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MEASURING THE SATISFACTION AND LOYALTY LEVEL OF MILLENNIAL FARMERS: A CASE STUDY ON SUGARCANE FARMING IN THE PARTNERSHIP BETWEEN FARMER AND PTPN XI EAST JAVA

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ABSTRACT

The PTPN XI's sugarcane supply in the last five years has tended to decline. A strong partnership between sugarcane farmers and PTPN XI can be an alternative solution to overcome the scarcity of the sugarcane supply by being shown high satisfaction and loyalty. The aims of this study are: 1) to compare the level of satisfaction of millennial and old sugarcane farmers to the performance of PTPN XI and 2) to compare the level of loyalty of millennial and old sugarcane farmers in partnership. The millennial and old sugarcane farmers' satisfaction levels are used to analyze CSI, gap analysis, Z-test, and IPA. The loyalty levels used average table analysis and Z-test. The study samples were obtained from four sugar mills areas of PTPN XI: Asembagoes, Soedhono, Wonolangan, and Pradjekan. The results showed that the satisfaction level category of millennial farmers was quite satisfied (65.68%), while the satisfaction level of old sugarcane farmers was satisfied (67.04%). Statistically, the results of the Z-test showed a significance value of 0.021. There was a difference in the average satisfaction level between millennial and old sugarcane farmers, where the satisfaction level of sugarcane farmers was higher than millennials. However, the study found that the loyalty of old sugarcane farmers was more elevated than millennials using the Z-test with a significance value of 0.011. Through this study, it is expected that the partnership between PTPN XI and the sugarcane farmers is getting better quality to achieve increased sugar production.

Keywords: *loyalty, millenial farmers, partnership, satisfaction, sugarcane*

BACKGROUND

The decreasing interest of sugarcane farmers is seen in sugarcane which is getting smaller nationally. The area of sugar cane plantations in Indonesia in the last five years has decreased by around 29 thousand hectares from 2016 to 2020 (BPS, 2021). The shrinking area of sugarcane plantations worsened the level of sugarcane yields. As a result, the government imported 3.7 million tonnes of sugar to meet the national sugar demand of 5.9 million tonnes from Thailand, Brazil, Australia, and India (BPS, 2021). The decline in the millennial generation's interest in the agricultural sector is caused by several things, including the fact that the agricultural sector has a less prestigious image with advanced technology and the assumption that agriculture has not provided adequate income (Susilowati, 2016). In addition to low income, high risk, and little profit, agriculture is the last choice compared to other jobs (Umunnakwe et al., 2014). Various factors cause the decline of sugarcane supply in PTPN XI. It certainly creates a new problem with the low productivity of sugar

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mills. According to Mazwan & Masyhuri (2019) in their study, the influencing factors included: substandard farming maintenance, planting under optimal times, and the majority of sugar cane land is a dry land with lower productivity than paddy fields. In addition, the use of fertilisers and the quality of the sugarcane seed varieties are not optimal. The quality of the sugarcane varieties showed an unbalanced composition of ripeness between early, middle, and late ripening, causing low sugarcane weight and yield.

The Directorate General of Plantations (2017) issued the Fixed Figures for Indonesian Plantation Statistics stating that East Java is a center for sugarcane production in Indonesia, contributing around 1,186,515 tons or 48.17% of national sugarcane production (BPS, 2021). Based on the national sugarcane production, the state's plantations contributed 13.74%, the private plantations 27.17%, and people plantations 58.67%. One of the state plantations in East Java is represented by PTPN XI. PTPN XI is a state-owned agribusiness company that focuses on sugar production. Most of the raw material comes from sugarcane, cultivated by smallholder farmers, around 70% through partnerships with sugar mills, and only about 30% of their sugarcane (PTPN XI, 2022). PTPN XI aims to increase production by empowering and strengthening community sugarcane farmer partnerships to achieve production efficiency and impact food self-sufficiency. In addition, the empowerment of community sugarcane farmers aims to increase capacity in managing sugarcane plantations and can foster mutually beneficial relationships between PTPN XI and farmers or farmer cooperatives with business partners (Rahayu, 2013).

However, the sugarcane farmer partnership program does not always go as expected because of many obstacles in the field. Partner farmers still grind their sugarcane only partially or only to fulfil the sugar factory agreement contract in the field. PTPN XI provides capital loan assistance with low interest, seed assistance, technical assistance, inputs, and fertilisers, so it is hoped that the partner farmers will grind their sugarcane products at the sugar mills of PTPN XI. Therefore, it is necessary to examine the satisfaction and loyalty of sugarcane farmers in the PTPN XI region regarding implementing company policies. It intends to partner with sugarcane farmers who consistently supply their cane crops to PTPN XI's mills to stabilise sugar production and increase.

Several previous studies were made as references in the current study. This research refers to earlier studies on farmer satisfaction in country and abroad, including Fadilah (2010), Ekawati (2013), Lukito (2017), Alfasanah (2019), Khoirunnisa (2019), Lestari (2021), Widayasari et al. (2023), Yazdanpanah et al. (2013), and Rouzaneh et al. (2021). Research in the country, there are some references. Widayasari et al. (2023), regarding the satisfaction level of coffee farmers towards the Bakti BCA CSR program in Sirap Village, Semarang Regency, Central Java, use the Customer Satisfaction Index (CSI) and Importance methods Performance Analysis (IPA). The IPA and CSI methods are also applied to the measurement of sugarcane farmer satisfaction in partnership with PG Pakis Baru researched by Ekawati (2013), and PG Kembroong (PTPN X) in Sidoarjo studied Alfasanah (2019).

Fadilah (2010) researched the partnership between PG Jatitujuh with Community Sugarcane Farmers in Majalengka, West Java, while Lukito (2017) examines Farmer Loyalty Related to Farmer Behavior, Role of Government and Sugar Factory (Case Study in Pasuruan Regency, East Java) focuses on its relation to sugarcane farming in the form of income and profit. The similarities between the two researchers used descriptive analysis methods and the Rank Spearman correlation test. Khoirunnisa (2019) only researched the pattern of partnership relationships between sugarcane farmers and the people and PTPN XI. Lestari (2021) regarding measuring the motivation of

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independent smallholder sugarcane farmers in establishing a partnership with PT. Nusantara Plantation (PTPN) XIV PG Takalar also uses descriptive analysis to determine the level of satisfaction with the performance. Studies from abroad related to the level of farmer satisfaction and loyalty can be studied in the study of Yazdanpanah et al. (2013), namely in the form of measuring the satisfaction of farmers who use plantation insurance in Iran using the ACSI (American Customer Satisfaction Index) method so that further studies confirm that customer satisfaction is the main factor that determines farmer loyalty. Rouzaneh et al. (2021) studied farmer satisfaction in Iran regarding the performance of micro-irrigation systems through application adoption, service life, and efficiency of use. The study examines policies to increase farmer satisfaction that should be carried out by expanding drip irrigation among Iranian farmers.

