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**Contract farming: An opportunity for supermarkets in China**

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# Contract Farming: An Opportunity for Supermarkets in China

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**ABSTRACT** This study aims to investigate how large supermarkets in China can be benefited from directly contracting with small farmers and then maintain their competitiveness. Structural equation model is used to analyze results of online questionnaire involving 257 respondents. This paper finds that less risk perceived either in retailer reliability or in food safety can increase customers purchasing confidence. Consumption in supermarkets can be significantly facilitated by universalism impacts but less by selling regional produce. These results suggest large supermarkets in China to contract directly with small farmers to help in selling their produces and production inputs supports to achieve a win-win situation.

**Key words** --- Large supermarkets, China, contract farming, customers consumption

## I. INTRODUCTION

Supermarkets are playing a more important role in food retail, and the market portion taken by them are continuously increasing (Hernandez, Reardon, and Berdegue, 2006), which has brought revolutions in traditional agricultural production and distribution (Wang, et al., 2009). Under this situation, Contract farming is emerging as an effectively helpful solution to increase small and poor households' welfare, especially in developing countries (Roy, et al., 2019; Miyata, Minot, and Hu, 2009; Ton, et al., 2017).

Prior studies only focused on proving contract farming benefited farmers who were in remote areas and examining by how (Miyata, Minot, and Hu, 2009; Abebe, et al., 2013). There is no study focuses on its effects on supermarkets. In order to examine impacts of contract farming on small farmers, prior studies compared contract farming participants' per capita income with traditional farmers' **错误!未找到引用源。**

. And there is an evidence shows that those contract farming participants are taking benefits when they are involved in the supermarket chain **错误!未找到引用源。**

This study aims to show how large supermarkets in China can be benefited from contract farming scheme by examining factor that are influencing customer consumption.

Basing on the results, this study makes suggestions to help large supermarkets develop a new model that differs from their models in other countries, and it will be more suitable and attractive to Chinese customers. Because all prior studies on supermarkets or on contract farming lack taking in consideration of produces' regional identities, which makes the domestic market in China differ from overseas market. Supermarkets rose and spread quickly in the earlier 2000s, but those large and global-wide supermarkets such as Wal-Mart are struggling with the decreasing sales in China (Burkitt, 2014; Jourdan, 2015). One pressure is from convenience stores whose operation model emphasizes high replacement of products and freshness **错误!**

**未找到引用源。** . Another factor is online food sales that are now involving farmers (Li, 2017), especially after Pinduoduo in China implements one project to link consumers and remote-district farmers **错误!未找到引用源。** . Those changes reflect

that Chinese customers now are more considering food safety and quality than convenience (Miyata, Minot, and Hu, 2009; Zhao and Zhou, 2014). Especially in China, most supermarkets are now developing their own online platforms and operate in an online-to-offline model (Zhang, et al., 2019), which further decreases the significance of convenience. Purchasing in supermarkets is considered as a mean to avoid risks in food safety **错误!未找到引用源。** . On the other hand, selling regional

Chinese agricultural products is helpful in rising customer loyalty **错误!未找到引用**

源。 . Therefore, by contracting to sell those special produces, supermarkets can maintain a more stable customer base in China.

Data are primarily collected through online questionnaire, which ensures the high diversity in respondents. This study used structural equation model (SEM) to perform survey data analysis. The results showed that directly contracting with farmers has positive impacts on customers' willingness to place orders in their local large supermarkets, as customers feel more contributions to human welfare in consumption and they will trust supermarkets more after tracing more information of produce growth and delivery. However, consumption in supermarkets is less influenced by regional produces on sale.

This study will contribute to the gap in prior studies of contract farming by focusing on supermarkets' benefits after they directly contract with remote-district farmers. This study shows that contracting with small farmers have positive effects on food safety control and allow supermarkets to provide more information to consumers to increase their confidence to purchase. As helping farmers in rural area sell produces is a significant portion of contract farming scheme and supermarkets are expected to provide production supports to those farmers, universalism impacts on customers will be strengthened. This would achieve a virtuous cycle and then provide continuous help to small farmers in China.

