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Determinants of Trust in the Indonesian Potato Industry: A Comparison Between Groups of Potato Farmers

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Indonesia's potato industry is undergoing a rapid transformation, presenting producers with new and more profitable opportunities to participate in modern food retail channels. This study explores the ways producers can enter modern chains and how various channels suit the individual characteristics of different producers. We surveyed three groups of farmers in the largest potato-producing area in Indonesia. This article provides a conceptual model and an empirical analysis of the buyer-seller relationship in the potato industry in Indonesia. Using multivariate analysis of variance (MANOVA) and linear regression methods, the study reveals that flexibility and dependence are determinate factors of trust.

Key words: buyer-seller relationships, emerging economies, modern food retail, potato value chains, trust

Indonesian food markets are undergoing a profound and extremely rapid transformation, with implications for food supply chains (Gulati and Reardon, 2008). Farmers enter the supply chain in many different ways and modes of marketing which suit their individual characteristics. In the Indonesian potato industry, many small farmers lack opportunities to participate in modern marketing channels. Natawidjaja et al. (2007) indicate low penetration rates, with only 3% of potato growers in West Java channeling their products to modern markets such as processing firms and supermarkets. Small producers face many difficulties, including relatively high transaction costs; an inability to meet quality, consistency and quantity requirements; and market relationship problems due to differences between the perceptions of buyers and sellers (Leminen, 2001).

In recent years, studies of relational marketing have become more important for understanding agriculture industries (Batt, 2003; Boniface et al., 2010). Establishing

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relationships with buyers allows farmers to reduce much of the risk and uncertainty currently presented in their transactions (Batt, 2003). Moreover, relational marketing variables such as communication and cultural similarity provide long-term buyer-seller relationship benefits (Boniface et al., 2010). The benefits differ among agricultural industries and among farmers. Even though most potato farmers in Asia have adopted a long-term orientation towards securing regular supplies of seed potatoes, the different styles of individual and corporate behavior may inhibit or support the buyer and seller relationships (Batt and Rexha, 1999; Cunningham, 1982). In terms of relational marketing concepts, the critical determinant of good relationships is trust (Morgan and Hunt, 1994).

This study explores differences between three forms of participation in the potato marketing chain in Indonesia. These are Farmer Field School (FFS) farmers, Indofood producers who sell to one of Indonesia's largest food processors, and a random sample of potato farmers. The FFS sample refers to all potato farmers who were selected to participate in a potato market training project. In Indonesia, FFSs provide opportunities for learning-by-doing, initially based on principles of non-formal education in agro-ecological concepts and integrated pest management (IPM) practices that incorporate self-discovery activities practiced in the field (Ooi, 1996). The second group, the Indofood producer group, sells their potatoes under forward contracts to the Indofood company, the largest food processor in Indonesia. The third group, the general potato farmers, is a random sample of potato farmers. Farmers in this group often sell their products directly to traders along the road near their plots. The three groups are expected to have different characteristics and behaviors related to trust in their relationships with buyers. This paper aims to investigate the determinants of trust within the three groups of potato farmers in Indonesia.

The remaining part of the article is organized as follows: first, we present an overview of the Indonesian potato industry. Then, we explain the theoretical and conceptual model used in this study. In the next section, we outline the research methodology and data analyses using MANOVA and linear regression. The results are discussed and conclusions are drawn, while the last section highlights conclusions and implications.

The Potato Industry in Indonesia

Potato marketing in Indonesia is dominated by general trading with limited contract farming schemes (Saptana, Indraningsih, and Hastuti, 2010). General trading refers to an informal and flexible relationship between sellers and buyers, and the commodity price is defined in an agreement (Saptana et al., 2005; Saptana, Indraningsih, and Hastuti, 2010). The traders' bargaining positions in determining prices are usually stronger than the farmers' as farmers have tight budget constraints in terms of loan repayments for seeds,

fertilizer, pesticides, and household goods. Contract farming is "...an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at predetermined prices (Eaton and Shepherd, 2001, p. 2)."

In general, there are two types of potato marketing channels for the majority of potato producers in Indonesia growing either Granola or Atlantic varieties (Sayaka et al., 2008). Granola potatoes are sold primarily in traditional wet markets for household consumption. Atlantic potatoes are mostly sold through the modern market involving a marketing partnership between farmers and Indofood. Indofood uses Atlantic potatoes to produce potato chips. The partnerships are conducted without a formal agreement between the company and the farmers.

A recent study of potato marketing in Indonesia by Natawidjaja et al. (2007) divided the potato channels in West Java into five segments; (1) Farmer – traditional wholesaler – wholesale market – retail market; (2) Farmer – local collector – traditional wholesaler – wholesale market – retail market; (3) Farmer – farmer group – industry specialized supplier (vendor) – food industry; (4) Farmer – traditional wholesaler – supermarket specialized supplier – supermarket; and (5) Farmer – farmer group – supermarket. The study highlights a transformation of market channels in the potato industry as a result of the increase in the modern food retail channels, including supermarkets and food processing industries. However, potatoes sales over the past 10 years still have been dominated by the traditional market.