The novelty of this study is the type of commodity and study location. In addition, previous studies on satisfaction measurement did not compare differences in satisfaction and loyalty levels between millennial and older sugarcane farmers. This gap research relates to smallholder sugarcane farmers' partnership with PTPN XI in East Java. PTPN XI aims to improve production by empowering and strengthening farmer partnerships to achieve sugarcane production efficiency to impact food self-sufficiency. Plus, empowering community sugarcane farmers to increase their capacity in managing sugarcane plantations and foster a mutually beneficial relationship between PTPN XI with farmers/farmer groups/cooperatives with business partners (Rahayu, 2013). However, the sugarcane farmer partnership program does not always go according to plan because many obstacles are encountered in the field. The sugar mills of PTPN XI are represented in each region of East Java, providing capital loan assistance with low interest, seed assistance, technical guidance, agricultural tools, and fertilizer. The sugarcane farmers are expected to grind the sugarcane yield to PTPN XI. In the field, partner farmers still grind the sugarcane only partly or only to fulfill the sugar mills' agreement. Therefore, it needs to be studied in more depth the satisfaction and loyalty of partner sugarcane farmers in the PTPN XI area towards implementing company policies. It thus aims to ensure sugarcane farmers can consistently supply their sugarcane to the PTPN XI so that sugarcane production can be stable and even increase. Based on the background description above, the objectives of the study of this thesis are: 1) to compare the level of satisfaction of millennial and old sugarcane farmers to the performance of PTPN XI and 2) to compare the level of loyalty of millennials and old sugarcane farmers in partnership.

RESEARCH METHODS

Study Area

The location of this study was determined by purposive sampling. The study locations were selected in four sugar mill areas at PT. Perkebunan Nusantara XI: PG Soedhono (Ngawi Regency), PG Wonolangan (Probolinggo Regency), PG Asembagus (Situbondo Regency), and PG Pradjekan (Bondowoso Regency). This study is a collaborative project between the Faculty of Agriculture of Gadjah Mada University and PT. Perkebunan Nusantara (PTPN) Holdings. This study was conducted from June- July 2022.

Sampling Procedure and Data Collection

The data used are primary data with the cross-section data category, namely the results of observations of many objects in one period (Firdaus, 2020). Data collection techniques were done

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through observation, surveys, interviews, recording, and analysis. Respondents selected as the samples were rice field and dry land farmers (both rented/owned) partners of PTPN XI East Java; each sugar mill has 40 respondents (a total of four sugar mills are 160 respondents). Statistical analysis usually requires a minimum sample size of 30 respondents (Saunders et al., 2007). The selected farmers' sample using a stratified random sampling method, dividing the population into homogeneous groups by looking at the partner farmer data owned by each of the selected PTPN XI above. The Regulation of the Minister of Agriculture of the Republic of Indonesia Number 4 of 2019 defines millennial farmers are farmers 19-39 years old who are adaptive to digital technology, while old farmers are farmers > 39 years old (Ministry of Agriculture RI, 2019).

Analytical Technique

In this paper, two aspects are analysed by the objectives: knowing the level of satisfaction of sugarcane farmers and the level of loyalty between the two categories of sugarcane farmers. The first objective is to measure satisfaction using the Customer Satisfaction Index (CSI). CSI measurement uses the Irawan method (2004). CSI can be used as a reference for setting targets for service improvement to partners and is required as a continuous matter. Measurement of CSI can be used as a reference for setting targets for improving service to partners and is required as a continuous matter (Irawan, 2004). The CSI calculation uses Mean Importance Value (MIS), Mean Satisfaction Value (MSS), Weighting Factors (WF), and Weighted Value (WS). There are five indicators for the level of importance and satisfaction in the CSI analysis of PTPN XI: agricultural production facilities (tangibles), technical guidance (reliability), determination of planting and harvesting schedules (responsiveness), implementation of milled cutting and transport (assurance), and profit-sharing and yield system (empathy). The value level of importance and satisfaction questionnaire used the Likert scale of 1-5. The importance level consists of five values categories: very unimportant (1), not important (2), quite important (3), important (4), and very important (5), while the satisfaction level also consists of five categories: very unsatisfying (1), unsatisfying (2), satisfying enough (3), satisfying (4), and very satisfying (5). The determining the level of Customer Satisfaction Index (CSI) method based on Irawan (2014) from a low to high value: 0.00 - 34.99% (very dissatisfied), 35.00 - 50.99% (not satisfied), 51.00- 65.99 (quite satisfied), 66.00 – 80.99 (satisfied) and 81.00 – 100.00 (very satisfied).

Then after knowing the CSI value of millennial and old sugarcane farmers, it is followed by gap analysis and independent samples Z-test. Gap analysis determines the difference between the value of importance and satisfaction. Calculation of the gap analysis using Irawan (2004), Gap value = level of satisfaction - level of importance. If the gap is negative, it indicates dissatisfaction. While if the gap is positive, the value of satisfaction is higher than the value of importance. While testing the difference in the average level of importance and satisfaction, this study was conducted using the Z-test. The Independent Samples Z-test to determine whether there is a difference between the means of two independent samples or not related to the number of samples $n \geq 30$. The Z-test uses SPSS Version 27 software. The test criteria are if the sig (2-tailed) value < 0.05, then H0 is rejected (Ghozali, 2016).

As part of knowing the level of satisfaction of millennial and old sugarcane farmers, Importance Performance Analysis (IPA) was also carried out. The IPA method is an analytical technique used to identify what essential performance factors must be demonstrated by an organization to meet the satisfaction of service users of a company. The IPA method can be an

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attribute that becomes the primary strategy for improving the performance of implementing partnership relations (Ekawati, 2013). Determination of the attributes was based on input facilities, technical guidance, setting planting and harvesting schedules, carrying out milled cutting and transport, profit sharing, and yield system. The IPA analysis used SPSS version 27 software to produce Cartesian Diagram, as shown in Figure 1.

