

# **Influential Article Review - Coffee Supply Chain Management: A Case of Sustainability**

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*This paper examines sustainability. We present insights from a highly influential paper. Here are the highlights from this paper: This paper aims to analyze and discuss the evolution towards sustainable coffee supply chain and its management in Vietnam. Coffee is a major agricultural export commodity of Vietnam with the export value accounts for 3% of national GDP in 2014 and provides a livelihood for approximately 2.6 million people. However, the sector is facing enormous challenges as the current farming methods and processing infrastructure have been unsustainable resulting in many catastrophic impacts on the environment such as deforestation and soil degradation that have the potential to lead to a decrease in the quality of coffee beans. Using a case study in Buon Me Thuot City, Daklak, Vietnam, the paper analyses the key factors influencing the sustainable coffee supply chain management in Vietnam. Our analysis confirms that although productivity is high, and farmers have positive experiences in this sector, sustainability issues are emerging. For instance, the farmers have experienced soil erosion and a lack of water and as such are now more willing to incorporate sustainability initiatives in their production and processing. For our overseas readers, we then present the insights from this paper in Spanish, French, Portuguese, and German.*

*Keywords: Coffee supply chain, Sustainability, Case study, Vietnam*

## **SUMMARY**

- However, just 43.1% of surveyed farmers stated that they were currently planting shade trees to protect their farms against soil degradation. Furthermore, 57.7% of samples said they were using both organic and chemical fertilisers, with only 38.7% stating that they only use organic fertilisers.
- Turning to concerns about environmental management, as mentioned earlier, coffee growers still mainly use traditional farming practice to cultivate their farms, which can only reach higher yields but cannot achieve sustainability status. On the other hand, local collectors and supervisors from the coffee processing companies agreed that they did not pay enough attention to the management of waste disposal.
- The information in this section is based on qualitative interviews with local collectors and staff of a well-known coffee processing company. When asked, senior purchasing executives and the production supervisors of the coffee processing factory in Buon Ma Thuot City said that all the

factory's products were sourced only from reliable local collectors, who had a very good relationship with the company.

- Finally, the representative of a coffee bean-collecting company commented that the logistics costs in her company were due mainly to transportation and storage.
- For the reverse logistic issues, data were analysed based on the opinions in the interviews about the current situation. Local collectors said they just improved their work by experience; there was no training to assist them with the most effective recycling strategies.
- From the statistical numbers in the survey, it is worth noting that only 66 out of 137 farmers had joined a sustainable certified coffee program, which accounted for 48.2% of those surveyed.
- More importantly, 88.3% of farmers said coffee farming was their main source of income and 82.5% said their family had suffered poverty as a result of fluctuating coffee prices in the past.
- Most farmers support one to three dependant family members, including one or two children of school age.
- Moreover, 132 out of 137 interviewees agreed that they were willing to invest over 10 million Vietnamese dong to improve farming methods and certify their coffee. A total of 73 of 137 interviewees said knowledge was the biggest challenge when it came to developing sustainable coffee. The role of women in society was also emphasised, as 62% of farmers said women were fairly important in their family and 34.3% said women were very important.
- The local collectors said they were trying to support local farmers. The certified coffee can be sold at 15–20% higher price than normal coffee. And certification programs request rigorous certification criteria and monitor the conditions strictly annually.
- The research used the surveyed data to run logistic regression to explain the relationship between the dependent variable 'Certificate ownership' and independent variables 'Productivity', 'Local support' and 'Experience'.

## HIGHLY INFLUENTIAL ARTICLE

We used the following article as a basis of our evaluation:

Nguyen, G. N. T., & Sarker, T. (2018). Sustainable coffee supply chain management: a case study in Buon Me Thuot City, Daklak, Vietnam. *International Journal of Corporate Social Responsibility*, 3(1), 1–17.

This is the link to the publisher's website:

<https://jcsr.springeropen.com/articles/10.1186/s40991-017-0024-x>

## INTRODUCTION

Coffee is a major agricultural export commodity of Vietnam with the export value accounts for 3% of national GDP in 2014 and provides a livelihood for approximately 2.6 million people (Vietnam Customs 2015). Following Brazil, since 2000 Vietnam has continuously been the world's second-largest exporter of coffee, typically to EU and US markets, which shows a positive outlook for the future of this sector (Marsh 2007). However, numerous challenges need to be overcome in order to make it happen. Currently, less than 10% of Vietnamese coffee is grown sustainably, compared with 75% in Latin America (Mistiaen 2012). With the increase in global market requirements, the competitiveness of Vietnamese coffee is being threatened. For example, people still use many unsustainable farming methods such as monocultures, burning of crop residue, poor fertility management, tillage, etc. which results in many catastrophic impacts on the environment – such as deforestation and soil degradation – have the potential to lead to a decrease in yields, increase in insect pests and diseases on crops (Schmitter et al. 2010). Many researches confirm that the rural poor dwellers are one of the most vulnerable residential groups to environmental deterioration as their livelihoods mainly depend on natural resources (Dasgupta et al. 2003). A meta-analysis of (Rahmann 2011; Bennett and Franzel 2013) states that the level of biodiversity in sustainable farms (such

as organic farms, fair-trade farms) is higher than conventional farms. Sustainable farming is a cost-effective system that has significant impacts on poverty alleviation, sustainable development in under-developed nations around the world (Kilcher 2007). According to (Crowdera and Reganold 2015; Nemes 2009; Ramesh et al. 2010), sustainable farms provide farmers with higher economic profitability by 22 to 35% compared to others thanks to higher yields and price premiums of sustainable products. Therefore, sustainability will need to be comprehensively addressed in coffee production to improve the uses of natural resources for human needs without damaging the environment (Nguyen and Yapwattanaphuna 2015). Also, a sustainable approach enables farmers to use their knowledge and skills more effectively. However, the factors impact on farmers' adoption to a new sustainable agricultural practice vary widely from farmers' perception, the characteristics of the new practice to resource endowments, socio-economic status, demographic characteristics, and access to institutional services (Negatu and Parikh 1999). The government is aiming to reach 65% of sustainable coffee production by 2018, which will help to preserve the environment, improve the living standards of the farmers and ensure a steady coffee supply for food processors (Mistiaen 2012).

Hence, the purpose of this paper is to study the current situation of the supply chain of Vietnamese coffee in Buon Ma Thuot City, Dak Lak Province, Vietnam, to examine the issues related to the development of sustainable coffee and to build up a logistic model that will explain the correlation between those factors and the decision to join the sustainable coffee program. This study also proposes some suggestions to increase the competitive advantages of the commodity, as well as to help coffee farmers to be more flexible in a constantly changing market.

This research investigates the opinions of local farmers through quantitative surveys. Qualitative interviews are also used to interview 23 local collectors and the staff of five famous large coffee manufacturing companies to provide an overview of the situation. SPSS was used to analyse the data and run the logistic regression model. The data were complemented by documentary analysis, including internal data and interview documents.

The paper provides empirical research about the sustainable supply chain in coffee farming methods in Buon Me Thuot City. The study found that although productivity is high, and farmers have positive experiences in this sector, sustainability issues are emerging. The farmers have experienced soil erosion and a lack of water. A logistic regression model is established based on the collected data to explain the relationship between the dependent variable 'Certificate ownership' and the independent variables 'Productivity', 'Local support' and 'Experience' to help sustainable coffee organisations forecast the probability of farmers obtaining a sustainability certificate in their current situation; this will help to choose promising candidates to develop sustainable programs.

