficients across groups. *Sociological Methods & Research, 28*(2), 186-208.

Apata, T., Apata, O., Igbalajobi, O., & Awoniyi, S. (2010). Determinants of Rural Poverty in Nigeria: Evidence from small holder farmers in South-western, Nigeria. *International Journal of Science and Technology Education Research, 1*(4), 85-91.

Arifin, B. (2010). Global Sustainability Regulation and Coffee Supply Chains in Lampung Province, Indonesia. *Asian Journal of Agriculture and Development, 7*(2), 67.

Arifin, B. (2013). On the Competitiveness and Sustainability of the Indonesian Agricultural Export Commodities. *ASEAN Journal of Economics, Management and Accounting, 1*(1), 81-100.

Armitage, C. J., & Conner, M. (1999). The theory of planned behaviour: Assessment of predictive validity and'perceived control. *British Journal of Social Psychology, 38*(1), 35-54.

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology, 40*(4), 471-499.

Auld, G. 2010. Assessing Certification as Governance: Effects and Broader Consequences for Coffee. *The Journal of Environment and Development, 19*(2), 215-241. http://dx.doi.org/10.1177/1070496510368506.

Austin, E., Willock, J., Deary, I., Gibson, G., Dent, J., Edwards-Jones, G., Sutherland, A. (1998). Empirical models of farmer behaviour using psychological, social and economic variables. Part I: linear modelling. *Agricultural Systems, 58*(2), 203-224.

Babatunde, R., Olagunju, F., Fakayode, S., & Adejobi, A. (2010). Determinants of participation in off-farm employment among small-holder farming households in Kwara State, Nigeria. *Production Agriculture and Technology, 6*(2), 1-14.

Bacon, C. (2005). Confronting the Coffee Crisis: Can Fair Trade, Organic, and Specialty Coffees Reduce Small-Scale Farmer Vulnerability in Northern Nicaragua? *World Development, 33*(3), 497-511. doi: http://dx.doi.org/10.1016/j.worlddev.2004.10.002

Baetschmann, G., Staub, K. E., & Winkelmann, R. (2011). Consistent estimation of the fixed effects ordered logit model: Working Paper Series, Department of Economics, University of Zurich.

Barham, B. L., Callenes, M., Gitter, S., Lewis, J., & Weber, J. (2011). Fair Trade/Organic Coffee, Rural Livelihoods, and the "Agrarian Question": Southern Mexican Coffee Families in Transition. *World Development, 39*(1), 134-145. doi: http://dx.doi.org/10.1016/j.worlddev.2010.08.005

Barrett, H. R., Browne, A. W., Harris, P. J. C., & Cadoret, K. (2001). Smallholder Farmers and Organic Certification: Accessing the EU Market from the Developing World. *Biological Agriculture & Horticulture, 19*(2), 183-199. doi: 10.1080/01448765.2001.9754920

Baumgart-Getz, A., Prokopy, L. S., & Floress, K. (2012). Why farmers adopt best management practice in the United States: A meta-analysis of the adoption literature. *Journal of environmental management, 96*(1), 17-25.

Bhattacherjee, A. (2000). Acceptance of e-commerce services: the case of electronic brokerages. *Systems, Man and Cybernetics, Part A: Systems and Humans, IEEE Transactions on, 30*(4), 411-420.

Bishop, C. M. (2006). *Pattern Recognition and Machine Learning*. Singapore Springer.

Bitzer, V. (2012). Partnering for change in chains: The capacity of partnerships to promote sustainable change in global agrifood chains. *MANAGING WICKED PROBLEMS IN AGRIBUSINESS*, 13.

Bitzer, V., Glasbergen, P., & Arts, B. (2013). Exploring the potential of intersectoral partnerships to improve the position of farmers in global agrifood chains: findings from the coffee sector in Peru. *Agriculture and Human Values, 30*(1), 5-20. doi: 10.1007/s10460-012-9372-z

Blackman, A., and J. Rivera. 2010. The Evidence Base for Environmental and Socioeconomic Impacts of "Sustainable" Certification. Resources for the future, Washington, DC.

Boahene, K., Snijders, T. A., & Folmer, H. (1999). An integrated socioeconomic analysis of innovation adoption: the case of hybrid cocoa in Ghana. *Journal of Policy Modeling, 21*(2), 167-184.