In the Section 2, this study reviews prior researches that test how the contract farming increases small farmers' welfare, show recent supermarkets' pressures from convenience stores, and analyze e-commerce' s influences on supermarkets. The Section 3 describes data sources and methodology applied. The Section 4 presents findings and explanations of them are in the Section 5. Finally, the conclusions and suggested strategies are shown in the Section 6.

## II. BACKGROUND

### Contract Farming

Contract farming always involves small and poor farmers, and the buyers who consistently purchase large amounts of agricultural products and then sell to final consumers 错误!未找到引用源。 . It is defined as a pre-determined plan of agricultural production between farmers and buyers so that farmers will produce and deliver as exactly as the buyers required. It runs through the whole process from growing to selling 错误!未找到引用源。 . It is now claimed as one of effective solutions to increase small farmers' welfare, especially in developing countries. Those small farmers are benefited from different aspects. As the nature of contract farming is an agreement, the two parties involved are able to evaluate and select each other. Farmers select the buyers by evaluating prices offered, flexibility, and their credit

degree 错误!未找到引用源。 , while the buyers choose farmers mostly based on the location and labor capability 错误!未找到引用源。 . This process reduces uncertainty in prices. The reduced uncertainty primarily ensures farmers' considerable income.

Another more important way to benefit small farmers is that contract farming brings more coordination and allows farmers to share risks with those contractors. Uncertainty is a common and important aspect in agriculture, which also includes natural factor such as season and weather, failure in marketing, and heavy losses during transportation. Uncertainty is also from the input market, and this type of uncertainty even has more influences on cereal growers than the uncertainty in the output markets 错误!未找到引用源。 . By participating in the contract, farmers can receive technology supports and necessary agricultural inputs such as seeds from the buyers. Hence, contract farming is commonly claimed as a practice of collaborative arrangement 错误!未找到引用源。 .

The study done by Abebe et al. (2013) claims that partial reason of small farmers can be benefited from the rising contract framing is the booming of supermarkets and their relative supply chains. Refer to Hernandez, Reardon and Berdegue (2006), supermarkets in Guatemala are taking up more portion in food retail, which almost reached 36% market share by 2002. This trend has forced the traditional supply chain to move towards a more centralized pattern. As the supermarkets have higher food quality requirement and more strict safety measurement, they are supplied by specialized wholesalers who directly purchase from wide-range farmers, or the by supermarkets' own agencies who were the buyers in contract farming scheme 错误!未找到引用源。 . This modern supermarket channel allows poor and small farmers participate in a larger and higher value market. Those small farmers are benefited from the decreasing uncertainty from larger demand and insured price, as well as technological advantages brought by supermarkets' development 错误!未找到引用源。 . However, as those specified wholesalers may purchase products from different farmers, the food safety control is still a problem. One method to have better control of food quality is to shorter supermarket supply chain (Wang, et al., 2009). Therefore, contracting directly with those small farmers to get supplies from original grower seems to be a practical solution.

### **Supermarkets' Pressures from Convenience Stores and E-commerce Platform**

Large supermarkets are facing problem in operation such as Wal-Mart that closed 25 stores in China 错误!未找到引用源。 . One pressure is from those rapidly expanded

convenience stores such as Seven-Eleven that has established its retail chain across the world. Its sales revenue in America and Canada was \$10.9 billion in 2003 错误!未找到引用源。 . Refer to world-wide supermarkets' failure in Japan, those prosperous convenience stores such as Seven-Eleven can more accurately reflect what are the new factors influence consumer purchasing behaviors. First, convenience stores have more flexible distribution channels so that they can satisfy consumers as soon as possible 错误!未找到引用源。 . This also ensures food freshness that is one important concept in their operation strategy 错误!未找到引用源。 . The second factor brings pressure is online-retail business that had achieved RMB 4.7 trillion gross sales in 2016 (Li, 2017) and it is taking up more than 20% in Chinese retail market 错误!未找到引用源。 . Recording to Jourdan (2015), Wal-Mart's average-annual sales decreased 6% because of online purchases and local competitors.