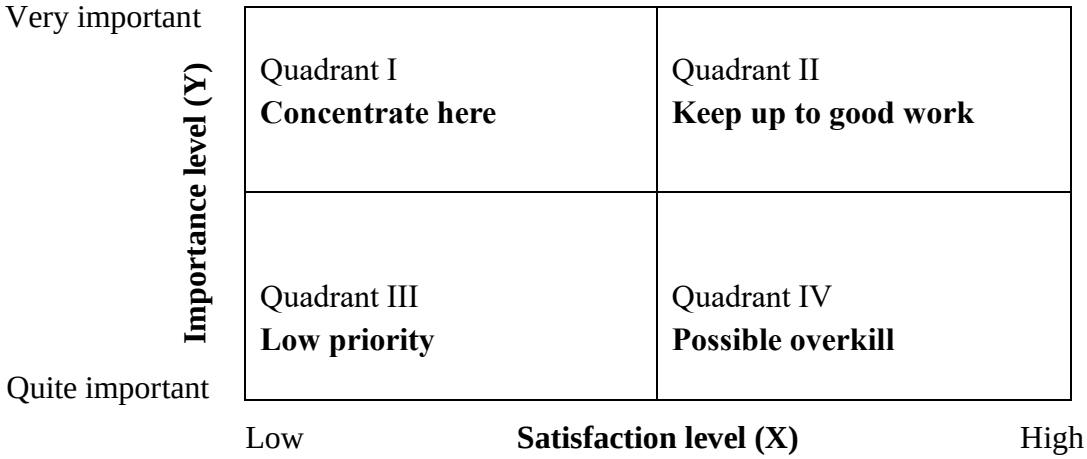

Figure 1. Importance Performance Index Cartesian Diagram
Source: Rangkuti (2003)

Information of IPA Cartesian Diagram based on Figure 1 above is Quadrant I (Concentrate here), Quadrant II (Keep up to good work), Quadrant III (Low priority), and Quadrant IV (Possible overkill). Quadrant I is a quadrant that contains attributes considered necessary by partner sugarcane farmers, but the implementation performance is not as expected by farmers, so it needs immediate attention from PTPN XI. The steps to make continuous improvements are to increase the satisfaction of the attributes in the quadrant. Meanwhile, Quadrant II is a quadrant that contains attributes considered necessary by partner sugarcane farmers. The implementation of these attributes is by what farmers feel. The attributes included in this quadrant must be maintained because all these attributes make the partner sugarcane farmers feel satisfied with the services provided by PTPN XI when carrying out partnership relations. Quadrant III is a quadrant that attributes considered less critical by partner sugarcane farmers, and the performance of these attributes is not too exceptional or low. The effect on the benefits felt by partner sugarcane farmers is minimal (has a low priority). Meanwhile, Quadrant IV is the quadrant that contains attributes considered too excessive, and the implementation is not too memorable. Attributes located in quadrant IV can be reduced by PTPN XI so that the company can save costs.

After analyzing the level of satisfaction, followed by an analysis of the second objective. The second analysis determines the loyalty level of millennial and old sugarcane farmers as PTPN XI's partners. Based on Wilianto's study (2019) states that partner loyalty can be measured using four indicators: compliance, responsibility, dedication, and integrity. Questionnaire data was processed quantitatively, processed into Microsoft Excel, and then analyzed. Then the statistical data is explained descriptively, including the data measurement scale and determination of average (mean) and class interval (Riadi & Sutanto, 2017). The measurement of variable indicators in this study uses a Likert scale through each statement in the questionnaire. It consists of five values, including very loyal (5), loyal (4), loyal enough (3), disloyal (2), and very disloyal (1). The second step is measuring

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the average or mean. The mean value can be determined by dividing the amount of data by the amount of data in the statements of smallholder sugarcane farmers as PTPN XI East Java partners in the questionnaire that has been collected. The last step determined class intervals and the category's lower and upper limits. Based on the above class intervals, categories are assigned: $1.00 \leq \text{Mean} \leq 2.30$ (low loyalty), $2.31 \leq \text{mean} \leq 3.60$ (moderate loyalty), and $3.61 \leq \text{mean} \leq 5.00$ (high loyalty). Testing whether there are differences in loyalty levels between millennial and old sugarcane farmers at PTPN XI East Java was conducted using the Z-test with SPSS Version 27. The Z-test is used to determine whether there is a difference between the average of two mutually free samples or not related to the number of samples $n \geq 30$ (Ghozali, 2016). The statistical hypothesis of test criteria: if the value of sig (2-tailed) $\leq \alpha$ 0.05, then H0 is rejected. It means there are different loyalty levels between millennial and old sugarcane farmers.

RESULT AND DISCUSSION

Sugarcane Farmers Characteristics

Based on the age variable shown in Table 1, PTPN XI partner's sugarcane farmers are dominated by old farmers, while millennial sugarcane farmers have a lower percentage. Most millennial sugarcane farmers come from PG Wonolangan and Pradjekan, while the older sugarcane farmers mainly come from PG Soedhono and Asembagoes. The table shows that old sugarcane farmers still dominate the sugarcane plantation workforce, and the respondents of PTPN XI's partner sugarcane farmers are still minimal from millennials.

According to the characteristics of partner farmers based on education level, data shows that high school graduates still dominate most millennial and old sugarcane farmers. Millennial sugarcane farmers with the second highest level of education come from undergraduates, while elementary school graduates still dominate the old partner sugarcane farmers with the second highest level of education. Based on this percentage, millennial sugarcane farmers have a much better education because farmers who come from high school and university graduates have a higher percentage than old sugarcane farmers. The old sugarcane farmers have a higher presentation of Elementary School to Junior High School than the percentage of young sugarcane farmers. The data shows that millennial sugarcane farmers have a better educational experience than the older generation. The third variable is the partner farmers' average sugarcane farming experience (years). A higher level of knowledge and skill in running a farming business can also be seen from the experience of how long farmers have been running their farming business (Mardani et al., 2017).

The third variable is the average sugarcane farming experience expressed in years. A higher level of knowledge and skill in running a farming business can also be seen from how long the experience farmers have been running their farming business (Mardani et al., 2017). Based on the table, the average experience of cultivating sugarcane is mainly done by old sugarcane farmers, in contrast to the millennial generation of sugarcane farmers with relatively short experience cultivating sugarcane. It naturally occurs because millennial sugarcane farmers start sugarcane farming later than older ones, so the experience of farming with old sugarcane farmers in farming takes longer.