The research has some limitations. For instance, it does not measure the financial benefits of sustainable coffee; therefore, future research should focus more on the financial aspects of sustainable coffee farming. Nevertheless, the paper helps to consolidate the position of the Vietnamese coffee brand on the international market, to improve the livelihood of farmers and to conserve the environment in Vietnam and will help fulfil the goal of improving the supply chain of Vietnamese coffee to develop sustainable practices.

## **CONCLUSION**

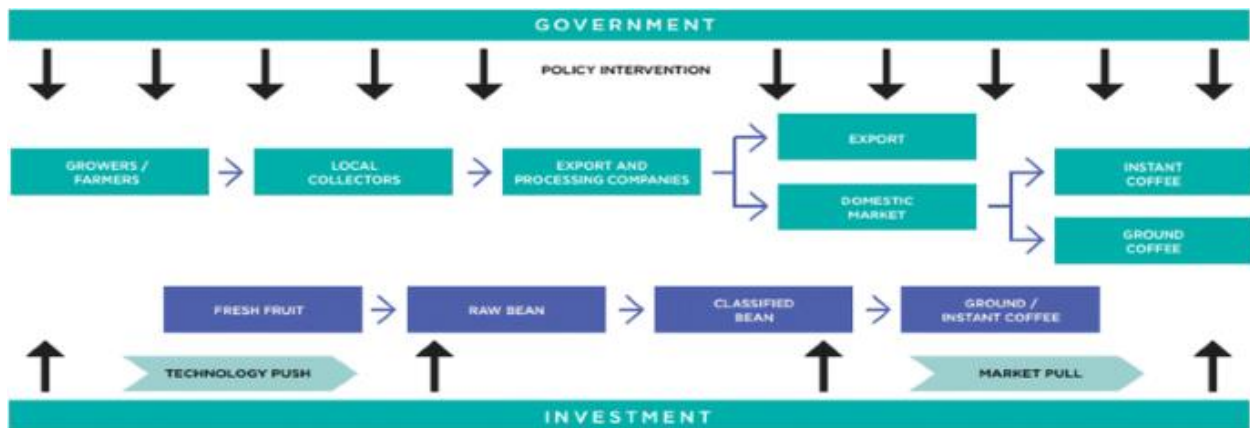
Following the research, it is plausible to conclude that the development of sustainable coffee in Buon Ma Thuot City in particular, and in Vietnam in general, offers many opportunities but still encounters some difficulties that need to be overcome. By means of Chi-square analysis, the positive impacts of sustainable coffee programs on the sustainable coffee supply chain management are confirmed. Certified farmers also perform higher levels of adoption of improved production practices. Environmental management, social attainment and corporate social responsibility are becoming the main concern of coffee processing companies but there is limited evidence of large-scale support from them to local farmers. Thus, the success of the improvement depends mainly on cooperation among stakeholders, both in the public and private sectors. They have to coordinate closely to improve current farming practices, and then manage the supply chain network as well as reverse logistic issues along with considering strategies to support sustainable

development. The government should also consider more effective policies and laws to encourage investment in sustainable coffee production, and expand the market for this product. Besides, the premium price for certified coffee is known as approximately 10–20% higher than the normal price. A positive relationship between certification ownership and higher economic profit is shown in the research; however, future research should measure and prove the financial benefits for farmers to persuade them to join sustainable programs. Another contribution that future research should examine is the productivity benefit when farmers change from planting normal coffee to certified coffee. Researchers should provide them with guidance to help them manage the quality of their coffee farms. Finally, the logistic regression model is suggested to help government and sustainable coffee programs choose farmers with proper conditions in order to achieve more success.

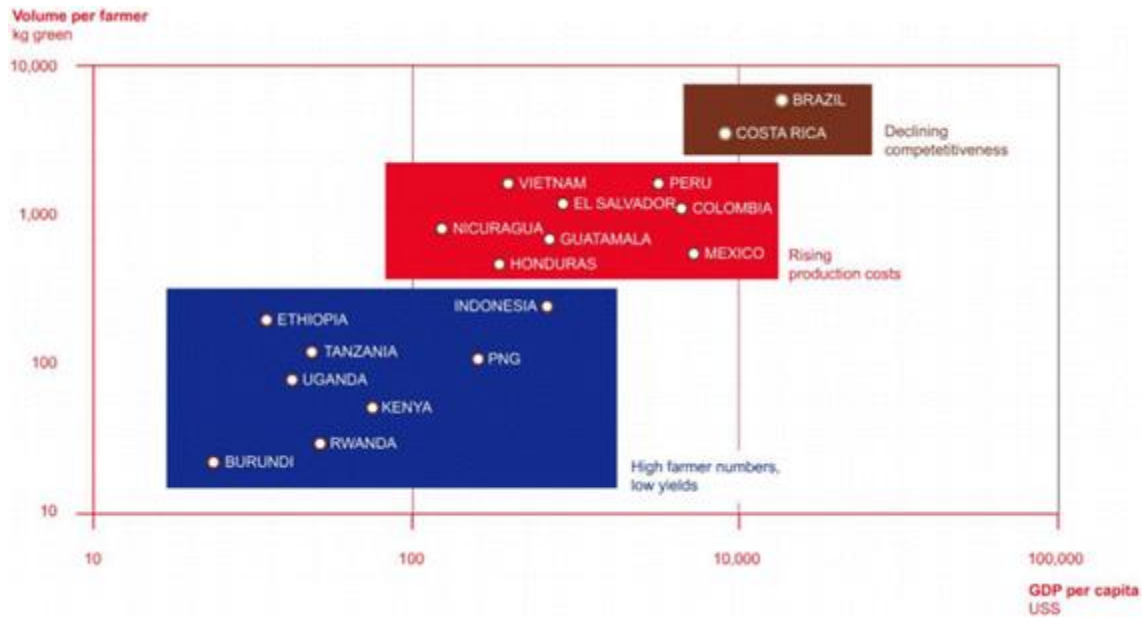
It is confirmed that sustainable coffee schemes should be enhanced thanks to their benefits. However, there are some limitations of this study that future research should consider. Due to the limitations of time and experience, the researchers were unable to study a larger sample, which could generate a more accurate result. In addition, the research did not measure the financial impacts of the sustainable coffee program.