### **Supermarkets and Online Platforms**

A new trend in most large supermarkets in China is that they are participating in e-commerce platforms such as Wal-Mart that has already engaged in developing the online store on JD.com 错误!未找到引用源。 . During recent years, the new selling model called online-to-offline (O2O) supermarket model has achieved huge success in China market 错误!未找到引用源。 . This model allows consumers to make orders online, then those offline supermarkets will pack products for them. Consumers can choose to take packages by themselves or by assigned pickers. Under this model, supermarkets seem to be more competitive than online-retails because the delivery time is shorter so that consumers' orders can be satisfied in the same day as they make the order with better quality of produces that will be received. This advantage also allows large supermarkets to compete with convenience stores.

### **Hypotheses Development**

#### **Regional Produce Consumption**

Agricultural products in China are always named by their growth places to differ from others. They have high regional identities and characteristics reflecting in appearances and tastes, and seasonal effect is significant 错误!未找到引用源。 . Researchers point out that those especially regional produces are attractive and have high customer loyalty. Participating in online retail to directly sell produces to online purchasers makes impressive increases in volume sold 错误!未找到引用源。 . This

was hypothesized as:

H1: Regional produces on sale has significantly influence on stimulating consumption in large supermarkets.

### **Universalism Impact**

Universalism is defined as consideration of contributions to human welfare in decision making, which is proved having the most significant influence on organic produce consumption **错误!未找到引用源。** Universalism can be used to explain the success of Pinduoduo, a Chinese online sales platform, that carried out one project to help remote-area farmers sell online and then to increase their welfare. Its total sales of agricultural products increased 233% and generated 653-billion-yuan gross revenue since 2018 (**错误!未找到引用源。** Pinduoduo has its cooperated carriers who develop exclusive transport routes to minimize delivery time. Pinduoduo also provides cheaper packages to reduce transaction costs (**错误!未找到引用源。** Implementing this project reflects Pinduoduo is taking its social responsibility and customers felt that their purchases could help poor farmers. This was hypothesized as:

H2: Universalism impact from helping poor farmers has significantly positive influence on facilitating regional produces consumption.

H3: Universalism impact from helping small farmers has significant influence on stimulating consumption in large supermarkets.

### **Perceived Food Safety**

Food safety, especially of vegetables and fruits, are taking up more weights in affecting consumers' decision making **错误!未找到引用源。** This item has been emphasized most frequently in online purchasing **错误!未找到引用源。** Consumers are worrying about freshness of food and differences between actual delivered produces and the figures exhibiting in webs. Lack of traceable information about how agricultural products grown and how they are delivered has significantly negative influences on consumers' confidence of purchasing **错误!未找到引用源。** This could be hypothesized as:

H4: Perceived high food safety level has a significantly positive influence on regional produces consumption.

H5: Perceived high food safety level has significantly positive influence on stimulating consumption in large supermarkets.

### **Perceived Retailer Reliability**

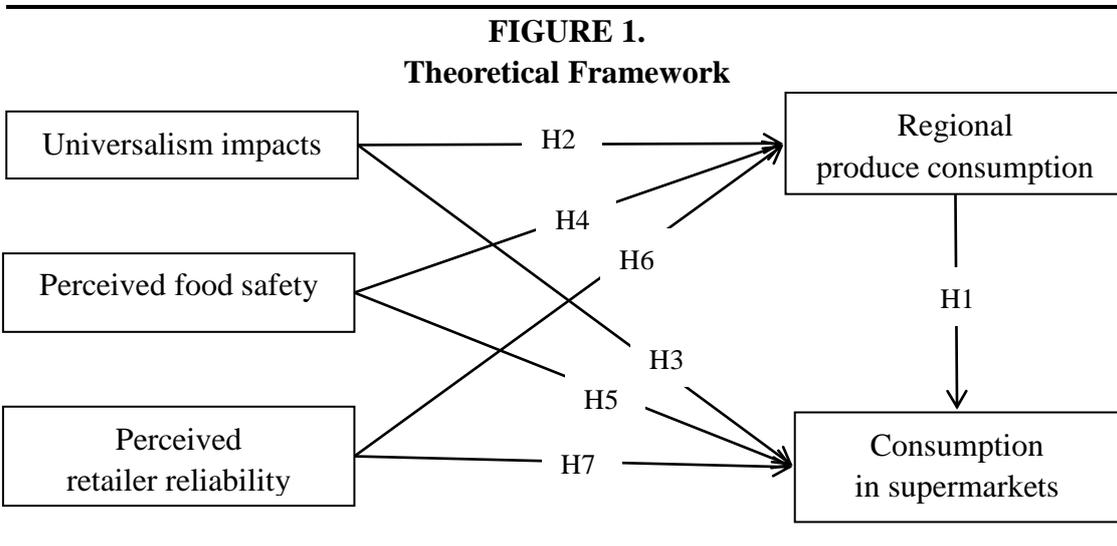
This relates to retailer choices made by customers basing on the their trustness and confidence. Purchasing in supermarkets is considered as a mean to avoid risks in food