The People's Sugarcane Farmers Cooperative (KPTR) is institution that carries out sugarcane agribusiness activities. The purpose is to improve the welfare of its members as sugar cane farmers. Empowerment of farmers through KPTR is carried out so that when PTPN XI and partner sugarcane farmers who generally have small-scale businesses work together, partner sugarcane farmers can

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increase their farming to be more extensive and efficient. Based on Table 1, the average time to join as a member of the KPTR of millennial partner farmers is relatively shorter, for eight years. It is reasonable because millennial sugarcane farmers are relatively new to running their farming business. The most extended average experience of joining KPTR was owned by partner sugarcane farmers at PTPN XI, namely by the category of old sugarcane farmers for 13.5 years. The experience of joining or not being farmers as members of the KPTR can illustrate how long farmers get information, facilities, and services that are easier regarding partnership relationships that are mutually beneficial to both parties.

Table 1. Characteristics of The Sugarcane Farmers

Variable	All Farmers Data	
	Millennial	**Old**
Age (%)		
Millennial (19-39 years old)	27.50	-
Old (>39 years old)	-	72.50
Education experience (%)		
Elementary School	13.63	24.14
Junior High School	6.81	9.48
Senior High School	47.72	44.83
University	31.81	21.55
Average of sugarcane farming (years)		
Millennial (19-39 years old)	9.50	-
Old (>39 years old)	-	17.00
Membership of The People's Sugarcane Farmers Cooperative (KPTR)		
Member (%) : Millennial (19-39 years old)	40.90	-
Old (>39 years old)	-	59.48
Non-member (%): Millennial (19-39 years old)	59.10	-
Old (>39 years old)	-	40.52
Average membership length (years): Millennial (19-39 years old)	8.00	-
Old (>39 years old)	-	12.50
Main occupations (%)		
Farmer	93.18	94.82
Teacher/public officials	0.00	2.58
Entrepreneurs	6.82	1.72
Housewives	0.00	0.86
Side occupations (%)		
Farmer	9.09	16.38
Trader	0.00	6.89
Teacher/public officials	9.09	8.62
Entrepreneurs	18.18	10.35
No job	63.64	57.76

Source: Primary Data Analysis (2023)

Based on Table 1 about sugarcane farmers' occupations, millennials and old farmers make sugarcane farming their primary profession. The two categories of partner farmers do not have a side job or only focus on sugarcane farming. Only a few partner farmers have main jobs as entrepreneurs, housewives, and teachers/public officials. Only a few sugarcane farmers have side jobs as rice, corn, tobacco farmers, cattle breeders, traders, entrepreneurs, or teachers/public officials.

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Satisfaction Level of Sugarcane Farmers

Based on the calculations that have been obtained, the overall data CSI value of sugarcane farmers is 66.65% (satisfied), as shown in Table 2, with a more detailed CSI value breakdown as follows: millennial sugarcane farmers are 65.68% (quite satisfied) and old sugarcane farmers of 67.04% (satisfied). Both millennial and old sugarcane farmers have an MIS value of three on the partnership relations. Meanwhile, the millennial sugarcane farmer's average satisfaction level (MSS) is below three for all attributes A1-A5 on input facility indicators, B3 and B5 attributes on technical guidance indicators, and E3 attributes on the profit-sharing and yield-sharing system indicators. The dissatisfied attributes are almost the same as the overall data of farmer respondents, and only the difference is added to attribute B5 (the socialization of new technologies to farmers by sugar factory extension agents). As is typical for millennials, technological renewal in all fields, including agriculture, is also a concern for millennial sugarcane farmers so that working is more effective and efficient (Susilowati, 2016). It will be different from old sugarcane farmers, dissatisfaction with an average value of two of the five existing indicators; this attribute is only on input indicators with attribute codes A1-A5. The indicator of input facility services and cultivation preparation until the sugarcane harvest in PTPNX XI is still very lacking, for example, tractors, fertilizers, seeds, trucks, and others. Therefore, it is the cause of sugarcane productivity and maturity that is difficult to be granted by partner farmers. According to PTPN XI, sugarcane quality standards are ripe, clean, and fresh.

The previous study, according to Ekawati (2013) on the satisfaction of partner farmers in PG Pakis Baru, Central Java, tangibles indicators on the service of fulfilling production input facilities in terms of convenience, quality, and adequacy of quantity, timeliness, and expenses that partner farmers can reduce still have value low CSI satisfaction. Partner farmers need concrete manifestations through fast response and service in overcoming problems. The sugar mills certainly need partner sugarcane farmers to get supplies of sugarcane raw materials to be used in its production. The partnership business ethics that are carried out are a balance between intensive and risk, and it is due to the response and concrete action on complaints from partner sugarcane farmers. It will be able to minimize losses due to the failure of a sugarcane farmer.

The calculation of the gap between PTPN XI's current satisfaction results and the importance of smallholder sugarcane farmers as partners are shown in Table 2. Based on the gap analysis data, it is known that PTPN XI's performance when providing partnership services to sugarcane farmers is still low compared to the level of importance, so a negative value gap is produced. The most significant discrepancy starts from the data of all partner farmer respondents, millennial and old sugarcane farmers, and partner farmers per sugar mills area; the average is in the input facility service indicator with attributes A1-A5. The smallest gap in the seven categories is attributed to D4 in carrying out milled felling and transport, namely The Letter of a Cutting and Transport Warrant (SPTA) issued by sugar mills.

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Table 2. The CSI Value and Gap Analysis of Sugarcane Farmers Partners of PTPN XI