Bolwig, S., Ponte, S., Du Toit, A., Riisgaard, L., & Halberg, N. (2010). Integrating Poverty and Environmental Concerns into Value-Chain Analysis: A Conceptual Framework. *Development Policy Review, 28*(2), 173-194. doi: 10.1111/j.1467-7679.2010.00480.x

Chau, P. Y. K., & Hu, P. J.-H. (2002). Investigating healthcare professionals' decisions to accept telemedicine technology: an empirical test of competing theories. *Information & Management, 39*(4), 297-311. doi: http://dx.doi.org/10.1016/S0378-7206(01)00098-2

Chen, C.-D., Fan, Y.-W., & Farn, C.-K. (2007). Predicting electronic toll collection service adoption: An integration of the technology acceptance model and the theory of planned behavior. *Transportation Research Part C: Emerging Technologies, 15*(5), 300-311. doi: 10.1016/j.trc.2007.04.004

Chiu, L. J. V., Gómez, M. I., Kaiser, H. M., & Yan, J. (2014). Socially-Responsible Certification Schemes for Smallholder Coffee Farmers: Economics of Giving and Consumer Utility.

Clancy, D., Breen, J., Moran, B., Thorne, F., & Wallace, M. (2011). Examining the socio-economic factors affecting willingness to adopt bioenergy crops. *Journal of International Farm Management, 5*(4), 25-40.

Coe, C. A. (2006). Farmer Participation in Market Authorities of Coffee Exporting Countries. *World Development, 34*(12), 2089-2115. doi: http://dx.doi.org/10.1016/j.worlddev.2006.08.002

Connolly, A. J., & Phillips-Connolly, K. (2012). Can Agribusiness Feed 3 Billion New People… and Save the Planet? A GLIMPSE™ into the Future. *MANAGING WICKED PROBLEMS IN AGRIBUSINESS*.

De Graaff, J.1986. The economics of coffee. Centre for Agricultural Publishing and Documentation (Pudoc), Wageningen, the Netherlands.

Dentoni, D., Hospes, O., & Ross, R. B. (2012). Managing Wicked Problems in Agribusiness: The Role of Multi-Stakeholder Engagements in Value Creation. *MANAGING WICKED PROBLEMS IN AGRIBUSINESS*.

Donovan, J., & Poole, N. (2011). Value chain development and rural poverty reduction: asset building by smallholder coffee producers in Nicaragua.

Donovan, J., & Poole, N. (2014). Changing asset endowments and smallholder participation in higher value markets: Evidence from certified coffee producers in Nicaragua. *Food Policy, 44*(0), 1-13. doi: http://dx.doi.org/10.1016/j.foodpol.2013.09.010

Doss, C. R. (2006). Analyzing technology adoption using microstudies: limitations, challenges, and opportunities for improvement. *Agricultural economics, 34*(3), 207-219.

Feder, G., Just, R. E., & Zilberman, D. (1985). Adoption of agricultural innovations in developing countries: A survey. *Economic development and cultural change*, 255-298.

Fishbein, M., & Ajzen, I. (1972). Attitudes and opinions. *Annual review of psychology, 23*(1), 487-544.

Fitter, R., & Kaplinsy*, R. (2001). Who Gains from Product Rents as the Coffee Market Becomes More Differentiated? A Value-chain Analysis. *IDS Bulletin, 32*(3), 69-82. doi: 10.1111/j.1759-5436.2001.mp32003008.x

Forsyth, D. R., García, M., Zyzniewski, L. E., Story, P. A., & Kerr, N. A. (2004). Watershed pollution and preservation: the awareness–appraisal model of environmentally positive intentions and behaviors. *Analyses of social issues and public policy, 4*(1), 115-128.

Frambach, R. T., & Schillewaert, N. (2002). Organizational innovation adoption: a multi-level framework of determinants and opportunities for future research. *Journal of Business Research, 55*(2), 163-176. doi: http://dx.doi.org/10.1016/S0148-2963(00)00152-1

French, D. P., Sutton, S., Hennings, S. J., Mitchell, J., Wareham, N. J., Griffin, S., . . . Kinmonth, A. L. (2005). The Importance of Affective Beliefs and Attitudes in the Theory of Planned Behavior: Predicting Intention to Increase Physical Activity1. *Journal of Applied Social Psychology, 35*(9), 1824-1848.