safety 错误!未找到引用源。 because large supermarkets have stricter food quality requirements, which represents better guaranteed food safety and freshness 错误!未找到引用源。 . Then this was hypothesized as:

H6: Perceived high retailer reliability has significant positive influence on facilitating regional-produce consumption.

H7: Perceived high retailer reliability has significantly positive influence on stimulating consumption in large supermarkets.

Basing on prior studies, hypotheses in this paper were used and summarized in the theoretical model showing in Figure 1.



### III. METHODOLOGY

This study uses primary data that are collected through online questionnaire. As this study was done in China, questions were originally written in both English and Chinese. Questionnaire were available online and shared through different social medias, which ensures those participants are randomly selected and belong to different customer segments across various areas in China. There are 257 valid and completed questionnaires used in the following analysis. The respondents are from 16 provinces in China, Hebei Province (44%), Zhejiang Province (18%), and Chongqing Province (6%) are the top three areas. There are 12 questions involved in questionnaire (Appendix) to measure aspects such as Chinese customers means to buy fresh food and their willingness to know information of produces growth. Variables

and relative questions used to measure them are listed in Table 1.

Structural equation model (SEM) was used to analyze data collected through the questionnaire. This model is widely used in human behavior studies and contributes to customer consumption analysis. Those paths were developed basing on previous study of customer luxury consumption (Soh, Rezaei, and Gu, 2017).

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**TABLE 1.**

**Variables and Relative Questionnaire Items for the Theoretical Model.**

<u>Variable</u>	<u>Questionnaire Items</u>
Perceived food safety	Q6 If one supermarket is providing information system that allows customers to trace how and where their produces were produced, will you think their produces are safer?
Universalism impact	Q7 When you heard that one supermarket is helping poor farmers who are in remote areas to sell produces, will you prefer to buy those produces?
	Q8 Will the action described in the question (7) changes your impression of this supermarket?
Consumption in supermarkets	Q3 You prefer to purchase fresh foods in supermarkets.
	Q10 If you heard that a special produce is available in local supermarket, you would like to buy
Perceived retailer reliability	Q11 If that supermarket also claims that the persimmons are originally grown in Lintong and transported from there, you would think the information is reliable.
Regional produce consumption	Q12 You want to try those regional produces

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#### IV. RESULTS

This section starts with a statistical description of questionnaire results. Because of the lack of existing supermarket participating in contract farming scheme, the measuring of acceptable prices is not involved. Following, results of structural equation model are presented, which contribute to figuring out what factors are influencing customers' inclination to buy regional produces and provide mathematical supports to establish strategies for supermarket operations.

##### Descriptive statistics

This sample includes 144 female and 113 male respondents. Though online shopping has developed quickly and is popular among Chinese customers, purchasing fresh food online is less accepted by customers based on the results of purchasing method question. There are only 29 respondents prefer to purchase fresh produces online, and 102 respondents have not purchased produces online. 60% respondents show the highly negative attitude towards purchasing fresh food online. However, when customers were asked to order produces basing on their preference to purchase online, fresh fruit earns the highest grade and following the vegetables. Table 2 shows the characteristics of respondents. 62% of respondents show high willingness to know how fresh produces are grew, including their growth environment and pesticide usage. After the food information provided, 72% respondents' perceived food safety has increased. More than half of respondents has high inclination to buy from small farmers.