Indicators	Attributes	Mean Importance Value (MIS)			Mean Satisfaction Value (MSS)			Gap Analysis (Δ)		
		Millennial	Old	All data	Millennial	Old	All data	Millennial	Old	All data
Agricultural production facilities (tangibles)	Ease of getting input from sugar mills (A1)	4.27	4.45	4.45	2.66	2.30	2.30	-1.61	-2.15	-2.00
	The quality of inputs (A2)	4.41	4.40	4.40	2.95	2.28	2.28	-1.45	-2.11	-1.93
	Enough production units (A3)	4.34	4.48	4.48	2.70	2.15	2.15	-1.64	-2.34	-2.14
	Provision of inputs on time (A4)	4.39	4.44	4.44	2.61	2.21	2.21	-1.77	-2.23	-2.11
	Save on expenses (A5)	4.14	4.35	4.35	2.39	2.07	2.07	-1.75	-2.28	-2.14
Technical guidance (reliability)	There is a technical guidance facility by sugar factory extension agents (B1)	4.55	4.42	4.42	3.43	3.30	3.30	-1.11	-1.12	-1.12
	Technical guidance material can be practiced easily (B2)	4.45	4.47	4.47	3.23	3.33	3.33	-1.23	-1.14	-1.16
	The discipline of sugar mills instructors provides technical guidance (B3)	4.32	4.34	4.34	2.89	3.01	3.01	-1.43	-1.34	-1.36
	Ease of communication with the extension agents (B4)	4.55	4.52	4.52	3.45	3.52	3.52	-1.09	-1.00	-1.03
	Socialization of new technology by extension agents ((B5)	4.36	4.38	4.38	2.84	3.12	3.12	-1.52	-1.26	-1.33
	Application of technical guidance increases sugarcane productivity (B6)	4.48	4.55	4.55	3.14	3.23	3.23	-1.34	-1.32	-1.33
	Sugar mills make beneficial activities for partner farmers (B7)	4.59	4.57	4.57	3.41	3.34	3.34	-1.18	-1.23	-1.22
Determination of planting and harvesting schedules (responsiveness)	Socialisation of planting schedule (C1)	4.20	4.31	4.31	3.02	3.60	3.60	-1.18	-0.71	-0.84
	Sugarcane productivity increases due to a disciplined planting schedule (C2)	4.27	4,38	4.38	3.25	3.65	3.65	-1.02	-0.73	-0.81
	Monitors certainty of harvest schedule (C3)	4.55	4.59	4.59	3.91	4.04	4.04	-0.64	-0.55	-0.58
	Socialisation of harvest schedule (C4)	4.48	4.59	4.59	3.95	4.11	4.11	-0.52	-0.47	-0.49
	Partner farmers comply with the planting and harvesting schedule determined (C5)	4.30	4.61	4.61	3.73	4.07	4.07	-0.57	-0.54	-0.55
Implementation of milled cutting and transport (assurance)	Dissemination of transport and milling schedules (D1)	4.30	4.64	4.64	3.77	4.14	4.14	-0.52	-0.50	-0.51
	The cut-and-carry process is by the planting schedule (D2)	4.23	4.53	4.53	3.50	4.11	4.11	-0.73	-0.41	-0.50
	Ease of cutting and transporting milled sugarcane facilities from partner farmers to sugar mills (D3)	4.55	4.64	4.64	3,93	4.25	4.25	-0.61	-0.39	-0.45
	There is an SPTA (Cutting and Transport Order) issued by sugar mills (D4)	4.55	4.53	4.53	4,20	4.21	4.21	-0.34	-0.32	-0.33
	Fairness in the waiting time for the sugarcane to enter (D5)	4.43	4.56	4.56	3,50	3.83	3.83	-0.93	-0.73	-0.79
Profit-sharing and yield system (empathy)	Partner farmers have agreed with the profit-sharing system (E1)	4.18	4.22	4.22	3,43	3.24	3.24	-0.75	-0.97	-0.91
	Profit sharing system benefits partner farmers and sugar mills (E2)	4.20	4.25	4.25	3,48	3.26	3.26	-0.73	-0.99	-0.92
	Yield is calculated based on the core sampler method (E3)	3.89	4.07	4.07	2,61	3.03	3.03	-1.27	-1.04	-1.11
	Conformity of the yield value provided by the sugar factory with the expectations of partner farmers (E4)	4.32	4.47	4.47	3,14	3.35	3.35	-1.18	-1.12	-1.14
	Increase in yield value by sugar mills (E5)	4.32	4.48	4.48	3,30	3.51	3.51	-1.02	-0.97	-0.99
Customer Satisfaction Index (CSI) Value		65.68	67.04	66.65						

Source: Primary Data Analysis (2023)

The next test is the independent samples Z-test with $n \geq 30$ respondents (Ghozali, 2016). The Z-test was conducted to determine whether there is a significant difference in the average satisfaction level between millennial and old partner sugarcane farmers. The test criterion is that if the sig (2-tailed) value is <0.05, then H_0 is rejected. Table 3 of the Z-test shows the sig 2-tailed results of the satisfaction level of millennial and old sugarcane farmers 0.021. It means that the sig 2-tailed value is less than the significance level of 0.05, so H_0 is rejected. Therefore, the results of the Z-test can be concluded that there are significant differences in the level of satisfaction between millennial and old partner sugar cane farmers. The results of this study are by the theory put forward by Kotler et al. (2010), who explained that consumers or partners in the young and old age categories have differences

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in their properties that will affect the level of satisfaction with the goods or services offered by the company. Young consumers tend to be more satisfied with new, innovative, and quality products, while older consumers or partners are more satisfied with products that have long been known and familiar. In addition, young consumers tend to be more sensitive to price and product quality, while older consumers pay more attention to service and convenience when shopping. Marconi (2002) also added that satisfaction is one factor that influences consumer or partner loyalty. Consumer satisfaction is a comparison between the expectations held by consumers or partners with the reality received by these consumers. Companies that can meet consumer or partner expectations will make them more satisfied with the company.

Table 3. Satisfaction Level in the Partnership of PTPN XI and Sugarcane Farmers

		Independent Samples Test			**Equal Variances Assumed**				
Sugarcane Farmers		**Mean**	**Std. Deviation**	**Std. Error Mean**	**t**	**df**	**Sig. (2-tailed)**	**Interval of the Lower**	**Interval of the Upper**
Satisfaction level	Millennial	4.356	0.161	0.031	-2.385	52	0.021**	-0.179	0.015
	Old	4.453	0.137	0.026					

Information: **α 5% = 0.05
Source: Primary Data Analysis (2023)

The following discussion is mapping satisfaction level strategies on the IPA Cartesian Diagram. The IPA analysis is an analytical technique used to identify what essential performance factors must be shown by an organization to meet the satisfaction of service users of a company (Caruna, 2002). After the CSI analysis, the following is a Cartesian Diagram from the IPA analysis (Figure 2) for the millennial and old sugarcane farmers used the same indicators: agricultural production facilities (tangibles), technical guidance (reliability), determination of planting and harvesting schedules (responsiveness), implementation of milled cutting and transport (assurance), and profit-sharing and yield system (empathy).

According to IPA Cartesian Diagram's Quadrant I of millennial sugarcane farmers in Figure 2, PTPN XI management must evaluate the attributes of the quality of inputs (A2), enough production units (A3), provision of inputs on time (A4), technical guidance material can be practised easily (B2), socialisation of new technology by extension agents (B5) and application of technical guidance increases sugarcane productivity (B6). In contrast to the old sugarcane farmers' Quadrant I, there are only five attributes that PTPN XI must evaluate: ease of getting input from sugar mills (A1), enough production units (A3), provision of inputs on time (A4), technical guidance material can be practised easily (B2), and application of technical guidance increases sugarcane productivity (B6).