Fu, J.-R., Farn, C.-K., & Chao, W.-P. (2006). Acceptance of electronic tax filing: A study of taxpayer intentions. *Information & Management, 43*(1), 109-126. doi: 10.1016/j.im.2005.04.001

Gallivan, M. J. (2001). Organizational adoption and assimilation of complex technological innovations: development and application of a new framework. *SIGMIS Database, 32*(3), 51-85. doi: 10.1145/506724.506729

Giovannucci, D., & Ponte, S. (2005). Standards as a new form of social contract? Sustainability initiatives in the coffee industry. *Food Policy, 30*(3), 284-301. doi: http://dx.doi.org/10.1016/j.foodpol.2005.05.007

Godin, G., & Kok, G. (1996). The theory of planned behavior: a review of its applications to health-related behaviors. *American Journal of Health Promotion 11, pp. 87–98.*

Goldratt, E. M. (1990). *Theory of constraints*: North River Croton-on-Hudson, NY.

Gómez, M. I., Barrett, C. B., Buck, L. E., De Groote, H., Ferris, S., Gao, H. O.,… Yang, R. Y. (2011). Research Principles for Developing Country Food Value Chains. *Science, 332*(6034), 1154-1155. doi: 10.1126/science.1202543

Haggar, J., Jerez, R., Cuadra, L., Alvarado, U., & Soto, G. (2012). Environmental and economic costs and benefits from sustainable certification of coffee in Nicaragua. *Food Chain, 2*(1), 24-41.

Harrison, D. A., Mykytyn Jr, P. P., & Riemenschneider, C. K. (1997). Executive decisions about adoption of information technology in small business: theory and empirical tests. *Information Systems Research, 8*(2), 171-195.

Hausenblas, H. A., Carron, A. V., & Mack, D. E. (1997). Application of the Theories of Reasoned Action. *Journal of Sport & Exercise Psychology, 19*, 36-51.

Hennessy, T. (2002). Modelling succession on Irish dairy farms. *Zaragoza (Spain), 28*, 31.

Henson, S., & Humphrey, J. (2010). Understanding the complexities of private standards in global agri-food chains as they impact developing countries. *J Dev Stud, 46*(9), 1628-1646. doi: 10.1080/00220381003706494

Henson, S., Masakure, O., & Cranfield, J. (2011). Do Fresh Produce Exporters in Sub-Saharan Africa Benefit from GlobalGAP Certification? *World Development, 39*(3), 375-386. doi: 10.1016/j.worlddev.2010.06.012

Ibrahim, H. W., & Zailani, S. (2010). A review of competitiveness of global supply chain in a coffee industry in Indonesia. *International Business Management, 4*(3), 105-115.

Igbaria, M. (1993). User acceptance of microcomputer technology: an empirical test. *Omega, 21*(1), 73-90.

International Trade Centre (ITC). 2011b. The Impacts of Private Standards on Producers in Developing Countries. Literature Review Series on the Impacts of Private Standards; Part II. International Trade Centre, Palais des Nations, 1211 Geneva 10, Switzerland. Available at http://www.intracen.org.

Jaffee, D. (2012). Weak coffee: Certification and co-optation in the fair trade movement. *Social Problems, 59*(1), 94-116.

Kaplinsky, R. 2004. Competitions Policy and the Global Coffee and Cocoa Value Chain. Paper prepared for United Nations Conference for Trade and Development (UNCTAD). Institute of Development Studies University of Sussex, and Centre for Research in Innovation Management, University of Brighton. Available at http://www.acp-eu-trade.org/library/files/Kaplinsky-Raphael_EN_052005_IDS_Competition-policy-and-the-global-coffee-and-cocoa-value-chain.pdf.

Kebede, Y., Gunjal, K., & Coffin, G. (1990). Adoption of new technologies in Ethiopian agriculture: the case of Tegulet-Bulga district Shoa province. *Agricultural economics, 4*(1), 27-43.

Kleemann, L., Abdulai, A., & Buss, M. (2014). Certification and Access to Export Markets: Adoption and Return on Investment of Organic-Certified Pineapple Farming in

Ghana. *World Development, 64*(0), 79-92. doi: http://dx.doi.org/10.1016/j.worlddev.2014.05.005

Kolk, A. (2013). Mainstreaming sustainable coffee. *Sustainable Development, 21*(5), 324-337. doi: 10.1002/sd.507

Le Gal, P. Y., Dugué, P., Faure, G., & Novak, S. (2011). How does research address the design of innovative agricultural production systems at the farm level? A review. *Agricultural Systems, 104*(9), 714-728. doi: http://dx.doi.org/10.1016/j.agsy.2011.07.007

Lee, J. S. H., Rist, L., Obidzinski, K., Ghazoul, J., & Koh, L. P. (2011). No farmer left behind in sustainable biofuel production. *Biological Conservation, 144*(10), 2512-2516. doi: http://dx.doi.org/10.1016/j.biocon.2011.07.006

Leeuwis, C., and A. van den Ban. (2004). Communication for rural innovation: rethinking agricultural extension, the third edition. United Kingdom: Blackwell Science.