Natawidjaja et al. (2007) also found that growers producing and selling Atlantic for the modern channel had profits that were about 150% higher than the Granola producers who sold to traditional channels. Saptana et al. (2005) described the supply chain in the Indonesian horticulture industry as a long marketing channel. Hastuti (2004) suggested that marketing costs are relatively high, while the potato farming community's access to formal financing institutions was quite low. Most traders made partnerships with farmers to maintain supply continuity, providing capital for inputs. Prices for Atlantic potatoes are set by Indofood and are known by producers before production. Prices for Granola are competitive, set in the Jakarta wholesale markets and changing daily. The majority of potato farmers have mobile phones and access to daily price information and changes.

The Potato Supply Chains

The key informant field research for this paper identified three forms of potato chains, including farmer-organized FFSs, those selling to Indofood, and the general potato farmer population who are not participating in specialized programs or selling to Indofood.

The FFSs provide an opportunity for learning-by-doing. The FFS approach represents a paradigm shift in agricultural extension: the training program utilizes participatory methods "...to help farmers develop their analytical skills, critical thinking, and creativity, and help them learn to make better decisions (Kenmore, 1997, p.8)." Expectations and perceived characteristics of FFS farmers include their motivations to innovate, to adopt new practices earlier and to be more environmentally friendly than the average potato farmer. FFS potato programs tend to recruit younger producers and farmers with little potato farming experience. In practice, FFS producers mostly sell their products, including potatoes, through their group leaders in order to lower their transactions costs and in an attempt to gain a market advantage.

Indofood contract farmers sell their products under forward contracts to the company. Indofood began as an instant noodle company in 1990 and today is the largest food processing company in Indonesia. The snack food processing sector in Indonesia is dominated by traditional snacks, with potato chips showing rapid growth as a non-traditional snack food. To maintain and guarantee the sustainable supply of raw materials, Indofood has built up a partnership with potato farmers by introducing Atlantic potatoes for processing. Access to seeds is organized through a partnership in the major potato-producing areas which are concentrated in several Regencies (districts) in West Java (Bandung and Garut) and Central Java (Dieng).

The general potato farmer sample is not involved in FFS programs nor in the Indofood partnership. These farmers often sell their products directly to traders and middlemen. In the Natawidjaja et al. (2007) study, the majority of producers in the general potato farmer sample sold via two chains. One chain was farmer – traditional wholesaler – traditional wholesale market – traditional retail market. A second chain was farmer – local collector – traditional wholesaler – traditional wholesale market – traditional retail market.

Description of Variables in the Model

In this study, we provide a discussion of trust and factors that may influence the development of trust in the potato industry. Specifically, we compare the factors among the FFS program, Indofood contract farmers, and the general potato farmer sample groups. Relational variables such as flexibility, price transparency, price satisfaction, communication, dependency, culture, reputation, and problem solving together are expected to influence the level of trust. In addition, some demographic factors such as farm size, experience producing potatoes, and potato price are examined to explore their impact on trust.

Trust

Trust can be a significant component of social capital contributing to economic development (Fukuyama, 1995; North, 1990; Ostrom, 2000; and Dasgupta, 2000). Trust is related to institutions and affects the costs of transactions. If one's confidence in an enforcement agency falters, one is also less likely to trust people and their agreements are not established (Dasgupta, 2000). A buyer's trust reduces the perception of risk and reduces transaction costs in an exchange relationship (Ganesan, 1994; and Doney and Cannon, 1997). Hence, trust can be categorized as a catalyst that helps make an economy function more efficiently. Anderson and Narus (1990) define trust as the belief that a business partner will perform actions that result in a positive outcome for the firm and not take unexpected actions that may result in negative outcomes. Johnson and Grayson (2000) add competence, reliability, and dependability to the trust concept. In short, although the marketing scholars and practitioners cannot define a single model of trust, it can be defined as a willingness to rely on an exchange partner's attributes with confidence (Moorman, Deshpandé, and Zaltman, 1993; and Yee and Yeung, 2002).

Researchers have divided trust into various dimensions (Masuku and Kirsten, 2003). For example, Sako (1997) distinguishes between three types of trust: contractual trust, competence trust, and goodwill trust. Contractual trust stresses shared moral norms of honesty and promise-keeping. Competence trust requires a shared understanding of professional conduct, and technical and managerial standards. Goodwill trust exists when there is consensus on the principles of fairness – each party makes an open-ended commitment to take initiatives for mutual benefit without taking advantage of a situation.

Other researchers, Nooteboom, Berger, and Noorderhaven (1997) and Das and Teng (2001), for example, classify trust into competence and goodwill trust. They use the description provided by Mayer, Davis, and Schoorman (1995) to explain competence trust as the expectation of the ability and expertise of a party to fulfill a promise, agreement or obligation.

Geyskens and Steenkamp (1995) view trust as encompassing two essential elements. First, they define honesty trust as a belief that partners stand by their words, fulfilling their promises. Second, goodwill trust means the expectations of each party's moral obligations and responsibility in social relationships demonstrate a special concern (dependability, responsibility, and integrity) for other's interests above their own (Barber, 1983; Ring and Van de Ven, 1992; and Rempel, Holmes, and Zanna, 1985).