The similarity attributes of Quadrant II are ease of communication with the extension agents (B4), sugar mills make beneficial activities for partner farmers (B7), monitors certainty of harvest schedule (C3), socialization of harvest schedule (C4), ease of cutting and transporting milled sugarcane facilities from partner farmers to sugar mills (D3), SPTA (Letter of Cutting and Transport Order) issued by sugar mills (D4), and fairness in the waiting time for the sugar cane to enter (D5). At these crucial points of Quadrant 1, continuous improvements can be made by PTPN XI to increase

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the satisfaction of the attributes in the quadrant. Meanwhile, the Quadrant 2 attributes must be maintained by PTPN XI because of the best services provided. All these attributes make the sugarcane farmers feel satisfied.

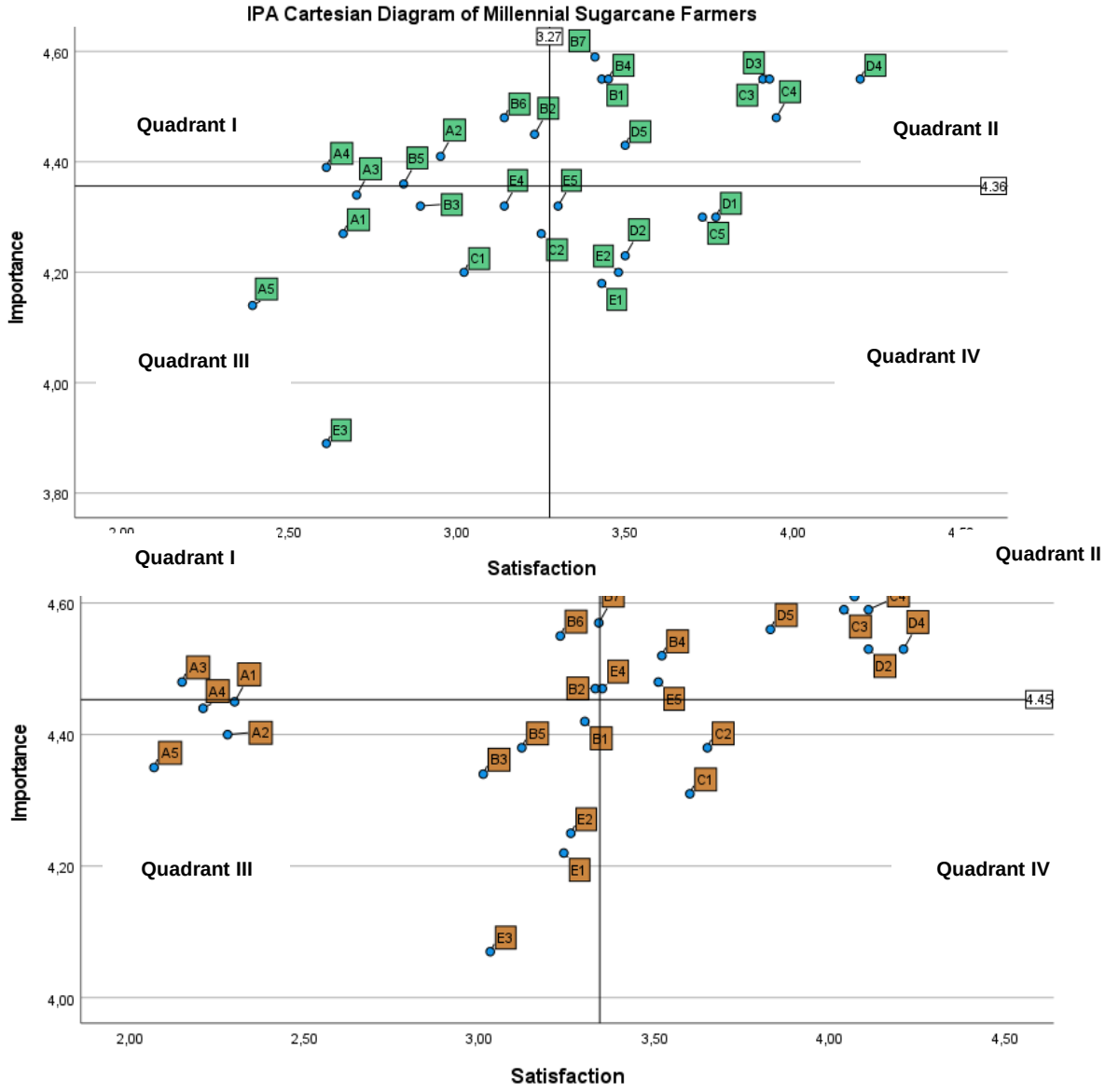

Figure 2. IPA Cartesian Diagram - Sugarcane Farmers Partner of PTPN XI
Source: Primary Data Analysis (2023)

However, based on the IPA assessment of millennial sugarcane farmers, seven attributes are considered low priority (Quadrant III). In comparison, the attributes are considered excessive (Quadrant IV) six attributes. Meanwhile, old sugarcane farmers assess as many as ten low-priority attributes; only two are considered excessive. Millennial and old sugarcane farmers consider that the attributes of ease of obtaining production inputs from PG (A1), cost-effective production inputs (A5), and yields calculated based on the core sampler method (E3) are considered to have low priority so that companies can reduce their focus on these so that they can save energy and costs. Studies by Ekawati (2013), Lukito (2017), and Alfasanah (2019) support that the satisfaction level of sugarcane

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farmers will contribute positively to the loyalty level. The stronger the satisfaction level of sugarcane farmers, the higher the loyalty level value of sugarcane farmers will be.

Loyalty Level of Sugarcane Farmers

The loyalty of partner farmers is a form of loyalty to do business with full awareness so that their business can be sustainable (Lukito, 2017). Partner sugarcane farmers, both millennial and old, will tend to cultivate sugarcane under favorable business conditions, with awareness, understanding, and other positive knowledge about the business. The loyalty level of millennial and old farmers in partnership is described in Table 4. All loyalty indicators shown by old partner sugarcane farmers have a high loyalty value, each with a compliance value of 4.07; responsibility of 3.76; dedication of 4.13; and integrity of 3.64. The millennial sugarcane farmers have moderate loyalty on the indicators of responsibility (3.42) and integrity (3.48), while the indicators of compliance and dedication have high loyalty of 3.70 and 3.89.

The loyalty of millennial sugarcane farmers is in the moderate category, while the old sugarcane farmers have a high level of loyalty. It can happen in the field because millennial farmers' expectations for sugarcane farming partnerships tend to be high, for example, the high quality of counseling and technical guidance services, clarity in providing input assistance, clear partnership rules and mutual understanding, and profitability for both parties, buying and selling sugarcane at high prices. Millennial sugarcane farmers tend to be rational in forming a partnership to sustain their farming business. Millennial sugarcane farmers are expected to tend to be loyal to PTPN XI if the agreements can be appropriately realized during the partnership contract. However, it differs from the old sugarcane farmers, who are relatively satisfied and loyal even though the partnership rules have changed because the old sugarcane farmers are already in their comfort zone.