Liu, P. (2009). Private standards in international trade: issues, opportunities and long-term prospects. *The evolving structure of world agricultural trade*, 205.

Loconto, A., & Fouilleux, E. (2014). Politics of private regulation: ISEAL and the shaping of transnational sustainability governance. *Regulation & Governance, 8*(2), 166-185.

Mujawamariya, G., D'Haese, M., & Speelman, S. (2013). Exploring double side-selling in cooperatives, case study of four coffee cooperatives in Rwanda. *Food Policy, 39*, 72-83.

Muradian, R., & Pelupessy, W. (2005). Governing the coffee chain: The role of voluntary regulatory Systems. *World Development, 33*(12), 2029-2044. doi: http://dx.doi.org/10.1016/j.worlddev.2005.06.007

Neilson, J. (2007). Institutions, the governance of quality and on-farm value retention for Indonesian specialty coffee. *Singapore Journal of Tropical Geography, 28*(2), 188-204. doi: 10.1111/j.1467-9493.2007.00290.x

Neilson, J. (2008). Global Private Regulation and Value-Chain Restructuring in Indonesian Smallholder Coffee Systems. *World Development, 36*(9), 1607-1622. doi: http://dx.doi.org/10.1016/j.worlddev.2007.09.005

Nikoloyuk, J., Burns, T. R., & de Man, R. (2010). The promise and limitations of partnered governance: The case of sustainable palm oil. *Corporate Governance, 10*(1), 59-72.

Norton, E. C., Wang, H., & Ai, C. (2004). Computing interaction effects and standard errors in logit and probit models. *Stata Journal, 4*, 154-167.

O'Connell, A. A. (2006). *Logistic regression models for ordinal response variables.* The United States of America.: Sage Publications, Inc.

Oldenburg, B., & Glanz, K. (2008). Diffusion of innovations. *Health Behavior and Health Education Theory, Research and Practice*, 313-333.

Parrish, B. D., Luzadis, V. A., & Bentley, W. R. (2005). What Tanzania's coffee farmers can teach the world: a performance-based look at the fair trade–free trade debate. *Sustainable Development, 13*(3), 177-189.

Ponte, S. (2002). The `Latte Revolution'? Regulation, Markets and Consumption in the Global Coffee Chain. *World Development, 30*(7), 1099-1122. doi: http://dx.doi.org/10.1016/S0305-750X(02)00032-3

Ponte, S., & Cheyns, E. (2013). Voluntary standards, expert knowledge and the governance of sustainability networks. *Global Networks, 13*(4), 459-477.

Rivis, A., & Sheeran, P. (2003). Descriptive norms as an additional predictor in the theory of planned behaviour: A meta-analysis. *Current Psychology, 22*(3), 218-233.

Rogers, E.M. (1995). Diffusion of Innovations. 4th edition. Free Press, New York.

Rosenqvist, H., Roos, A., Ling, E., & Hektor, B. (2000). Willow growers in Sweden. *Biomass and bioenergy, 18*(2), 137-145.

Ruben, R., & Fort, R. (2012). The Impact of Fair Trade Certification for Coffee Farmers in Peru. *World Development, 40*(3), 570-582. doi: http://dx.doi.org/10.1016/j.worlddev.2011.07.030

Rueda, X., & Lambin, E. F. (2013). Responding to globalization: impacts of certification on Colombian small-scale coffee growers. *Ecol Soc, 18*(3), 21.

Schouten, G., & Glasbergen, P. (2012). Private multi-stakeholder governance in the agricultural market place: An analysis of legitimization processes of the roundtables on sustainable palm oil and responsible soy. *MANAGING WICKED PROBLEMS IN AGRIBUSINESS*, 63.

Schouten, G., Leroy, P., & Glasbergen, P. (2012). On the deliberative capacity of private multi-stakeholder governance: the roundtables on responsible soy and sustainable palm oil. *Ecological Economics, 83*, 42-50.