Batt (2003) explains trust between growers and market agents as an expectation of high returns when there is some uncertainty associated with the decision outcomes and when the outcome is considered important. Moreover, Batt (2003) conceptualizes trust as an expectation to acquire incomplete buyer information. For example, depending on a

partner's verbal pledges and a willingness to make oneself vulnerable to the actions of another party (Mayer, Davis, and Schoorman, 1995), trust can be identified through partners' honesty and goodwill. For goodwill trust, this study follows the framework of Yee and Yeung (2002), using responsibility, dependability, and integrity. For honesty trust, the analysis follows the concepts developed by Geyskens and Steenkamp (1995) who define honesty as growers' perceptions based on partners' words, fulfilling their promised obligations and sincerity. The multidimensional nature of trust is expected to be influenced by price satisfaction, dependence exploitation, reputation, flexibility, joint problem solving, and communication.

In the three farmer groups studied here, the level of trust was also expected to be different among groups. Farmers with stronger market relationships with their buyers were expected to have a better understanding of consumer demands and more willingness to facilitate the informal resolution of conflicts (Batt and Rexha, 1999; and Hakansson and Sharma, 1996). Current literature suggests no common consensus about the meaning of relationship quality or how to measure the level of relationship quality between exchange partners. However, commitment, trust, and satisfaction are the most common variables to quantitatively measure relationship quality, together with one or several antecedents or consequences.

Antecedents of Trust

Many factors influence the building and maintenance of trust. One of the most important determinants of trust is communication. Anderson and Narus (1990) defined communication as the formal as well as informal sharing of meaningful, timely, and frequent information between firms. This definition stresses the efficacy of information exchange rather than the quantity. In agribusiness studies, researchers such as Batt and Rexha (1999); Matanda and Schroder (2004); and Schulze, Spiller, and Wocken (2006) investigated the relationship between communication and relationship quality, as well as trust, finding that communication impacts positively on relationship quality.

Price transparency is also an important factor influencing trust. Beukema and van der Zaag (1990) found that farmers were more likely to establish long-term relationships with seed suppliers to reduce uncertainty in the output market. Price transparency helps decrease uncertainty. It can be achieved through communication and information sharing (Lages, Lages, and Lages, 2005; and Naudé and Buttle, 2000).

Relative price satisfaction—comparing price levels to a reference price—may also influence the development and maintenance of trust between the potato farmers and the buyers (Schulze, Spiller, and Wocken, 2006) and was included in the model. Jaervelin (2001) found that, when comparing their own price received with the price paid by other dairies and slaughterhouses, relative price satisfaction was the construct that comprised

short- and long-term satisfaction. Hence, farmers seek other buyer's prices before they sell their products. When farmers are satisfied with their buyers, they tend to rely on the buyer's offered price rather than seek another buyer.

The price-quality ratio is an important determinant of trust in the model presented here. Fornell et al. (1996) considered the perceived level of product quality relative to the price paid as perceived value received by customers. Fiegenbaum (1991) defined quality as a customer's actual experience with the product that consistently met their specifications.

Joint problem solving was also included in the model. The joint problem solving construct was described in terms of collaboration. Yilmaz and Hunt (2001) defined collaboration in a buyer-seller relationship as a departure from the anchor point that underlies spot-market transactions towards a relational, bilateral exchange. The other variables in the model included partner reputation, dependency, and flexibility in the relationship. Morgan and Hunt (1994) stated that a partner's reputation was one of three additional constructs assumed to have influence in assessing the level of trust among supply chain partners.

Kwon and Suh (2004) stipulated that a partner's reputation in the market had a strong positive impact on the trust-building process, whereas a partner's perceived conflict created a strong negative impact on trust. Heide and John (1992) identified flexibility as a dimension of relationship management practices that influenced relationship outcomes, viewing relationship flexibility as the willingness to move beyond the terms and conditions specified in contractual agreements as circumstances required. MacNeil (1980) argued that the requirement for flexibility in contracts arises as a result of the bounded rationality of the manager's decision-making, the limited availability of information, and the non-constant state of the environment.

The final antecedent as a determinant of trust considered in this study was dependence. Pfeffer and Salancik (1978) discussed that firms engaged in transactions because they required resources from other firms. Dependence increased when outcomes obtained from a specific relationship were higher than or better than the outcomes available from alternative relationships, and when fewer alternative sources of exchange were available to the firm. Studies suggest that dependence usually engenders power which, when used indiscriminately, leaves partners feeling under-rewarded and resentful, and may result in suspicion and mistrust in the relationship between the buyers and sellers (Ganesan, 1994; and Gruen, 1995).

Demographic Variables

In addition to the antecedents discussed above, socioeconomic and demographic variables were included in the trust model. Farm size was expected to have a positive influence on trust since larger farms could potentially allow their owners to negotiate better prices when purchasing inputs or selling outputs. Moreover, Key (2004) argued that small-scale growers might be preferred by contractors as the bargaining strength of contractors is inversely related to the scale of the grower. In this study, land size of potato farms was the measure of firm size. La Porta et al. (1997) provided evidence that trust was positively related to the size of firms. We also included experience—measured by the number of years in potato farming—as a determinant of trust.