**TABLE 2.**  
**Characteristics of Respondents**

<u>Measurement</u>	<u>Characteristics</u>	<u>Frequency</u>	<u>%</u>
Consumption in supermarkets	Prefer to buy fresh foods in supermarkets	228	88.72
	Prefer to buy regional produce in supermarkets	136	52.92
Regional produce consumption	High willingness to buy regional produces	188	73.15
Perceived food safety	High willingness to trace information	160	62.26
	Higher confidence with information available	186	72.37
Universalism impact	High willingness to buy from small farmers	155	60.31
Perceived retailer reliability	Supermarkets are reliable	162	63.04
	Online sellers are reliable	81	31.52
	Neither	62	24.12

### **Factors influencing Customer Consumption**

The structural equation model helps to show each observed variables' impacts on customers consumption willingness in a visual way and their impact degrees. Results for regional produces consumption in Table 3 show that only the universalism impact ( $p=0.648$ ) does not have significant influence on facilitating customers to buy regional produces. However, each variable has positive impact on consumption of regional produces, as they have positive coefficient values.

For the variables listed under consumption in supermarkets in Table 3, their coefficient values are all positive, which means universalism impact, perceived retailer reliability and food safety can facilitate customers to buy regional produces and consume in large supermarkets. Simultaneously, universalism impact ( $p=0.000$ ) and perceived retailer reliability ( $p=0.005$ ) have significant influence on facilitating customers to purchase in supermarkets when confidence level is 99%. However, regional produces on sale ( $p=0.914$ ) and perceived food safety level ( $p=0.103$ ) do not have significant influence on attracting customers to go to supermarkets..

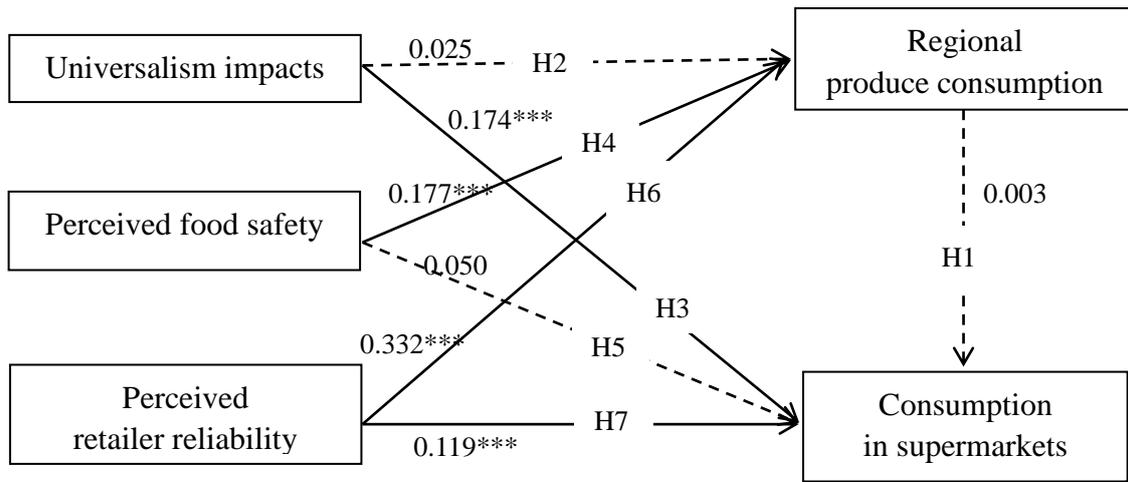
**TABLE 3.**  
**SEM Results for Customer Consumption in Supermarkets Survey**

	<u>Coef.</u>	<u>Std. Err.</u>	<u>z</u>	<u>P&gt;z</u>
<b>Structural</b>				
<b>Regional produce consumption</b>				
Universalism impact	0.025713	0.056325	0.46	0.648
Perceived retailer reliability	0.332376	0.062131	5.53	0.000***
Perceived food safety	0.176575	0.055432	3.19	0.001***
_cons	0.353887	0.064403	5.49	0.000***
<b>Consumption in supermarkets</b>				
Regional produce consumption	0.003533	0.032569	0.11	0.914
Universalism impact	0.173635	0.039002	4.45	0.000***
Perceived retailer reliability	0.118975	0.041884	2.84	0.005***
Perceived food safety	0.050371	0.030914	1.63	0.103

Note: \*\*\* Significant at 1% level.