Kotler et al. (2010) put forward the theory of consumer behavior regarding the factors that influence consumer or partner behavior, including personal factors such as age and life cycle stage. Partners with different age categories will form different levels of loyalty. Durianto (2001) explains the loyalty relation to a product or service. Young consumers or partners tend to be switchers because there is an assumption that products or services with any brand will be considered adequate and play a small role in partnership decisions. Meanwhile, old consumers or partners tend to be habitual buyers of products or services based on their habits and are already satisfied with the brands consumed so far. Kaloz et al. (2011) also confirmed that young consumers' loyalty desire is relatively low.

The similarities in the loyalty attributes of the millennial, old, and all sugarcane farmer respondents who still have a moderate loyalty value (average value below 3) include attributes of planting varieties determined, recording the use of production inputs from sugar mills, sales of sugar cane will be made to sugar mills even though other parties are willing to buy at a higher price, and farmers can show records of the use of inputs used. Moderate loyalty from these attributes can be used as evaluation material for future management of PTPN XI. Based on the attributes with low to moderate loyalty values, the sugarcane farmers in the field do not always plant various sugarcane varieties launched by the Ministry of Agriculture. These superior varieties have high productivity and yields.

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Table 4. The Loyalty Level Analysis of Millennial and Old Sugarcane Farmers

Indicators	Attributes	Average		Category	
		Millennial	Old	Millennial	Old
	Planting varieties that have been determined	3,27	3.64	Moderate	High
	Commitment to carrying out the contents of the partnership contract	3,75	4.14	High	High
Obedience	Comply with things that are not permitted in the contract	3,84	4.12	High	High
	The sale of all sugar cane is made to sugar mills under PTPN	4,00	4.29	High	High
	There are no other destination sugar mills	3,66	4.15	High	High
	Amount	3,70	4.07	High	High
	Planting sugar cane according to a predetermined schedule	2,89	3.91	Moderate	High
	Technical implementation of sugarcane cultivation by issued SOPs	3,30	3.79	Moderate	High
	Cane felling according to a predetermined schedule	3,95	4.38	High	High
Responsibility	Adhere to the contract procedure properly until the contract ends	3,98	4.35	High	High
	Follow directions from agricultural extension workers	3,23	3.91	Moderate	High
	Delighted to implement new technology	3,89	4.01	High	High
	Recording of farming activities	3,57	3.18	Moderate	Moderate
	Recording of the use of production inputs	2,57	2.53	Moderate	Moderate
	Amount	3,42	3.76	Moderate	High
	Sugar cane sales continue to sugar mill of PTPN XI even though other parties are willing to buy at a higher price	3,52	3.91	Moderate	High
	Providing input to PG for the common good	3,82	4.13	High	High
	Take the initiative to innovate to increase sugarcane productivity	3,84	3.96	High	High
Dedication	Attendance in guidance activities held by PG	3,82	4.16	High	High
	Attendance at activities held by sugar mills	4,00	4.16	High	High
	Communicating difficulties related to farming	3,82	3.99	High	High
	There is a desire to partner with sugar mills under PTPN in the following years	4,39	4.59	High	High
	Amount	3,89	4.13	High	High
	The use of production inputs is only from sugar mills for the benefit of farming	2,84	2.78	Moderate	Moderate
	Shows a record of the use of inputs used	2,70	2.34	Moderate	Moderate
	There is a report on the condition of farming by the reality on the ground	3,59	3.87	Moderate	High
Integrity	Submission of input on PG in a good way	3,61	4.09	High	High
	Provision of information according to existing facts about the form of partnership to third parties	3,73	4.07	High	High
	Committed to jointly maintaining the good name of PG and sugar cane farmers	4,41	4.72	High	High
	Amount	3,48	3.64	Moderate	High

Source: Primary Data Analysis (2023)

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However, the sugarcane farmers still choose to return to old varieties such as BL (Bululawang), Cenning, PS 862, and red HW because these varieties are easier to cultivate, resistant to pests and diseases, and quite resistant to various environmental conditions. Partner farmers do not want to cultivate sugarcane with complicated maintenance. The farmers prefer that BL and Cenning can still produce 70-80 tonnes/ha with traditional land and sugarcane maintenance. The conditions for planting unsuitable varieties must be addressed immediately. The government will arrange the early, middle, and late ripening varieties. The key to this success is that partner sugarcane farmers must be disciplined in implementing GAP (Good Agricultural Practices), in which sugarcane cultivation must be good, correct, environmentally friendly, and safe for consumption. The high-yielding sugarcane varieties recommended by the government tend to be very responsive to fertilizers, so they should not be lacking or delayed in treatment. However, in the field, many sugarcane farmers are not diligent in caring for their sugarcane. Various factors cause the decline in sugarcane production faced by partner farmers within the PTPN XI environment. Production decline in sugarcane creates a new problem of low sugar productivity milled by factories. In their research, Mazwan and Masyhuri (2019) state that the influencing factors include: maintenance of substandard farming, planting under optimal periods, majority of land Sugar cane is dry land which has lower productivity than land ricefield. In addition, the use of fertilizers and the quality of the varieties of sugarcane seeds used not optimal is also the cause of the low productivity of the resulting sugarcane by partner sugarcane farmers. The sugarcane varieties quality shows the composition of unbalanced cooking between early, middle, and late cooking, causing low sugarcane weight and yield.

Furthermore, related to the loyalty indicator, dedication to the attribute of sugarcane sales will be made to sugar mills, even though other parties are willing to buy at a higher price. It has to do with the constraints of the current buy-out system. The partnership between the sugar mills of PTPN XI and sugarcane farmers has become somewhat looser. Sugarcane farmers no longer sell sugarcane at PTPN XI as the partner but sell it to other private sugar mills that buy it at a higher price. Without a strong partnership, the management of varieties and a good sales and purchase system will not work. The partnership pattern implemented by PTPN with smallholder sugarcane farmers is the nucleus plasma partnership pattern (Dirjen Perkebunan, 2022). PTPN acts as the core party, and the sugarcane farmers act as plasma partners. Sugarcane farmers as partners provide obligations to the main party (PTPN) as providing the necessary capital for smallholder sugarcane farmers to run their farming business in return for the PTPN receiving the sugarcane harvest for production. Smallholder sugarcane farmers as plasma parties receive capital assistance from core parties and are obliged to comply with all the rules set by PTPN in implementing farming and producing sugarcane following PTPN requests. The partnership that PTPN has forged with sugarcane farmers should be treated with good management so that the partnership's implementation runs effectively and mutually benefits both parties (Hafsah, 2000).