**APPENDIX**

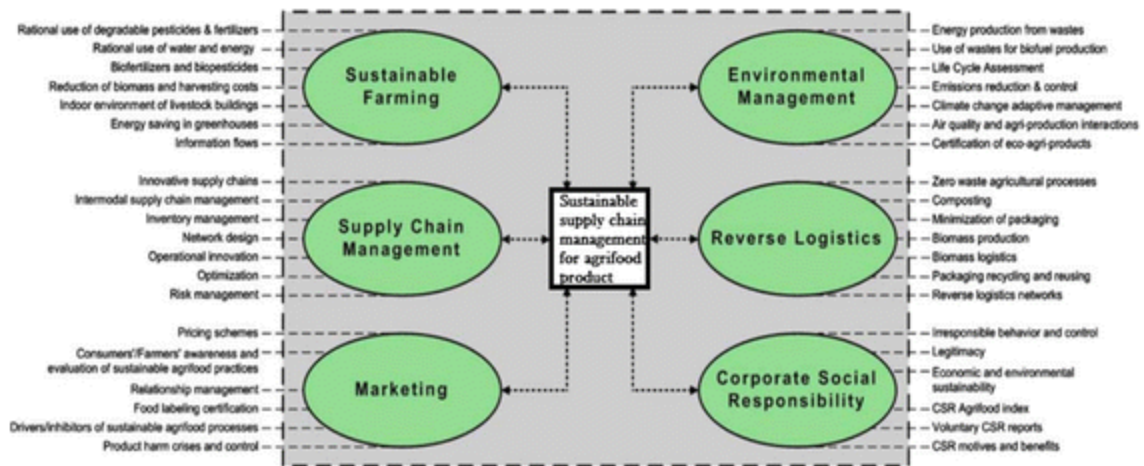
**FIGURE 1  
GENERAL SUPPLY CHAIN OF VIETNAM’S COFFEE**



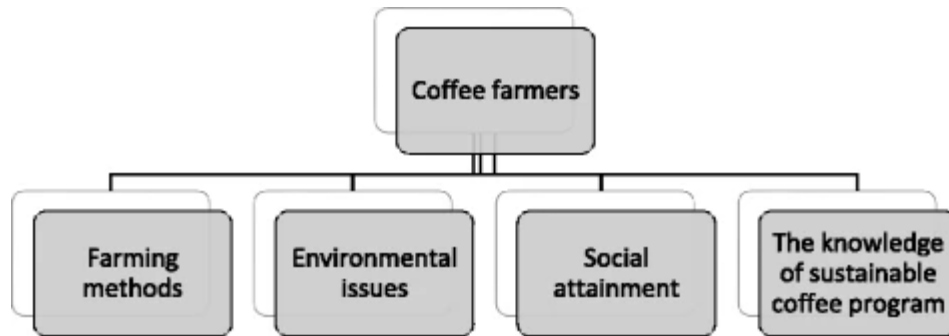
**FIGURE 2  
CHALLENGES OF COFFEE INDUSTRY IN DIFFERENT AREAS**



**FIGURE 3**  
**CONCEPTUAL FRAMEWORK FOR SUSTAINABLE SUPPLY CHAIN MANAGEMENT FOR COFFEE**



**FIGURE 4**  
**CONCEPTUAL FRAMEWORK TO INTERVIEW COFFEE FARMERS**



Source: Authors' own

**FIGURE 5**  
**CONCEPTUAL FRAMEWORK TO INTERVIEW LOCAL COFFEE COLLECTORS**



**FIGURE 6**  
**CONCEPTUAL FRAMEWORK TO INTERVIEW STAFF OF COFFEE MANUFACTURING COMPANIES**



**TABLE 1**  
**GENERAL CRITERIA OF COMMON CERTIFICATION PROGRAMS FOR COFFEE**

<b>Certification Seal</b>	<b>Environmental Criteria</b>	<b>Social Criteria</b>	<b>Economic Criteria</b>	<b>Quality Standards</b>
Organic	✓			
Fairtrade		✓✓	✓	
Rainforest Alliance	✓✓	✓		
Bird-friendly	✓✓			
UTZ Certified	✓	✓	✓	
Starbucks C.A.F.E	✓	✓	✓	✓✓
4C	✓	✓✓	✓	✓

✓: Moderate criteria- ✓✓: Very Strong criteria  
Source: (Lentijo and Hostetler 2011)

**TABLE 2**  
**MAJOR RISKS TO VIETNAMESE COFFEE SUPPLY CHAIN**

Production risks	
Drought	
Pest and disease outbreaks	
Erratic rainfall	
Market risks	
Coffee price volatility risk	
Steep and prolonged price fall	
input price volatility	
Counterparty risk	
Exchange rate & Interest rate volatility	
Enabling environment risks	
Reputational risk	
Theft	

Source: (International Bank for Reconstruction and Development/ The World Bank 2011)

**TABLE 3**

**DESCRIPTIVE STATISTICS ABOUT THE COFFEE FARMING (DATA COLLECTED FROM THE SURVEY)**

	N	Minimum	Maximum	Mean	Std. Deviation
Years of experience	137	1.00	4.00	2.4453	.96953
Total area	137	1.00	3.00	1.8102	.64777
Productivity	137	1.00	4.00	2.4891	1.03694
The years of coffee farm	137	1.00	3.00	1.7883	.62345
Valid N (listwise)	137				

(With years of experience: '1.00': < 5 years, '2.00': 5–10 years, '3.00': 10–15 years, '4.00': >15 years; total area: '1.00': < 2 ha; '2.00': 2–5 ha; '3.00': >5 ha; productivity: '1.00': < 2 tons/ha, '2.00': 2–4 tons/ha, '3.00': 4–6 tons/ha, '4.00': >6 tons/ha; and years of coffee farm: '1.00': < 10 years, '2.00': 11–20 years, '3.00': > 20 years)

**TABLE 4  
THE RELATIONSHIP BETWEEN PRODUCTIVITY AND YEARS OF EXPERIENCE**

Count		Years of experience				Total
		<5 years	5–10 yrs	10–20 yrs	>20 years	
Productivity	<2 tons/ha	19	9	0	0	28
	2–4 tons/ha	16	23	3	0	42
	4–6 tons/ha	1	2	20	16	39
	>6 tons/ha	1	1	10	16	28
Total		37	35	33	32	137
Chi-Square Tests						
	Value	df	Asymp. Sig. (2-sided)			
Pearson Chi-Square	1.202E2 <sup>a</sup>	9	.000			
Likelihood ratio	143.572	9	.000			
Linear-by-linear association	81.480	1	.000			
N of valid cases	137					

<sup>a</sup>0 cells (.0%) have expected count less than 5. The minimum expected count is 6.54



**TABLE 5**  
**THE RELATIONSHIP BETWEEN CERTIFICATE OWNERSHIP AND THE USE OF PESTICIDES**

Count					
		Certification ownership		Total	
		Yes	No		
Pesticides	No	29	12	41	
	Yes	37	59	96	
Total		66	71	137	
Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	11.924 <sup>a</sup>	1	.001		
Continuity Correction <sup>b</sup>	10.669	1	.001		
Likelihood Ratio	12.170	1	.000		
Fisher's Exact Test				.001	.000
Linear-by-Linear Association	11.837	1	.001		
N of Valid Cases <sup>b</sup>	137				

<sup>a</sup>0 cells (.0%) have expected count less than 5. The minimum expected count is 19.75

<sup>b</sup>Computed only for a 2 × 2 table

**TABLE 6**  
**THE RELATIONSHIP BETWEEN CERTIFICATE OWNERSHIP AND PLANTING SHADING TREES**

Count					
		Certification ownership		Total	
		Yes	No		
Shade trees	No	33	45	78	
	Yes	33	26	59	
Total		66	71	137	
Chi-Square Tests					

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.498 <sup>a</sup>	1	.114		
Continuity Correction <sup>b</sup>	1.982	1	.159		
Likelihood Ratio	2.503	1	.114		
Fisher's Exact Test				.124	.080
Linear-by-Linear Association	2.479	1	.115		
N of Valid Cases <sup>b</sup>	137				

<sup>a</sup>0 cells (.0%) have expected count less than 5. The minimum expected count is 28.42

<sup>b</sup>Computed only for a 2 × 2 table

**TABLE 7**  
**THE RELATIONSHIP BETWEEN CERTIFICATE OWNERSHIP AND THE PERCENTAGE OF COFFEE SOLD DIRECTLY**

Count						
		Percentage of your coffee sold directly				Total
		0–30%	30–50%	50–70%	70–100%	
Certification ownership	Yes	14	10	18	24	66
	No	52	7	5	7	71
Total		66	17	23	31	137
Chi-Square Tests						
	Value	Df	Asymp. Sig. (2-sided)			
Pearson Chi-Square	41.480 <sup>a</sup>	3	.000			
Likelihood Ratio	44.025	3	.000			
Linear-by-Linear Association	35.426	1	.000			
N of Valid Cases	137					

<sup>a</sup>0 cells (.0%) have expected count less than 5. The minimum expected count is 13.97