Finally, the price received by the farmers was expected to influence trust. The actual price in neo-classical market models is considered to be the key coordination mechanism of exchange for relationships in perfect competition (Arndt, 1983; and Hobbs, 1996).

Sample and Methods

This study uses data collected from 307 potato farmer households surveyed during February and March 2009. The entire sample is from two Regencies in West Java: Bandung and Garut. These two Regencies account for over 90% of West Java's potato production (Natawidjaja et al., 2007). Farmers that did not grow potatoes in the 2008/09 rainy season or dry season were not interviewed.

The 197 respondents in the general potato farmer sample resulted from randomly selecting an average of 12 potato producers in each of 16 villages. The 16 villages were selected in three steps. First, sub-districts (*kecamatans*) were stratified into two categories, major and minor potato production areas based on published production and area data, and key informant interviews. Second, two sub-districts were randomly selected from the major and minor potato production zones, resulting in eight sub-districts. Third, site visits and key informant interviews were used to develop a list of potato-producing villages in each sub-district. The research team visited the land registry in each of the randomly sampled villages to obtain names and contact information for potato producers from the land tax office files.

The Indofood sample includes 60 farmers drawn randomly from a list provided by Indofood of more than 400 producers. The 50 FFS producers were selected randomly from lists of more than 200 farmers provided by extension officers working for two government departments. The questionnaire provided data on household characteristics, assets, potato production and marketing history, other sources of income, contractual details, and farmers' perceptions of changes over time.

Additionally, to determine the various latent constructs of farmers' trust and possible antecedents of trust, respondents indicated their level of agreement (1 = strongly disagree to 5 = strongly agree) with eight statements regarding honesty and goodwill trust, and more than 20 statements relating to the antecedents of trust (Appendix). The statements were adapted from the previous studies discussed earlier, in particular Boniface et al. (2010); Gyau and Spiller (2007, 2008); and Gyau, Spiller, and Wocken (2011). The statements were pre-tested with over 30 potato farmers and were modified slightly after receiving feedback. Originally, 10 questions were used to measure potato farmers' perceptions of trust, but the number of trust questions was reduced to eight after completing the pre-test.

Table 1 presents basic descriptive data. Average land holdings for the FFS, Indofood, and general potato farmer samples were 1.22, 1.24, and 0.91 hectares, respectively. The average age and the years of potato farming experience were lowest for the FFS group. Indofood farmers received relatively higher prices than other farmers.

Table 1. Descriptive Statistics of Demographics

Descriptive Statistics	Mean			Standard Deviation		
	FFS	Indofood	General Potato Farmers	FFS	Indofood	General Potato Farmers
Firm size (ha)	1.224	1.239	0.911	2.517	0.947	1.547
Experience in potato farming (years)	15.800	18.570	21.260	10.079	11.830	13.059
Age (years)	41.000	44.000	47.000	10.387	9.527	11.895
Actual price (rupiah)	3,169.000	3,462.500	3,224.900	605.661	166.628	741.028

Factor Analysis

The measures of trust, flexibility, price transparency, relative price satisfaction, price-quality ratio, communication, dependence, reputation, and joint problem solving were developed using farmers' responses to the attitudinal questions provided in the Appendix. These questions were used to measure the various latent constructs of each variable. The dimensionality of trust and the eight relational variables were checked using principal component analysis with varimax rotation. All items with Eigen values above one were extracted. In addition, items with factor loadings above 0.50 were extracted and all those with cross loadings above 0.50 were deleted (see the Appendix). Originally, eight

statements were used to measure trust; however, one of the statements was dropped as it had a factor loading below 0.50.

A reliability test using Cronbach's Alpha was used to analyze the measurement scale for each of the variables with more than one latent construct (trust, flexibility, price transparency, price-quality ratio, communication, and dependence). The results of the principal component analysis indicated two dimensions of trust, namely goodwill trust and honesty trust, as shown in the Appendix. To test the appropriateness of the principal component analysis for the scales, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO-MSA) was conducted for all of the variables with multiple constructs. All measurements were accepted as the KMO-MSA was in the acceptable range of greater than 0.50 (Nunnally, 1978).

Statistical Analyses

Multivariate analysis of variance (MANOVA) and a post-hoc test were used to test the hypotheses that there are significant differences in the level of trust, the antecedents of trust, and the demographic factors among the three farmer groups or samples. The independent variables were the three farmer groups and the dependent variables were trust, its antecedents, and the demographic variables. Multivariate differences across groups were assessed using the Wilks' Lambda criterion (known as the U Statistic). The test examined whether groups were somehow different without being concerned with whether they differed on at least one linear combination of a dependent variable (Gyau and Spiller, 2009). Finally, the variables identified were modeled in a linear regression model to determine which dependent variables influence trust.