Sheikh, A. D., Rehman, T., & Yates, C. M. (2003). Logit models for identifying the factors that influence the uptake of new 'no-tillage' technologies by farmers in the rice–wheat and the cotton–wheat farming systems of Pakistan's Punjab. *Agricultural Systems, 75*(1), 79-95. doi: http://dx.doi.org/10.1016/S0308-521X(02)00014-8

Simatupang, T. M., Wright, A. C., & Sridharan, R. (2004). Applying the theory of constraints to supply chain collaboration. *Supply Chain Management: An International Journal, 9*(1), 57-70.

Smit, A. A. H., Driessen, P. P. J., & Glasbergen, P. (2008). Constraints on the conversion to sustainable production: the case of the Dutch potato chain. *Business Strategy and the Environment, 17*(6), 369-381. doi: 10.1002/bse.554.

Stoian, D., Donovan, J., Fisk, J., & Muldoon, M. F. (2012). Value chain development for rural poverty reduction: a reality check and a warning. *Enterprise Development and Microfinance, 23*(1), 54-60.

Strano, M., & Colosimo, B. M. (2006). Logistic regression analysis for experimental determination of forming limit diagrams. *International Journal of Machine Tools and Manufacture, 46*(6), 673-682. doi: http://dx.doi.org/10.1016/j.ijmachtools.2005.07.005

Taylor, P. L. (2005). In the Market But Not of It: Fair Trade Coffee and Forest Stewardship Council Certification as Market-Based Social Change. *World Development, 33*(1), 129-147. doi: http://dx.doi.org/10.1016/j.worlddev.2004.07.007

The Tropical Commodity Coalition (TCC). 2012. Coffee Barometer 2012. Available at http://www.teacoffeecocoa.org/tcc/Publications/Our-publications.

Tiwari, K. R., Sitaula, B. K., Nyborg, I. L., & Paudel, G. S. (2008). Determinants of farmers' adoption of improved soil conservation technology in a Middle Mountain Watershed of Central Nepal. *Environmental management, 42*(2), 210-222.

Torres-Reyna, O. (2012). Getting started in Logit and ordered logit regression. *Princeton University, http://dss. princeton. edu/training/Logit. pdf*.

Trienekens, J. H. (2011). Agricultural Value Chains in Developing Countries A Framework for Analysis. *International Food and Agribusiness Management Review, 14*(2).

Vanslembrouck, I., Huylenbroeck, G., & Verbeke, W. (2002). Determinants of the Willingness of Belgian Farmers to Participate in Agri-environmental Measures. *Journal of Agricultural Economics, 53*(3), 489-511.

Vermeulen, W. J., & Hovens, J. (2006). Competing explanations for adopting energy innovations for new office buildings. *Energy Policy, 34*(17), 2719-2735.

Vorley, B., & Fox, T. (2004). Global Food Chains—Constraints and Opportunities for Smallholders.

Wahyudi, T. and M. Jati. 2012. Challenges of Sustainable Coffee Certification in Indonesia. Seminar on the Economic, Social and Environmental Impact of Certification on the

Coffee Supply Chain, International Coffee Council 109th Session, London, United Kingdom 25th September 2012. Available at http://www.ico.org/event_pdfs/seminar-certification/certification-iccri-paper.pdf.

Weber, J. G. (2011). How much more do growers receive for Fair Trade-organic coffee? *Food Policy, 36*(5), 678-685. doi: http://dx.doi.org/10.1016/j.foodpol.2011.05.007

Wejnert, B. (2002). Integrating models of diffusion of innovations: A conceptual framework. *Annual review of sociology*, 297-326.

Willock, J., Deary, I. J., Edwards-Jones, G., Gibson, G. J., McGregor, M. J., Sutherland, A., Grieve, R. (1999). The Role of Attitudes and Objectives in Farmer Decision Making: Business and Environmentally-Oriented Behaviour in Scotland. *Journal of Agricultural Economics, 50*(2), 286-303. doi: 10.1111/j.1477-9552.1999.tb00814.x

Willock, J., Deary, I. J., McGregor, M. M., Sutherland, A., Edwards-Jones, G., Morgan, O., Austin, E. (1999). Farmers' Attitudes, Objectives, Behaviors, and Personality Traits: The Edinburgh Study of Decision Making on Farms. *Journal of Vocational Behavior, 54*(1), 5-36. doi: http://dx.doi.org/10.1006/jvbe.1998.1642