**TABLE 8**

**THE RELATIONSHIP BETWEEN CERTIFICATE OWNERSHIP AND QUALITY EXAMINATION**

Count						
		Collectors or traders examine the planting process and quality frequently				Total
		None	1–2 times/crop	3–5 times/crop	> 5 times/crop	
Certification ownership	Yes	2	12	38	14	66
	No	25	40	6	0	71
Total		27	52	44	14	137
Chi-Square Tests						
	Value	Df	Asymp. Sig. (2-sided)			
Pearson Chi-Square	71.855 <sup>a</sup>	3	.000			
Likelihood Ratio	84.249	3	.000			
Linear-by-Linear Association	63.461	1	.000			
N of Valid Cases	137					

<sup>a</sup>0 cells (.0%) have expected count less than 5. The minimum expected count is 6.74

**TABLE 9  
THE RELATIONSHIP BETWEEN CERTIFICATE OWNERSHIP AND SUPPORT FROM LOCAL ASSOCIATION**

Count						
		Support from local associations				
		Never	Rarely	Often	Very often	Total
Certification ownership	Yes	8	2	41	15	
	No	24	30	15	2	71
Total		32	32	56		17
Chi-Square tests						
	Value	Df	Asymp. Sig. (2-sided)			
Pearson Chi-Square	54.403 <sup>a</sup>	3	.000			
Likelihood Ratio	61.388	3	.000			

Linear-by-Linear Association	37.179	1	.000
N of Valid Cases	137		

<sup>a</sup>0 cells (.0%) have expected count less than 5. The minimum expected count is 8.19

**TABLE 10**  
**THE RELATIONSHIP BETWEEN KNOWLEDGE ABOUT SUSTAINABLE COFFEE AND**  
**MEMBERSHIP OF A COOPERATIVE FARMING GROUP**

Count		A member of any cooperative farming group		Total
		No	Yes	
Knowledge about sustainable coffee area	Never heard	33	7	40
	Have heard but never joined	29	37	66
	Have participated	8	23	31
Total		70	67	137
Chi-Square tests				
	Value	Df	Asymp. Sig. (2-sided)	
Pearson Chi-Square	25.074 <sup>a</sup>	2	.000	
Likelihood Ratio	26.832	2	.000	
Linear-by-Linear Association	23.485	1	.000	
N of Valid Cases	137			

<sup>a</sup>0 cells (.0%) have expected count less than 5. The minimum expected count is 15.16

**TABLE 11**  
**THE RELATIONSHIP BETWEEN CERTIFICATE OWNERSHIP AND PROFIT**

Count		Profit from the coffee farm				Total
		<80 million Vietnamese dong/ha/year	80–100 million Vietnamese dong/ha/year	100–120 million Vietnamese dong/ha/year	>120 million Vietnamese dong/ha/year	
Certification ownership	Yes	4	7	24	31	66
	No	25	30	10	6	71

Total	29	37	34	37	137
Chi-Square Tests					
	Value	Df	Asymp. Sig. (2-sided)		
Pearson Chi-Square	52.048 <sup>a</sup>	3	.000		
Likelihood Ratio	56.584	3	.000		
Linear-by-Linear Association	46.404	1	.000		
N of Valid Cases	137				

<sup>a</sup>0 cells (.0%) have expected count less than 5. The minimum expected count is 13.97.

**TABLE 12**  
**THE RELATIONSHIP BETWEEN MAIN SOURCE OF INCOME AND WILLINGNESS TO JOIN**

Count				
		Is the coffee farm your main source of income?		Total
		NO	YES	
Willing to join sustainable coffee development program	No	4	3	7
	Yes if have any supportive schemes	6	79	85
	Yes for sure	6	39	45
Total		16	121	137
Chi-Square Tests				
	Value	Df	Asymp. Sig. (2-sided)	
Pearson Chi-Square	15.905 <sup>a</sup>	2	.000	
Likelihood Ratio	10.492	2	.005	
Linear-by-Linear Association	1.380	1	.240	
N of Valid Cases	137			

<sup>a</sup>1 cells (16.7%) have expected counts less than 5. The minimum expected count is .82

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### **TRANSLATED VERSION: SPANISH**

Below is a rough translation of the insights presented above. This was done to give a general understanding of the ideas presented in the paper. Please excuse any grammatical mistakes and do not hold the original authors responsible for these mistakes.

### **VERSION TRADUCIDA: ESPAÑOL**

A continuación se muestra una traducción aproximada de las ideas presentadas anteriormente. Esto se hizo para dar una comprensión general de las ideas presentadas en el documento. Por favor, disculpe cualquier error gramatical y no responsabilite a los autores originales de estos errores.

### **INTRODUCCIÓN**

El café es un importante producto de exportación agrícola de Vietnam, con un valor de exportación que representa el 3 por ciento del PIB nacional en 2014 y proporciona un sustento a aproximadamente 2,6 millones de personas (Aduana de Vietnam 2015). Después de Brasil, desde 2000 Vietnam ha sido continuamente el segundo mayor exportador mundial de café, por lo general a los mercados de la UE y Estados Unidos, lo que muestra una perspectiva positiva para el futuro de este sector (Marsh 2007). Sin embargo, es necesario superar numerosos desafíos para lograrlo. Actualmente, menos del 10% del café vietnamita se cultiva de forma sostenible, en comparación con el 75% en América Latina (Mistiaen 2012). Con el aumento de las necesidades del mercado mundial, la competitividad del café vietnamita está siendo amenazada. Por ejemplo, las personas todavía utilizan muchos métodos agrícolas insostenibles, como los monocultivos, la quema de residuos de cultivos, la mala gestión de la fertilidad, la labranza, etc., lo que da lugar a muchos impactos catastróficos en el medio ambiente, como la deforestación y la degradación del suelo, tienen el potencial de conducir a una disminución de los rendimientos, al aumento de las plagas de insectos y enfermedades en los cultivos (Schmitter et al. 2010). Muchas investigaciones confirman que los habitantes pobres rurales son uno de los grupos residenciales más vulnerables al deterioro del medio ambiente, ya que sus medios de vida dependen principalmente de los recursos naturales (Dasgupta et al. 2003). Un metanálisis de (Rahmann 2011; Bennett y Franzel 2013) afirma que el nivel de biodiversidad en granjas sostenibles (como granjas orgánicas, granjas de comercio justo) es mayor que las granjas convencionales. La agricultura sostenible es un sistema rentable que tiene un impacto significativo en la mitigación de la pobreza, el desarrollo sostenible en las naciones subdesarrolladas de todo el mundo (Kilcher 2007). Según (Crowdera y Reganold 2015; Nemes 2009; 2010), las granjas sostenibles proporcionan a los agricultores una mayor rentabilidad económica entre un 22 y un 35% en comparación con otras gracias a los mayores rendimientos y las primas de precios de los productos sostenibles. Por lo tanto, la sostenibilidad deberá abordarse de manera integral en la producción de café para mejorar los usos

de los recursos naturales para las necesidades humanas sin dañar el medio ambiente (Nguyen y Yapwattanaphuna 2015). Además, un enfoque sostenible permite a los agricultores utilizar sus conocimientos y habilidades de manera más eficaz. Sin embargo, los factores que influyen en la adopción de los agricultores a una nueva práctica agrícola sostenible varían ampliamente de la percepción de los agricultores, las características de la nueva práctica hasta las dotaciones de recursos, la situación socioeconómica, las características demográficas y el acceso a los servicios institucionales (Negatu y Parikh 1999). El gobierno tiene como objetivo alcanzar el 65% de la producción sostenible de café para 2018, lo que ayudará a preservar el medio ambiente, mejorar el nivel de vida de los agricultores y garantizar un suministro constante de café para los procesadores de alimentos (Mistiaen 2012).