Results and Discussion

Tests of Differences

Table 2 provides the test criteria for the MANOVA. The MANOVA is used to accommodate more than one dependent variable (Ndubisi and Jantan, 2003). The MANOVA was applied to control simultaneously the effects of trust, its determinants, and the demographic variables such as firm size, experience, and potato price. Table 2 provides the test statistics for different multivariate tests—Pillai Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root. The values of these test statistics indicated that there is a significant ($p < 0.05$) effect of the independent variables on all of the dependent variables, considered as a category.

Table 2. MANOVA Test Criteria and Exact F-Statistics

Statistic	Value	F-statistic	Hypothesis degrees of freedom	Error degrees of freedom	Prob. > F
Pillai's Trace	0.989	2360.156[a]	11.000	294.000	0.000[b]
Wilks' Lambda	0.011	2360.156[a]	11.000	294.000	0.000[b]
Hotelling's Trace	88.305	2360.156[a]	11.000	294.000	0.000[b]
Roy's Largest Root	88.305	2360.156[a]	11.000	294.000	0.000[b]

[a] Exact statistic
[b] Computed using alpha = 0.05

Table 3 provides a univariate test for the three categories on each of the antecedents of trust and demographic variables. The results indicate significant differences (p-value < 0.050) exist across farmer categories (FFS, Indofood, and general potato farmers) in terms of the following antecedents of trust: price transparency, relative price satisfaction, price-quality ratio, joint problem solving, reputation, flexibility, and dependence. Additionally, experience in potato farming and actual potato price received were significantly different across groups. Communication and firm size were the only two variables which were not significantly different across farmer groups.

Next, the mean differences between each of the farmer groups for each antecedent of trust and demographic variable were calculated using the post-hoc Bonferroni test of differences. The Bonferroni test allowed us to determine if the mean difference in the antecedents of trust and demographic factors were significantly different across the three groups. The results of the test of differences are presented in Table 4. The general potato farmer group was significantly different from the Indofood group in terms of price transparency (p-value = 0.000), relative price satisfaction (p-value = 0.087), joint problem solving (p-value = 0.004), reputation (p-value = 0.022), flexibility (p-value = 0.002), dependence (p-value = 0.000), and actual price (p-value = 0.013), and significantly different from the FFS group in terms of years of experience in potato farming (p-value = 0.006).

Table 3. Multivariate analysis of variance (MANOVA) for antecedents of trust and demographic variables

Dependent Variable	F-ratio	p-value	Noncent. Parameter	Observed Power [a]	Group means		
					FFS	Indofood	General Potato Farmers
Antecedents of Trust							
Communication	0.82	0.44	1.63	0.19	0.12	0.08	-0.05
Price transparency	8.53	0.00	17.06	0.97	-0.12	0.47	-0.11
Relative price satisfaction	4.10	0.027	0.03	8.20	0.73	-0.22	-0.03
Price-quality	14.81	0.00	0.09	29.61	1.00	0.05	0.17
Joint problem solving	4.30	0.01	8.59	0.75	3.60	3.85	3.50
Reputation	3.23	0.04	6.46	0.61	0.01	0.28	-0.09
Flexibility	4.88	0.01	9.76	0.80	0.04	0.34	-0.11
Dependence	28.42	0.00	56.84	1.00	-0.17	0.80	-0.20
Demographic variables							
Firm size (ha)	1.33	0.27	2.67	0.29	1.22	1.24	0.91
Experience in potato farming [b]	4.28	0.02	8.55	0.74	16.00	19.00	21.00
Actual price (rupiah)	3.72	0.03	7.45	0.68	3169.0	3462.5	3224.87

[a] Computed using alpha = 0.05
[b] Experience is in years.

The results in Table 4 and the group means provided in Table 3 suggest that Indofood farmers perceive their buyers to be more price transparent; and although the actual price the Indofood farmers received from their buyer was higher on average, they were relatively less satisfied with the terms and conditions offered by their buyer (relative price satisfaction) compared to the general potato farmer group. Further, the mean values of the variables reputation, flexibility, and dependence were significantly higher for the Indofood farmer group compared to the general potato farmer group. Thus, it appears that, relative to the general potato farmer group, Indofood farmers find their buyers to have a relatively high reputation and to be flexible; however, Indofood farmers also indicated they are dependent on their buyers. The difference between Indofood farmers and FFS and general potato farmers in terms of experience was reasonable since the FFS

potato programs tend to recruit younger producers and farmers with little potato-farming experience.

Table 4. Test of Differences in Antecedents of Trust and Demographic Variables by Potato Farmer Group