Table 4 and 5 show results for hypothesis test of each path significance. The path from perceived food safety towards regional produce consumption ( $p=0.648$ ), and paths from regional produces (0.914) and from perceived food safety level ( $p=0.103$ ) towards customer consumption in supermarkets are not significant. The path analysis is presented in Figure 2 in which the dotted line represents unsupported path. Solid lines represent the remaining supported hypotheses.

**FIGURE 2.**  
**Results of Structural Equation Model**



**TABLE 4.**  
**Hypothesis Test: Significance of Paths towards Regional Produces Consumption**

<u>Hypotheses</u>	<u>Path</u>	<u>Path coefficient</u>	<u>SE</u>	<u>Z</u>	<u>P value</u>	<u>Conclusion</u>
H2	Universalism impact → Regional produce consumption	0.025	0.056	0.457	0.648	False
H4	Perceived food safety → Regional produce consumption	0.177	0.055	3.185	0.001***	Valid
H6	Perceived retailer reliability → Regional produce consumption	0.332	0.062	5.350	0.000***	Valid

Note: \*\*\* Significant at 1% level.

**TABLE 5.**  
**Hypothesis Test: Significance of Paths towards Consumption in Supermarkets**

<u>Hypotheses</u>	<u>Path</u>	<u>Path coefficient</u>	<u>SE</u>	<u>Z</u>	<u>P value</u>	<u>Conclusion</u>
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H1	Regional produce consumption → Consumption in supermarkets	0.003	0.033	1.108	0.914	False
H3	Universalism impact → Consumption in supermarkets	0.174	0.039	4.452	0.000***	Valid
H5	Perceived food safety → Consumption in supermarkets	0.050	0.031	1.629	0.103	False
H7	Perceived retailer reliability → Consumption in supermarkets	0.119	0.042	2.841	0.005***	Valid

Note: \*\*\* Significant at 1% level.

## V. DISCUSSION

### Regional Produce Consumption

Table 4 shows that perceived food safety level ( $p=0.001$ ) and perceived retailer reliability ( $p=0.000$ ) have significant influence on customers decisions of purchasing regional produces with 99% confidence. H4 and H6 are supported. However, as the universalism ( $p=0.648$ ) does not have significant influence on attracting customers to buy regional produces, H2 is not supported, which is opposite with previous study that claims customers consider their contributions to human welfare in each purchasing and they tend to buy goods with high contributions [错误!未找到引用源。](#)

The possible reason is that customers have already known those regional produces are grown by small farmers and customers clearly know their consumption will contribute to those small farmers' welfare. Therefore, customers mainly focus on finding a reliable retailer and their regional produces on sale are safe.

### Consumption in Supermarkets

As results showing in Table 5, p values of the path starting with universalism and the path starting with perceived retailer reliability are below 0.01, which means those variables are significant indicators of customers consumption in supermarkets at 99% confidence level. And any improvement in those variables can increase customers willingness to purchase in supermarkets. Therefore, H3 and H7 are supported. Those results are identical with previous studies reviewed.

However, the path from regional produce consumption ( $p=0.914$ ) is not

significant, which does not support H1. This result is opposite with the study done by 错误!未找到引用源。 . They claim that Chinese customers are attracted by produces with high regional identities. The possible reason is that customers decide to purchase in supermarkets are to avoid high risks in fresh food consumption (Huang, Feng, and Yan, 2014). Therefore, supermarket selection is mainly based on customers' trustness, which is also identical with the supported H7 in this study.

The path from perceived food safety ( $p=0.103$ ) is not significant. Perceived food safety is not a indicator of customer consumption in supermarkets. H5 is not supported, which is opposite with prior studies that claim food safety is being taken more in customers' consideration when they choose fresh food (Haddock-Fraser, Poole, and Doishita, 2009). Refer to studies done by Lassoued, et al. (2015) and Lam, et al. (2016), customers have more confidence to purchase from food retailers that they have already trusted, and customers assess safety level of those reliable retailers' foods are higher than trustless sellers' foods .