Por lo tanto, el propósito de este documento es estudiar la situación actual de la cadena de suministro del café vietnamita en Buon Ma Thuot City, provincia de Dak Lak, Vietnam, para examinar las cuestiones relacionadas con el desarrollo del café sostenible y construir un modelo logístico que explique la correlación entre esos factores y la decisión de unirse al programa de café sostenible. Este estudio también propone algunas sugerencias para aumentar las ventajas competitivas de la mercancía, así como para ayudar a los productores de café a ser más flexibles en un mercado en constante cambio.

Esta investigación investiga las opiniones de los agricultores locales a través de encuestas cuantitativas. Las entrevistas cualitativas también se utilizan para entrevistar a 23 coleccionistas locales y al personal de cinco famosas grandes empresas de fabricación de café para proporcionar una visión general de la situación. SPSS se utilizó para analizar los datos y ejecutar el modelo de regresión logística. Los datos se complementaron con análisis documentales, incluidos datos internos y documentos de entrevista.

El trabajo proporciona investigaciones empíricas sobre la cadena de suministro sostenible en los métodos de cultivo de café en La ciudad de Buon Me Thuot. El estudio encontró que aunque la productividad es alta, y los agricultores tienen experiencias positivas en este sector, están surgiendo problemas de sostenibilidad. Los agricultores han experimentado la erosión del suelo y la falta de agua. Se establece un modelo de regresión logística basado en los datos recopilados para explicar la relación entre la variable dependiente "Propiedad del certificado" y las variables independientes "Productividad", "Apoyo local" y "Experiencia" para ayudar a las organizaciones de café sostenibles a pronosticar la probabilidad de que los agricultores obtengan un certificado de sostenibilidad en su situación actual; esto ayudará a elegir candidatos prometedores para desarrollar programas sostenibles.

La investigación tiene algunas limitaciones. Por ejemplo, no mide los beneficios financieros del café sostenible; por lo tanto, la investigación futura debería centrarse más en los aspectos financieros de la agricultura sostenible del café. Sin embargo, el documento ayuda a consolidar la posición de la marca de café vietnamita en el mercado internacional, a mejorar el sustento de los famosos y a conservar el medio ambiente en Vietnam y ayudará a cumplir el objetivo de mejorar la cadena de suministro de café vietnamita para desarrollar prácticas sostenibles.

## **CONCLUSIÓN**

Después de la investigación, es plausible concluir que el desarrollo del café sostenible en la ciudad de Buon Ma Thuot en particular, y en Vietnam en general, ofrece muchas oportunidades, pero todavía se encuentra con algunas dificultades que deben superarse. Mediante el análisis de Chi-square, se confirman los impactos positivos de los programas de café sostenible en la gestión sostenible de la cadena de suministro de café. Los agricultores certificados también realizan mayores niveles de adopción de prácticas de producción mejoradas. La gestión ambiental, el logro social y la responsabilidad social corporativa se están convirtiendo en la principal preocupación de las empresas de procesamiento de café, pero hay pruebas limitadas de un apoyo a gran escala de ellas a los agricultores locales. Por lo tanto, el éxito de la mejora depende principalmente de la cooperación entre las partes interesadas, tanto en el sector público como en el privado. Tienen que coordinarse estrechamente para mejorar las prácticas agrícolas actuales, y luego gestionar la red de la cadena de suministro, así como las cuestiones logísticas inversas, junto con la posibilidad de estrategias para apoyar el desarrollo sostenible. El gobierno también debería considerar políticas y leyes más eficaces para fomentar la inversión en la producción sostenible de café, y expandir el

mercado de este producto. Además, el precio premium para el café certificado se conoce como aproximadamente 10-20% más alto que el precio normal. En la investigación se muestra una relación positiva entre la propiedad de la certificación y un mayor beneficio económico; sin embargo, las investigaciones futuras deben medir y demostrar los beneficios financieros para los agricultores para persuadirlos de que se unan a programas sostenibles. Otra contribución que la investigación futura debe examinar es el beneficio de productividad cuando los agricultores cambian de plantar café normal a café certificado. Los investigadores deben proporcionarles orientación para ayudarles a gestionar la calidad de sus granjas de café. Por último, se sugiere el modelo de regresión logística para ayudar a los programas gubernamentales y de café sostenible a elegir a los agricultores con las condiciones adecuadas para lograr un mayor éxito.

Se confirma que los esquemas de café sostenibles deben mejorarse gracias a sus beneficios. Sin embargo, hay algunas limitaciones de este estudio que la investigación futura debe considerar. Debido a las limitaciones de tiempo y experiencia, los investigadores no pudieron estudiar una muestra más grande, lo que podría generar un resultado más preciso. Además, la investigación no midió los impactos financieros del programa de café sostenible.

### **TRANSLATED VERSION: FRENCH**

Below is a rough translation of the insights presented above. This was done to give a general understanding of the ideas presented in the paper. Please excuse any grammatical mistakes and do not hold the original authors responsible for these mistakes.

### **VERSION TRADUITE: FRANÇAIS**

Voici une traduction approximative des idées présentées ci-dessus. Cela a été fait pour donner une compréhension générale des idées présentées dans le document. Veuillez excuser toutes les erreurs grammaticales et ne pas tenir les auteurs originaux responsables de ces erreurs.

### **INTRODUCTION**

Le café est un produit d'exportation agricole majeur du Vietnam, la valeur des exportations représentant 3 % du PIB national en 2014 et fournit un moyen de subsistance à environ 2,6 millions de personnes (Douanes du Vietnam, 2015). Après le Brésil, depuis 2000, le Vietnam est toujours le deuxième exportateur mondial de café, généralement vers les marchés de l'UE et des États-Unis, ce qui montre des perspectives positives pour l'avenir de ce secteur (Marsh, 2007). Cependant, de nombreux défis doivent être surmontés afin d'y parvenir. Actuellement, moins de 10% du café vietnamien est cultivé de manière durable, contre 75% en Amérique latine (Mistiaen 2012). Avec l'augmentation des exigences du marché mondial, la compétitivité du café vietnamien est menacée. Par exemple, les gens utilisent encore de nombreuses méthodes agricoles non durables telles que les monocultures, la combustion des résidus de cultures, une mauvaise gestion de la fertilité, le travail du sol, etc. Qui entraînent de nombreux impacts catastrophiques sur l'environnement – tels que la déforestation et la dégradation des sols – ont le potentiel de conduire à une diminution des rendements, à une augmentation des insectes nuisibles et aux maladies sur les cultures (Schmitter et al., 2010). De nombreuses recherches confirment que les pauvres ruraux sont l'un des groupes résidentiels les plus vulnérables à la détérioration de l'environnement, car leurs moyens de subsistance dépendent principalement des ressources naturelles (Dasgupta et al., 2003). Une méta-analyse de (Rahmann 2011; Bennett et Franzel 2013) affirme que le niveau de biodiversité dans les exploitations agricoles durables (comme les fermes biologiques, les fermes équitables) est plus élevé que dans les fermes conventionnelles. L'agriculture durable est un système rentable qui a des répercussions importantes sur la réduction de la pauvreté, le développement durable dans les pays sous-développés du monde entier (Kilcher, 2007). Selon (Crowdera et Reganold 2015; Nemes 2009; Ramesh et coll. 2010), les fermes durables offrent aux agriculteurs une rentabilité économique plus élevée de 22 à 35 % par rapport aux autres

grâce à des rendements plus élevés et des primes de prix des produits durables. Par conséquent, la durabilité devra être abordée de manière globale dans la production de café afin d'améliorer l'utilisation des ressources naturelles pour les besoins humains sans nuire à l'environnement (Nguyen et Yapwattanaphuna 2015). En outre, une approche durable permet aux agriculteurs d'utiliser leurs connaissances et leurs compétences plus efficacement. Toutefois, les facteurs qui influent sur l'adoption par les agriculteurs d'une nouvelle pratique agricole durable varient considérablement de la perception des agriculteurs, des caractéristiques de la nouvelle pratique aux ressources, au statut socioéconomique, aux caractéristiques démographiques et à l'accès aux services institutionnels (Negatu et Parikh, 1999). Le gouvernement vise à atteindre 65 % de la production de café durable d'ici 2018, ce qui contribuera à préserver l'environnement, à améliorer le niveau de vie des agriculteurs et à assurer un approvisionnement régulier en café pour les transformateurs alimentaires (Mistiaen 2012).