Dependent Variables	Pair	t-value	Std. Error	p-value
Communication	GPF-FFS	1.250	0.158	0.212
	GPF-Indofood	0.705	0.148	0.481
Price transparency	GPF-FFS	-0.083	0.155	0.934
	GPF-Indofood	4.012	0.144	0.000
Relative price satisfaction	GPF-FFS	-0.822	0.121	0.412
	GPF-Indofood	1.716	0.113	0.087
Price-quality ratio	GPF-FFS	-0.283	0.158	0.777
	GPF-Indofood	-1.573	0.147	0.117
Joint problem solving	GPF-FFS	0.793	0.129	0.429
	GPF-Indofood	2.926	0.120	0.004
Reputation	GPF-FFS	0.913	0.103	0.362
	GPF-Indofood	2.305	0.096	0.022
Flexibility	GPF-FFS	0.950	0.156	0.343
	GPF-Indofood	3.112	0.146	0.002
Dependence	GPF-FFS	0.321	0.146	0.748
	GPF-Indofood	7.225	0.136	0.000
Firm size (meter squares)	GPF-FFS	1.282	0.394	0.201
	GPF-Indofood	1.154	0.367	0.250
Experience (years)	GPF-FFS	-2.785	1.962	0.006
	GPF-Indofood	-1.476	1.827	0.141
Actual price (rupiah)	GPF-FFS	-0.545	102.449	0.586
	GPF-Indofood	2.491	95.397	0.013

Notes: Computed using alpha = 0.10. FFS = Farmer field school group. GPF = General potato farmer group

Regression Analysis

Regression analysis was used to determine how the antecedents and demographic variables affect honesty and goodwill trust among the three groups. The results of the regression analysis are provided in Table 5 and Table 6, presenting the differences in factors that influence honesty and goodwill trust among the three groups of potato farmers. Honesty trust is based on the farmer believing that the buyers will fulfill their promises. Goodwill trust is based on the farmer's belief that the buyer is committed and will make decisions which are mutually beneficial and will not take advantage of a situation. Goodwill trust reflects responsibility, dependability, and integrity. The following discussion highlights how some of the variables significantly influenced honesty and goodwill trust among the three farmer groups.

Communication had a positive influence on goodwill trust (Table 6) for the general potato farmer group. The results correspond with Han, Wilson, and Dant (1993) who found that trust was developed by the constant and detailed exchange of information. Our results were similar to other research describing how communication and information exchange influence trust between growers and buyers (Osborn, 2000).

Price transparency was found to have a positive and significant impact on the level of honesty trust for the FFS and the general potato farmer samples. This means growers have more trust in the buyers when they perceive they are paid a fair and reasonable price. This supports other studies in agribusiness literature, including Batt (2003); Geyskens, Steenkamp, and Kumar (1999); and Jaervelin (2001). The results also revealed that relative price satisfaction had a significant and positive impact on honesty trust of the FFS group. Even though these farmers do not sell potatoes directly to buyers, they rely on their FFS coordinators who take responsibility to seek the best prices for the farmers in the FFS group.

For the general potato farmer group, joint problem solving had a significant and negative impact on honesty trust, and a significant and positive impact on goodwill trust. In terms of honesty trust, the general potato farmer sample appeared to not rely on what potato buyers promised, even if they offer joint problem solving opportunities. However, goodwill trust appeared to be linked to positive relationships with buyers who offered solutions to the farmers' problems through technical assistance and access to seeds, fertilizers, and pesticides. This result relates to the Zaheer, McEvily, and Perrone (1998) study that found that exchange of personnel and shared decision-making leads to improved performance and decreases in transaction costs. Bahlmann, Schulze, and Spiller (2007) also highlighted that management cooperation was a relevant determinant of trust by farmers.

Reputation had a significant and positive impact on honesty trust for the Indofood and general potato farmer groups. Indofood is one of Indonesia's largest food companies and

the only processing company in Indonesia conducting contract farming with potato farmers. For the general farmer population, the buyer's reputation is influenced by their willingness to provide cash payments, financial assistance, technical support, and keep promises to pay for potatoes on time.

Interestingly, flexibility had a significant and negative impact on honesty trust for the FFS and Indofood groups. However, this variable had a significant and positive impact on goodwill trust for the Indofood and general potato farmer groups. Flexibility refers to the willingness of the buyer to move beyond the terms and conditions specified in contractual agreements as circumstances require. FFS farmers stated that buyers lacked contract flexibility about how to sell potatoes as their harvest was turned over to the FFS group coordinators. Indofood farmers faced a take-it-or-leave-it contract, leaving little room for flexibility in contract negotiations and delivery.

The positive impact of flexibility on goodwill trust for the Indofood farmer group may be linked to the fact that Indofood provides technical assistance and support, as well as high-yielding seeds, which are unavailable elsewhere. Thus, growers may perceive that as a large Indonesian firm, Indofood is more concerned about their welfare than small independent traders. The general potato farmer group had a relatively high proportion of farmers receiving financial assistance and related support directly from their buyers, thus they may perceive their buyers to be committed to them by offering this assistance.

Dependence in market relationships was expected to influence trust negatively (Ganesan, 1994; and Gruen, 1995). However, the results shown in Table 5 reveal that, in this case, dependency had a statistically positive impact on honesty trust for Indofood farmers. As mentioned earlier, Indofood provides farmers with access to highly sought-after, high-yielding Atlantic potato seeds as part of their contract. In potato farming, seed costs are the highest portion of production costs, on average 72% of total costs of producing potatoes (Natawidjaja et al., 2007). Indofood is also the main buyer of the Atlantic variety and the only large food processor producing potato chips. Thus, it is vital that Indofood follows through on its commitments as the farmers need Indofood to access both better quality inputs and product markets.