### **Interpretation of SEM Results**

SEM results emphasize a significantly positive universalism impact on customer purchase decision making. This suggests supermarkets in China to contract directly with small farmers and provide them with some necessary supports such as technology teaching, production equipment, and seeds (Roy, et al., 2019). This practice will help farmers produce more effectively and well organized, which will further strengthen the degree of contributions to human welfare in each consumption felt by customers. This would be a useful practice of achieving a win-win situation in the long run, which can ensure a continuous contract farming scheme. Besides, as regional produces do no significantly influence consumption in supermarkets. Supermarkets are not suggested high rely on selling regional produces in each contract. They can sell certain type of original produces basing on their existing customer preferences, which can be helpful to increase customer loyalty (Zhang and Lu, 2014) and then to obtain benefit in the long run. On the other hand, those supermarkets are highly suggested to increase their reliability. This can be achieved by shortening their supply chain and provide more reliable information of how produces in sales are grown and delivered to rise customers' confidence to buy foods from supermarkets (Zhao and Zhou, 2014). Higher trustworthiness is a competitive advantage for supermarkets to compete with online sellers who are not well trusted and their produces on sale are questioned by customers (Huang, Feng, and Yan, 2014).

### **Limitations**

Because of the lack of existing case that a large supermarket in China has already directly contracted with poor farmers and the lack of objective costs records such as delivery costs, there is no estimation of price settings. Also, every customer has different acceptable or estimated prices for different produces, which makes it impossible to measure price effects on their purchase decisions when the selling produce is not clearly determined or given.

Another limitation is due to the lack of designing delivery channels. Referring to Pinduoduo example, it has designed specific delivery channel for each region basing on the types of produces selling and distance. As the supermarkets and their contracting farmers and what will be delivered are not determined, it is impossible to select transportation methods this time.

The further research should find a large supermarket in China to directly contract with rural-area small farmers and try to sell their regional produces. Then basing on the operation results to analyze any problems involved so that to make further improvements to help supermarkets achieve long-turn profitability.

### **Validation and Reliability**

This study collected data by using online questionnaire to collect data to ensure all respondents were randomly selected and they participated in this research voluntarily, so that this research was free from selection bias. Using online questionnaire allowed respondents in this sample were from different areas of China and belong to different customer segments, which ensured this sample was representative for Chinese customers and reflect their current preferences complete and accurate. This also ensured generalizable results of this study.

This study used Cronbach alpha to test reliability of the consistence and reliability of the SEM results. The average interitem covariance should be greater than 0.6 to prove the reliability of this model. As the results represented in Table 6, the reliability of the regression model used is 0.6493 ( $> 0.6$ ), which proves the reliability of this study can be accepted.

Goodness of fit test was employed to exam whether SEM established in this paper can predict future well, which also determines the results reliability. As its result presented in Table 7, chi-square is 34.451 with p (0.002) is less than 0.05. RMSEA (0.075) is less than 0.08 and indicates good fitness of this structural equation model. Also, as CFI and TLI equal to 1.00, the good fitness is proved.

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**TABLE 6.**  
**Cronbach Alpha Test Results for SEM**

Average interitem covariance	0.068
Number of items in the scale	5
Scale reliability coefficient	0.649

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Note: Variables and models are as described in the methodology of this paper.

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**TABLE 7.**  
**Summarized Validity and Reliability Tests Results for SEM**

<u>Fit statistic</u>	<u>Value</u>	<u>Description</u>
<b>Likelihood</b>		
chi2_ms (14)	34.451	model vs. saturated
p>chi2	0.002	
chi2_bs (25)	167.299	Baseline vs. saturated
p>chi2	0.000	
<b>Population error</b>		
RMSEA	0.075	Root mean squared error of approximation
<b>Baseline comparison</b>		
CFI	0.856	Comparative fit index
TLI	0.743	Tucker-Lewis index

### **Theoretical Contribution**

This study contributes to prior literature gap by showing that contract farming does not only benefit both small farmers but also large supermarkets, especially under the O2O supermarket model in China. This new model allows customers to make online orders in supermarkets and reduces impacts of convenience on customers purchase decision making. Hence, large supermarkets now should focus on how to take other strengths attract more customers. This study suggests supermarkets to make contract with remote-area farmers to sell their produces, which will change the existing supermarket supply chain in which large supermarkets are supplied by their agencies or certain wholesalers.