Par conséquent, le but de ce document est d'étudier la situation actuelle de la chaîne d'approvisionnement du café vietnamien dans la ville de Buon Ma Thuot, province de Dak Lak, Vietnam, pour examiner les questions liées au développement du café durable et de construire un modèle logistique qui expliquera la corrélation entre ces facteurs et la décision de rejoindre le programme de café durable. Cette étude propose également quelques suggestions pour accroître les avantages concurrentiels de la marchandise, ainsi que pour aider les producteurs de café à être plus flexibles dans un marché en constante évolution.

Cette recherche étudie les opinions des agriculteurs locaux au moyen d'enquêtes quantitatives. Des entrevues qualitatives sont également utilisées pour interviewer 23 collectionneurs locaux et le personnel de cinq grandes entreprises de fabrication de café célèbres pour donner un aperçu de la situation. SPSS a été utilisé pour analyser les données et exécuter le modèle de régression logistique. Les données ont été complétées par une analyse documentaire, y compris des données internes et des documents d'entrevue.

L'article fournit des recherches empiriques sur la chaîne d'approvisionnement durable dans les méthodes de culture du café à Buon Me Thuot City. L'étude a révélé que même si la productivité est élevée et que les agriculteurs ont des expériences positives dans ce secteur, des problèmes de durabilité apparaissent. Les agriculteurs ont connu l'érosion des sols et le manque d'eau. Un modèle de régression logistique est établi sur la base des données recueillies pour expliquer la relation entre la variable dépendante « rotien de certificatio » et les variables indépendantes « roductivité », « rotien loca » et « ntressio » pour aider les organisations de café durable à prévoir la probabilité que les agriculteurs obtiennent un certificat de durabilité dans leur situation actuelle; cela aidera à choisir des candidats prometteurs pour développer des programmes durables.

La recherche a certaines limites. Par exemple, il ne mesure pas les avantages financiers du café durable; par conséquent, les recherches futures devraient se concentrer davantage sur les aspects financiers de la culture durable du café. Néanmoins, le document contribue à consolider la position de la marque vietnamienne de café sur le marché international, à améliorer les moyens de subsistance des célébrités et à préserver l'environnement au Vietnam et aidera à atteindre l'objectif d'améliorer la chaîne d'approvisionnement du café vietnamien pour développer des pratiques durables.

## CONCLUSION

Suite à la recherche, il est plausible de conclure que le développement du café durable dans la ville de Buon Ma Thuot en particulier, et au Vietnam en général, offre de nombreuses opportunités, mais rencontre encore quelques difficultés qui doivent être surmontées. Au moyen de l'analyse de Chi-square, les impacts positifs des programmes de café durable sur la gestion durable de la chaîne d'approvisionnement en café sont confirmés. Les agriculteurs certifiés effectuent également des niveaux plus élevés d'adoption de pratiques de production améliorées. La gestion de l'environnement, la réussite sociale et la responsabilité sociale des entreprises deviennent la principale préoccupation des entreprises de transformation du café, mais il y a peu de preuves d'un soutien à grande échelle de leur part aux agriculteurs locaux. Ainsi, le succès de l'amélioration dépend principalement de la coopération entre les parties prenantes, tant dans les secteurs public que privé. Ils doivent se coordonner étroitement pour améliorer les pratiques agricoles actuelles, puis

gérer le réseau de la chaîne d'approvisionnement ainsi que inverser les questions logistiques ainsi que d'envisager des stratégies pour soutenir le développement durable. Le gouvernement devrait également envisager des politiques et des lois plus efficaces pour encourager l'investissement dans la production durable de café et élargir le marché de ce produit. En outre, le prix élevé pour le café certifié est connu comme environ 10 à 20% plus élevé que le prix normal. Une relation positive entre la propriété de la certification et l'augmentation des bénéfices économiques est démontrée dans la recherche; toutefois, les recherches futures devraient mesurer et prouver les avantages financiers pour les agriculteurs de les persuader de se joindre à des programmes durables. Une autre contribution que les recherches futures devraient examiner est l'avantage de productivité lorsque les agriculteurs passent de la plantation de café normal au café certifié. Les chercheurs devraient leur fournir des conseils pour les aider à gérer la qualité de leurs fermes de café. Enfin, le modèle de régression logistique est proposé pour aider les programmes gouvernementaux et durables de café à choisir des agriculteurs avec des conditions appropriées afin d'obtenir plus de succès.

Il est confirmé que les régimes de café durables devraient être améliorés grâce à leurs avantages. Toutefois, il y a certaines limites de cette étude que la recherche future devrait tenir compte. En raison des limites de temps et d'expérience, les chercheurs n'ont pas été en mesure d'étudier un échantillon plus important, ce qui pourrait générer un résultat plus précis. De plus, la recherche n'a pas mesuré les répercussions financières du programme de café durable.

#### **TRANSLATED VERSION: GERMAN**

Below is a rough translation of the insights presented above. This was done to give a general understanding of the ideas presented in the paper. Please excuse any grammatical mistakes and do not hold the original authors responsible for these mistakes.

#### **ÜBERSETZTE VERSION: DEUTSCH**

Hier ist eine ungefähre Übersetzung der oben vorgestellten Ideen. Dies wurde getan, um ein allgemeines Verständnis der in dem Dokument vorgestellten Ideen zu vermitteln. Bitte entschuldigen Sie alle grammatikalischen Fehler und machen Sie die ursprünglichen Autoren nicht für diese Fehler verantwortlich.

#### **EINLEITUNG**

Kaffee ist ein wichtiges Agrarexportgut Vietnams mit einem Exportwert von 3 % des nationalen BIP im Jahr 2014 und bietet etwa 2,6 Millionen Menschen einen Lebensunterhalt (Vietnam Customs 2015). Nach Brasilien ist Vietnam seit dem Jahr 2000 kontinuierlich der zweitgrößte Kaffeexporteur der Welt, typischerweise auf die Märkte der EU und der USA, was einen positiven Ausblick für die Zukunft dieses Sektors zeigt (Marsh 2007). Um dies zu erreichen, müssen jedoch zahlreiche Herausforderungen bewältigt werden. Derzeit werden weniger als 10 % des vietnamesischen Kaffees nachhaltig angebaut, verglichen mit 75 % in Lateinamerika (Mistiaen 2012). Mit der Steigenden globalen Marktanforderungen wird die Wettbewerbsfähigkeit des vietnamesischen Kaffees bedroht. So verwenden die Menschen nach wie vor viele nicht nachhaltige Anbaumethoden wie Monokulturen, das Verbrennen von Ernterückständen, schlechtes Fruchtbarkeitsmanagement, Bodenbearbeitung usw., was zu vielen katastrophalen Auswirkungen auf die Umwelt führt – wie Entwaldung und Bodendegradation – das Potenzial, zu einem Rückgang der Erträge, einer Zunahme von Insektenschädlingen und Krankheiten auf Kulturen zu führen (Schmitter et al. 2010). Viele Untersuchungen bestätigen, dass die armen Bewohner des ländlichen Raums zu den am stärksten gefährdeten Wohngruppen für Umweltzerstörung gehören, da ihre Existenzgrundlage hauptsächlich von natürlichen Ressourcen abhängt (Dasgupta et al. 2003). Eine Metaanalyse von (Rahmann 2011; Bennett und Franzel 2013) weist darauf hin, dass die Artenvielfalt in nachhaltigen Betrieben (wie Bio-Betrieben, Fair-Trade-Betrieben) höher ist als in konventionellen Betrieben. Nachhaltige