Dependence also had a positive and significant impact on goodwill trust for the FFS and the general potato farmer groups. Similar to the explanation of the flexibility variable on goodwill trust, many producers in the FFS and general potato farmer groups received loans from buyers to purchase seeds, chemicals, and fertilizer. This access to financing is important as loans from banks are difficult to organize for small producers in Indonesia. When buyers provided these services, the farmers became dependent on the buyers, but this dependency may also be viewed by the farmers as necessary and mutually beneficial.

Firm size had a negative impact on honesty trust and a positive impact on goodwill trust for the FFS group. This is an interesting finding and it suggests that larger firms

involved in FFS tend to have less confidence that buyers will fulfill their promises, yet they believe that buyers will make mutually beneficial decisions and will not take advantage of them. Larger firms may believe that they are better able to influence their buyers to make mutually beneficial decisions. The significant and positive impact on goodwill trust of the variable representing the potato price received for the FFS and general potato farmer groups was not surprising. Farmers who receive higher prices were likely to believe that their buyers are not taking advantage of them.

Table 5. Regression Models of Honesty Trust for Each Potato Farmer Group

Variables	Honesty Trust Model					
	FFS		Indofood		General Potato Farmers	
	Beta Coefficient	p-value	Beta Coefficient	p-value	Beta Coefficient	p-value
(Constant)		0.660		0.229		0.252
Communication	0.124	0.461	-0.090	0.543	-0.031	0.727
Price transparency	0.634**	0.001	0.014	0.930	0.317**	0.001
Relative price satisfaction	0.414**	0.006	0.130	0.283	0.078	0.291
Price quality ratio	0.069	0.668	0.190	0.149	0.103	0.231
Joint problem solving	-0.059	0.727	-0.156	0.207	-0.156**	0.039
Reputation	-0.122	0.478	0.327**	0.010	0.134*	0.065
Flexibility	-0.474**	0.019	-0.268**	0.038	-0.069	0.372
Dependence	0.064	0.636	0.369**	0.015	-0.051	0.477
Firm size (ha)	-0.261**	0.075	0.069	0.566	0.017	0.812
Experience (years)	-0.054	0.660	0.001	0.992	-0.014	0.838
Actual price (rupiah)	-0.062	0.645	0.063	0.624	0.080	0.240
R-Square	0.492	0.003	0.409	0.004	0.202	0.000
Adjusted R-Square	0.345	0.003	0.274	0.004	0.155	0.000

Notes: **$p \leq 0.05$; *$p \leq 0.10$

Table 6. Regression Models of Goodwill Trust for Each Potato Farmer Group

Variables	Goodwill Trust Model					
	FFS		Indofood		General Potato Farmers	
	Beta Coefficient	p-value	Beta Coefficient	p-value	Beta Coefficient	p-value
(Constant)		0.061		0.690		0.172
Communication	0.039	0.827	0.187	0.210	0.167**	0.030
Price transparency	0.089	0.632	0.144	0.364	0.100	0.236
Relative price satisfaction	-0.011	0.943	0.088	0.471	-0.099	0.119
Price quality ratio	0.123	0.472	-0.030	0.818	0.099	0.180
Joint problem solving	-0.136	0.446	0.044	0.720	0.150**	0.021
Reputation	0.153	0.398	-0.098	0.429	0.002	0.969
Flexibility	0.338	0.104	0.296**	0.024	0.211**	0.002
Dependence	0.249*	0.085	0.169	0.259	0.341**	0.000
Firm size' (ha)	0.352**	0.024	-0.161	0.186	-0.041	0.493
Experience (years)	0.106	0.417	-0.019	0.875	-0.046	0.448
Actual price (rupiah)	0.358**	0.015	0.130	0.315	0.124**	0.034
R-Square	0.437	0.012	0.401	0.005	0.413	0.000
Adjusted R-Square	0.274	0.012	0.263	0.005	0.379	0.000

Notes: **$p \leq 0.05$; *$p \leq 0.10$

Conclusions and Implications

The results suggest that there are significant differences in the factors influencing honesty trust and goodwill trust, and that these factors differ across the three groups of farmers. For the FFS group, price transparency, price satisfaction, and flexibility had significant and positive impacts on honesty trust, and dependence had a significant and positive impact on goodwill trust. Reputation and dependence had statistically significant and positive impacts, and flexibility had a significant and negative impact, on honesty trust for the Indofood group. Flexibility, which had a positive impact on goodwill trust for the Indofood group, was the only statistically significant variable in this model. For the general potato farmer group, price transparency and reputation positively influenced honesty trust, while joint problem solving had a negative impact on honesty trust. Communication, joint problem solving, flexibility, and dependence all had positive and statistically significant impacts on goodwill trust. Firm size and actual price received affected trust for the FFS and general potato farmer groups.

Identification of the determinant factors of trust for each group is important since every group has unique characteristics and behaviors. Identification of the antecedents of trust enhances understanding of the factors influencing farmers' motivations to engage in long-term relationships with their buyers. Moreover, for the buyers, knowledge of the important role of relational norms with the farmers can be used to evaluate which farmers are more likely to be committed and loyal, bringing the benefits of long-term relationships. Improved levels of trust can potentially assist both parties to improve their economic performance and reduce concerns about opportunistic behavior by either party.