Contracting with those poor farmers to help them sell produces and provide production supports is viewed as supermarkets are taking their social responsibilities. Hence, when customers are informed their purchasing will contribute to others' welfare, they will have higher willingness to buy because of the universalism effects. On the other hand, being supplied by farmers without third party allows supermarkets to have better control of their supply chain and food quality. This will also allow customers to trace more information about how those produces grew, which is useful to reduce their perceived risk of purchasing fresh food and then facilitate their purchasing.

This study is developing strategy for large supermarkets because the flourishing convenience stores and e-commerce have brought heavy pressures to them and they are suffering losses. Supermarkets should utilize the advantage created by the blooming contract farming scheme and integrate with the new O2O model to compete with convenience stores and online food retail.

Prior researches highly focused on how contract farming develops with the supermarkets expanding and how contract farming is benefiting small and poor farmers who are in remote areas. Those studies payed less attention on how it can change the existing supermarket supply chain to benefit them at the same time. Continuously considerable development of large supermarkets is the factor to ensure that contract farming will continuously benefit farmers.

## VI. CONCLUSION

This study develops suggestions to supermarkets in China to help them maintain competitiveness over convenience stores and online produce retailers by showing how those large supermarkets can be benefited from directly contracting with small farmers. Basing on the 257 respondents' answers of online questionnaire, a SEM model was established to investigate how customers' inclination to purchase in supermarkets is influenced. The results showed that less perceived risk in either retailer reliability or food quality, and more contributions to those small farmers in each consumption felt by customers can significantly increase customers confidence and willingness to buy fresh produces. Though selling regional produces does not significantly attract new customers, it can be useful to obtain high existing customers' loyalty (Zhang and Lu, 2014).

Hence, this study suggests large supermarkets in China to contract directly with small farmers to obtain long term profits by strengthening universalism impact on customers, if supermarkets can provide necessary production supports to farmers in return. Large supermarkets also will be benefited from increased food safety level because the supply chain is shortened, which will allow more information through produce growth to selling will be available for tracing. Food safety is a significant weakness in the online fresh food sales. If those supermarkets take advantage of online-to-offline delivery model simultaneously, they can compete with online retailers more effectively and efficiently. Moreover, supermarkets should not only sell regional produces in those contracts. Types of regional produces to sell should be based on supermarkets own customers researches.

Limitations of this study in price effect measurement and delivery channel design are due to the lack of existing sample large supermarkets that have already participated in contract farming scheme with small farmers to sell regional produces. The further study will need supermarkets to participate in and assess their operations to make improvements and develop better operation strategies.

## REFERENCES

错误!未指定书签。

## APPENDIX

1. Gender
2. Order the type of produces that you prefer to purchase online.
3. You prefer to purchase fresh foods in supermarkets.
4. Were you satisfied with the fresh food bought online?
5. Have you want to know about how and where the produce such as cabbages are grown?
6. If one supermarket is providing information system that allows customers to trace how and where their produces were produced, will you think their produces are safer?
7. When you heard that one supermarket is helping poor farmers who are in remote areas to sell produces, will you prefer to buy those produces?
8. Will the action described in the question (7) changes your impression of this supermarket?
9. Which process that you prefer to purchase fresh food from supermarkets?

The special produces in this questionnaire are defined as the fresh produces with high regional identities in test, appearance, maturation seasons, and so on. Those produces may be shown in popular film and television works, which suddenly and significantly increases online searching times and discussion frequencies of them. A common example is the persimmons growing in Lintong. Basing on this information, please answer the following questions.

10. If you heard that a special produce is available in local supermarket, you would like to buy from
11. If that supermarket also claims that the persimmons are originally grown in Lintong and transported from there, you would think the information is reliable?
12. You want to try those regional produces