Landwirtschaft ist ein kostengünstiges System, das erhebliche Auswirkungen auf die Armutsbekämpfung, die nachhaltige Entwicklung in unterentwickelten Ländern auf der ganzen Welt hat (Kilcher 2007). Nach (Crowdera und Reganold 2015; Nemes 2009; Ramesh et al. 2010), nachhaltige Betriebe bieten Landwirten eine höhere wirtschaftliche Rentabilität von 22 bis 35% im Vergleich zu anderen dank höherer Erträge und Preisprämien für nachhaltige Produkte. Daher muss Nachhaltigkeit in der Kaffeeproduktion umfassend angegangen werden, um die Nutzung natürlicher Ressourcen für menschliche Bedürfnisse zu verbessern, ohne die Umwelt zu schädigen (Nguyen und Yapwattanaphuna 2015). Außerdem ermöglicht ein nachhaltiger Ansatz den Landwirten, ihr Wissen und ihre Fähigkeiten effektiver einzusetzen. Die Faktoren, die sich auf die Einführung der Landwirte auf eine neue nachhaltige landwirtschaftliche Praxis auswirken, reichen jedoch stark von der Wahrnehmung der Landwirte, den Merkmalen der neuen Praxis bis hin zu Ressourcenausstattung, sozioökonomischem Status, demografischen Merkmalen und Zugang zu institutionellen Dienstleistungen (Negatu und Parikh 1999). Die Regierung strebt an, bis 2018 65 % der nachhaltigen Kaffeeproduktion zu erreichen, was dazu beitragen wird, die Umwelt zu schonen, den Lebensstandard der Landwirte zu verbessern und eine stetige Kaffeeversorgung für Lebensmittelverarbeiter zu gewährleisten (Mistiaen 2012).

Daher ist der Zweck dieses Papiers, die aktuelle Situation der Lieferkette von vietnamesischem Kaffee in Buon Ma Thuot City, Dak Lak Provinz, Vietnam zu untersuchen, um die Fragen im Zusammenhang mit der Entwicklung von nachhaltigem Kaffee zu untersuchen und ein logistisches Modell aufzubauen, das die Korrelation zwischen diesen Faktoren und der Entscheidung, dem nachhaltigen Kaffeeprogramm beizutreten, erklären wird. Diese Studie schlägt auch einige Vorschläge vor, um die Wettbewerbsvorteile der Ware zu erhöhen und den Kaffeebauern zu helfen, in einem sich ständig verändernden Markt flexibler zu sein.

Diese Forschung untersucht die Meinungen der lokalen Landwirte durch quantitative Erhebungen. Qualitative Interviews werden auch verwendet, um 23 lokale Sammler und die Mitarbeiter von fünf berühmten großen Kaffeeherstellern zu interviewen, um einen Überblick über die Situation zu geben. SPSS wurde verwendet, um die Daten zu analysieren und das logistische Regressionsmodell auszuführen. Ergänzt wurden die Daten durch eine dokumentarische Analyse, einschließlich interner Daten und Interviewdokumente.

Das Papier liefert empirische Forschungen über die nachhaltige Lieferkette in Kaffeeanbaumethoden in Buon Me Thuot City. Die Studie ergab, dass, obwohl die Produktivität hoch ist und landwirte positive Erfahrungen in diesem Sektor haben, Nachhaltigkeitsprobleme auftauchen. Die Landwirte haben Bodenerosion und Wassermangel erlebt. Auf der Grundlage der gesammelten Daten wird ein logistisches Regressionsmodell erstellt, um die Beziehung zwischen der abhängigen Variablen "Zertifikatsbesitz" und den unabhängigen Variablen "Produktivität", "Lokale Unterstützung" und "Erfahrung" zu erklären, um nachhaltige Kaffeeorganisationen dabei zu unterstützen, die Wahrscheinlichkeit zu prognostizieren, dass Landwirte in ihrer aktuellen Situation ein Nachhaltigkeitszertifikat erhalten; dies wird dazu beitragen, vielversprechende Kandidaten für die Entwicklung nachhaltiger Programme auszuwählen.

Die Forschung hat einige Einschränkungen. Zum Beispiel misst sie nicht die finanziellen Vorteile von nachhaltigem Kaffee; Daher sollte sich die künftige Forschung stärker auf die finanziellen Aspekte der nachhaltigen Kaffeezucht konzentrieren. Dennoch trägt das Papier dazu bei, die Position der vietnamesischen Kaffeemarke auf dem internationalen Markt zu festigen, die Lebensgrundlage der Farmers zu verbessern und die Umwelt in Vietnam zu schonen, und wird dazu beitragen, das Ziel der Verbesserung der Lieferkette von vietnamesischem Kaffee zu erreichen, um nachhaltige Praktiken zu entwickeln.

## **SCHLUSSFOLGERUNG**

Nach der Forschung ist es plausibel zu schlussfolgern, dass die Entwicklung von nachhaltigem Kaffee in Buon Ma Thuot City im Besonderen, und in Vietnam im Allgemeinen, bietet viele Möglichkeiten, aber immer noch einige Schwierigkeiten, die überwunden werden müssen. Mit Hilfe der Chi-Quadrat-Analyse werden die positiven Auswirkungen nachhaltiger Kaffeeprogramme auf das nachhaltige Kaffee-Lieferkettenmanagement bestätigt. Zertifizierte Landwirte führen auch ein höheres Maß an Akzeptanz

verbesserten Produktionspraktiken durch. Umweltmanagement, soziale Leistungen und soziale Verantwortung der Unternehmen werden zu einem Hauptanliegen der Kaffee verarbeitenden Unternehmen, aber es gibt nur begrenzte Anzeichen für eine umfassende Unterstützung der lokalen Landwirte durch sie. Daher hängt der Erfolg der Verbesserung hauptsächlich von der Zusammenarbeit zwischen den Interessenträgern sowohl im öffentlichen als auch im privaten Sektor ab. Sie müssen sich eng abstimmen, um die derzeitigen landwirtschaftlichen Praktiken zu verbessern, und dann das Lieferkettennetz zu verwalten sowie logistische Fragen umkehren und Strategien zur Unterstützung einer nachhaltigen Entwicklung in Betracht ziehen. Die Regierung sollte auch wirksamere Strategien und Gesetze in Betracht ziehen, um Investitionen in eine nachhaltige Kaffeeproduktion zu fördern und den Markt für dieses Produkt zu erweitern. Außerdem ist der Premiumpreis für zertifizierten Kaffee als etwa 10–20% höher als der Normalpreis bekannt. Ein positiver Zusammenhang zwischen Zertifizierungseigentum und höherem wirtschaftlichen Gewinn zeigt sich in der Forschung; künftige Forschungen sollten jedoch die finanziellen Vorteile für die Landwirte messen und nachweisen, um sie davon zu überzeugen, sich nachhaltigen Programmen anzuschließen. Ein weiterer Beitrag, den die zukünftige Forschung untersuchen sollte, ist der Produktivitätsvorteil, wenn Landwirte von der Anpflanzung von normalem Kaffee zu zertifiziertem Kaffee wechseln. Die Forscher sollten ihnen Anleitungen geben, die ihnen helfen, die Qualität ihrer Kaffeefarmen zu verwalten. Schließlich wird das logistische Regressionsmodell vorgeschlagen, um staatlichen und nachhaltigen Kaffeeprogrammen zu helfen, Landwirte mit angemessenen Bedingungen zu wählen, um mehr Erfolg zu erzielen.