For two groups, uncertainty over price influences a farmer's willingness to maintain a relationship. The FFS group considers price transparency and relative price satisfaction, and the general potato farmer group considers price transparency, when making decisions on buyer relationships. The actual price received can also determine the trust perceptions of the FFS and general potato farmer groups. Thus, the actual price and the farmers' perceptions of price satisfaction are significant factors influencing a farmer's trust, as well as the presence of relational norms. With agricultural commodities, price uncertainty is common. Buyers can attempt to reduce profit uncertainty, however, making relationship-specific investments.

Indofood farmers feel that reputation is an important factor determining trust. In this study, reputation is based on the farmer's perceptions that their partners are honest, they provide payments in cash, and they offer financial assistance. Flexibility is a dimension of relationship quality influencing relationship outcomes both positively and negatively in the Indofood group. Limited availability of information in relationships and uncertainty of the business environment are the reasons why flexibility appears in contracts (MacNeil, 1980). The Indofood farmers feel certainty in marketing, output price, and supply of the input supplies such as seeds. However, they also perceive a lack of goodwill as some obligations go unfulfilled.

All three farmer groups perceive that they are able to achieve collective goals with their buyers and they do not feel exploited, leading to a positive relationship between dependence and trust. Farmers are more trustful of buyers who offer specific assistance to obtain seeds, fertilizers, pesticides, and related financial assistance. On the other hand, when a channel member controls resources that the other channel member wants or needs, various power relations emerge that enable the party controlling the resource to exert some influence or power (Andaleeb, 1996). In the potato channels, farmers tend to obtain benefits from better access to credit and inputs, better access to technology and information, and opportunities for skill transfer.

A buyer-seller relationship is a dynamic phenomenon that changes over time. The data used in this study is a cross section, capturing farmers' perceptions at a given point in time. As a consequence, research is recommended to take into consideration the time dimensions of buyer-seller relationships. Moreover, the relationship performance was

measured only from farmers' perceptions. To identify whether there is a gap of the perceptions between farmers and buyers, future research is suggested to measure the relationship performance dimensions from the buyers' perspectives.

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Appendix. Principal Component Analysis of Trust and Antecedents of Trust

No	Factors and items	Factor loadings
1	*Trust*	
	Honesty Trust (Cronbach's alpha=0.697, KMO-MSA=0.650, Explained variance=62.476)	
	Even when the buyer gives us a rather unlikely explanation, we are confident that it is telling the truth	0.783
	The buyer usually keeps his/her promises	0.804
	We can count on the buyer to be sincere	0.636
	Goodwill Trust (Cronbach's alpha=0.799 , KMO-MSA=0.787, Explained variance=62.427)	
	Though circumstances change, we believe that the buyer will be ready and willing to offer us assistance and support	0.824
	When making important decisions, the buyer is concerned about our welfare	0.817
	When we share our problems with the buyer, we know that he will respond with understanding	0.782
	Whenever the buyer gives us advice on our business operations, we know that he is sharing his best judgments that will also benefit us	0.688
2	*Flexibility (Cronbach's alpha=0.529, KMO-MSA=0.571, Explained variance=48.888)*	
	My buyer is flexible in their contract and arrangement to fit with the current scenario	0.824
	My buyer can adjust the contract conditions to fit with my current requirements	0.697
	When I have a problem, my buyer will make sure the problem does not jeopardize our business relationship	0.555

Appendix. Principal Component Analysis of Trust and Antecedents of Trust (continued)

No	Factors and items	Factor loadings
3	*Price Transparency (Cronbach's alpha=0.690, KMO-MSA=0.604, Explained variance=62.332)*	
	Price changes are communicated to me properly and in a timely manner	0.735
	The price information provided by the buyers is complete, correct and frank	0.752
	I know what I pay and what I receive	0.550
4	*Relative Price Satisfaction*	
	The terms and conditions offered by my buyer/processor are better than those of other buyers/processors	1.000
5	*Price-quality ratio* (Cronbach's alpha=0.710, KMO-MSA=0.500, Explained variance=75.984)	
	I am satisfied with the potato price and grading system offered by my buyer	0.576
	I get a good price-quality ratio	0.648
6	*Communication (Cronbach's alpha=0.852, KMO-MSA=0.809, Explained variance=67.604)*	
	The buyers provide me with information in a timely manner	0.865
	The buyers provide me with all if the relevant market information	0.849
	We frequently share common information with the buyer	0.813
	Information sharing on important issues has become a critical element to maintain this partnership	0.760
7	*Dependence (Cronbach's alpha=0.588, KMO-MSA=0.606, Explained variance=55.092)*	
	The buyers have all the power in my potato production decisions	0.793
	I have no other alternative buyer	0.736
	My buyers control all the production information	0.673
8	*Reputation*	
	The buyers have a strong reputation	1.000
9	*Joint problem solving*	
	When I have problem with my buyers, I meet with them and solve problems together	1.000