Then the next challenge is the dedication indicator which shows moderate loyalty, namely the attribute related to partner farmers in the field who lack the initiative to innovate to increase sugarcane productivity. It can happen because the sugarcane farmers' capital is limited to meet the purchase prices of seeds, fertilizers, and production inputs, which are soaring, so the farmers' movement is limited in innovating further sugarcane cultivation. The millennial and old sugarcane farmers with limited capital who have just started their farming business cannot do this without capital support and assistance from PTPN XI and other private or government agencies. Fadilah (2010) states that five of the six aspects of partnership effectiveness are of high value: the accessibility of capital, the

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smoothness of marketing, the level of tool modernization, ability level, and profit level. Sugarcane farmers of Jatitujuh Sugar Mills, Majalengka-West Jawa, feel the positive impact of a partnership. Only one low-value variable is finance management. Most sugarcane farmers do not record sugarcane cultivation activities relating to funds. Then, research by Ekawati (2013) found that raw materials are a needs that determine the sustainability of the company Pakis Baru Sugar Mills. Farmers enter into partnerships to assist in capital farming, cultivation, and guarantee marketing of sugarcane it generates. The level of satisfaction of sugarcane farmers with their partnerships with CSI analysis shows a result of 94.5%. The calculations show that partner sugarcane farmers are delighted with the partnership that has been intertwined with PG Pakis Baru.

Loyalty has a low to moderate category in the use of production inputs (an indicator of responsibility), and partner farmers have not been able to show records of the use of production inputs (integrity indicator). These two attributes with low loyalty apply to the category of partner sugarcane farmers, both millennial and old. Partner sugarcane farmers still think that keeping records related to their farming business is complicated and troublesome, and there is an assumption for controlling tools of farming management policies. According to Yulius et al. (2016), the functions of recording/bookkeeping as business information for management planning, implementation, supervision, and decision-making.

Table 5. Loyalty Level of Millennial and Old Sugarcane Farmers based on Z-test

		Independent Samples Test					**Equal Variances Assumed**		
Sugarcane Farmers		**Mean**	**Std. Deviation**	**Std. Error Mean**	**t**	**df**	**Sig. (2-tailed)**	**Interval of the Lower**	**Interval of the Upper**
Loyalty level	Millennial	3.615	0.611	0.092	-2.578	158	0.011**	-0.487	-0.064
	Old	3.891	0.602	0.056					

Information : **α 5% = 0.05
Source: Primary Data Analysis (2023)

Differences in the level of loyalty of sugarcane farmers can be known by doing the Z test. The Z test is an independent or independent sample Z-test with several respondents n ≥ 30 (Ghozali, 2016). The Z-test determines whether there is a significant difference in loyalty between millennial and old partner sugarcane farmers. The Z test uses the average value of loyalty for each respondent, which is interval data, so the test is parametric. The test criterion is that if the sig (2-tailed) value is <0.05, then H_0 is rejected. The Z-test shows the sig 2-tailed results of the loyalty level of millennial and old partner sugarcane farmers of 0.011. It means that the sig 2-tailed value is less than the significance level of 0.05, so H_0 is rejected. Therefore, the results of this Z test can be concluded that there is a significant difference in the level of loyalty between millennials and old sugarcane farmers.

Durianto (2001), book author of Strategy to Conquer the Market through Research Brand Equity and Behavior, supports research findings on differences the level of loyalty of old and young sugarcane farmers, namely the loyalty of young consumers towards a product or service tends to be a switcher because young consumers state that products or services with any brand will be considered adequate and play very little role in the decision purchases, while older consumers tend to be habitual

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buyers (buyers of an ordinary nature) based on the purchase of a product or service out of habit so far. The old consumers are already satisfied with the brand of products or services they use has been consumed so far. Young consumers have loyalty to a product or service, but the desire to be loyal is relatively low (Kaulaz et al., 2011). Marconi (2002) mentioned other factors that can increase a sense of loyalty among consumers towards the company, such as satisfaction, emotional bond, trust, experience with the company, value (price and quality), image, convenience and facilities, services, and guarantees provided by the company.

CONCLUSION AND SUGGESTION

CSI for millennial sugarcane farmers has a value category that is quite satisfied, while the old partner sugar cane farmers have a satisfied CSI value category. There is a comparison of satisfaction levels between millennial and old partner sugarcane farmers with significant differences in the average value of sugarcane farmer satisfaction levels. Millennials are lower than the old partner sugar cane farmers. Based on IPA Diagrams Cartesian, attributes that are the main improvement according to partner farmers, millennial and old, including the quality of production inputs given to farmers, ease of obtaining inputs, timeliness and number of inputs adequate, ease of application of technical guidance material and discipline in dissemination of new technology to partner sugarcane farmers. Four loyalty indicators shown by old sugarcane farmers have high loyalty scores on compliance, responsibility, dedication, and integrity. In contrast, millennial partner sugarcane farmers have moderate loyalty to indicators of responsibility and integrity and high loyalty to the indicators of obedience and dedication. The loyalty level between millennial and old sugarcane farmers is different; millennial partner sugarcane farmers have a higher level of loyalty than the old partner sugarcane farmers.

Considering these results, PTPN XI, the leading partner of sugarcane farmers in East Java, can evaluate and create some strategies for increasing the CSI value of partnerships through the IPA Cartesian Diagram containing four quadrants. In addition, low to moderate attributes loyalty can be used as routine evaluation material for PTPN XI's management so that sugarcane farmer loyalty can increase occasionally. The loyalty of sugarcane farmers also needs to be maintained and increased with various programs through good cooperation with various stakeholders in Indonesia and internationally. It has a natural effect on increasing the loyalty of sugarcane farmers. The stronger the satisfaction level of sugarcane farmers, the higher the loyalty level of sugarcane farmers will be. Improvement and implementation of genuine partnership services must be provided to the people's sugar cane farmers who become partners, such as providing assistance inputs for tractors, irrigation pumps, fertilizers, and seeds for cultivating sugarcane; giving technical guidance and counseling on more modern sugarcane cultivation technology; And sugarcane purchasing system that benefits both parties. If loyalty to the partner sugar cane farmers is stable and even increases, the risk of supply shortages of sugarcane for raw material for PG-PG sugar at PTPN XI will be minimal. Farmer partner people who are disloyal to their partnership will prefer to sell sugarcane production results to other private PGs, which are considered more to provide profit in terms of income.

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