Es wird bestätigt, dass nachhaltige Kaffeeprogramme dank ihrer Vorteile verbessert werden sollten. Allerdings gibt es einige Einschränkungen dieser Studie, die zukünftige Forschung berücksichtigen sollte. Aufgrund der zeitlichen und erfahrenen Grenzen waren die Forscher nicht in der Lage, eine größere Stichprobe zu untersuchen, die ein genaueres Ergebnis generieren konnte. Darüber hinaus wurden die finanziellen Auswirkungen des nachhaltigen Kaffeeprogramms nicht gemessen.

## **TRANSLATED VERSION: PORTUGUESE**

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## **VERSÃO TRADUZIDA: PORTUGUÊS**

Aqui está uma tradução aproximada das ideias acima apresentadas. Isto foi feito para dar uma compreensão geral das ideias apresentadas no documento. Por favor, desculpe todos os erros gramaticais e não responsabilize os autores originais responsáveis por estes erros.

## **INTRODUÇÃO**

O café é uma importante mercadoria de exportação agrícola do Vietnã, com o valor de exportação responsável por 3% do PIB nacional em 2014 e fornece um meio de subsistência para aproximadamente 2,6 milhões de pessoas (Alfândega do Vietnã 2015). Seguindo o Brasil, desde 2000 o Vietnã tem sido continuamente o segundo maior exportador mundial de café, tipicamente para os mercados da UE e dos EUA, o que mostra uma perspectiva positiva para o futuro deste setor (Marsh 2007). No entanto, inúmeros desafios precisam ser superados para que isso aconteça. Atualmente, menos de 10% do café vietnamita é cultivado de forma sustentável, em comparação com 75% na América Latina (Mistiaen 2012). Com o aumento das exigências do mercado global, a competitividade do café vietnamita está sendo ameaçada. Por exemplo, as pessoas ainda utilizam muitos métodos agrícolas insustentáveis, como monoculturas, queima de resíduos de culturas, má gestão da fertilidade, lavoura, etc. O que resulta em muitos impactos catastróficos no meio ambiente – como desmatamento e degradação do solo – têm potencial para levar a uma diminuição da produção, aumento de pragas de insetos e doenças nas lavouras (Schmitter et al. 2010).



Muitas pesquisas confirmam que os moradores pobres rurais são um dos grupos residenciais mais vulneráveis à deterioração ambiental, pois seus meios de subsistência dependem principalmente dos recursos naturais (Dasgupta et al. 2003). Uma meta-análise de (Rahmann 2011; Bennett e Franzel 2013) afirmam que o nível de biodiversidade em fazendas sustentáveis (como fazendas orgânicas, fazendas de comércio justo) é maior do que as fazendas convencionais. A agricultura sustentável é um sistema econômico que tem impactos significativos no alívio da pobreza, no desenvolvimento sustentável em nações subdesenvolvidas em todo o mundo (Kilcher 2007). De acordo com (Crowdera e Reganold 2015; Nemes 2009; Ramesh et al. 2010), as fazendas sustentáveis proporcionam aos agricultores uma maior rentabilidade econômica em 22 a 35% em comparação com outras graças aos maiores rendimentos e prêmios de preços de produtos sustentáveis. Portanto, a sustentabilidade precisará ser amplamente abordada na produção de café para melhorar o uso dos recursos naturais para as necessidades humanas sem prejudicar o meio ambiente (Nguyen e Yapwattanaphuna 2015). Além disso, a abordagem sustentável permite que os agricultores usem seus conhecimentos e habilidades de forma mais eficaz. No entanto, os fatores impactam na adoção dos agricultores a uma nova prática agrícola sustentável, variando amplamente da percepção dos agricultores, das características da nova prática às doações de recursos, status socioeconômico, características demográficas e acesso a serviços institucionais (Negatu e Parikh 1999). O governo pretende alcançar 65% da produção sustentável de café até 2018, o que ajudará a preservar o meio ambiente, melhorar o padrão de vida dos agricultores e garantir uma oferta constante de café para processadores de alimentos (Mistiaen 2012).

Assim, o objetivo deste artigo é estudar a situação atual da cadeia de fornecimento de café vietnamita na cidade de Buon Ma Thuot, província de Dak Lak, Vietnã, para examinar as questões relacionadas ao desenvolvimento do café sustentável e construir um modelo logístico que explique a correlação entre esses fatores e a decisão de aderir ao programa de café sustentável. Este estudo também propõe algumas sugestões para aumentar as vantagens competitivas da commodity, bem como para ajudar os cafeicultores a serem mais flexíveis em um mercado em constante mudança.

Esta pesquisa investiga as opiniões dos agricultores locais por meio de pesquisas quantitativas. Entrevistas qualitativas também são usadas para entrevistar 23 colecionadores locais e a equipe de cinco grandes empresas de fabricação de café para fornecer uma visão geral da situação. A SPSS foi utilizada para analisar os dados e executar o modelo de regressão logística. Os dados foram complementados por análise documental, incluindo dados internos e documentos de entrevista.

O artigo fornece pesquisas empíricas sobre a cadeia de fornecimento sustentável em métodos de cafeicultura na cidade de Buon Me Thuot. O estudo constatou que, embora a produtividade seja alta, e os agricultores tenham experiências positivas nesse setor, as questões de sustentabilidade estão surgindo. Os agricultores experimentaram erosão do solo e falta de água. Estabelece-se um modelo de regressão logística com base nos dados coletados para explicar a relação entre a variável dependente 'Propriedade de Certificado' e as variáveis independentes 'Produtividade', 'Apoio local' e 'Experiência' para ajudar organizações de café sustentáveis a prever a probabilidade de os agricultores obterem um certificado de sustentabilidade em sua situação atual; isso ajudará a escolher candidatos promissores para desenvolver programas sustentáveis.

A pesquisa tem algumas limitações. Por exemplo, não mede os benefícios financeiros do café sustentável; portanto, pesquisas futuras devem se concentrar mais nos aspectos financeiros da cafeicultura sustentável. No entanto, o artigo ajuda a consolidar a posição da marca de café vietnamita no mercado internacional, para melhorar a subsistência dos famosos e conservar o meio ambiente no Vietnã e ajudar a cumprir o objetivo de melhorar a cadeia de suprimentos do café vietnamita para desenvolver práticas sustentáveis.

## CONCLUSÃO

Após a pesquisa, é plausível concluir que o desenvolvimento do café sustentável na cidade de Buon Ma Thuot em particular, e no Vietnã em geral, oferece muitas oportunidades, mas ainda encontra algumas dificuldades que precisam ser superadas. Por meio da análise da Praça-Chi, confirma-se os impactos

positivos dos programas de café sustentável na gestão sustentável da cadeia produtiva do café. Os agricultores certificados também realizam níveis mais elevados de adoção de melhores práticas de produção. A gestão ambiental, a realização social e a responsabilidade social corporativa estão se tornando a principal preocupação das empresas de processamento de café, mas há evidências limitadas de apoio em larga escala deles aos agricultores locais. Assim, o sucesso da melhoria depende principalmente da cooperação entre os stakeholders, tanto no setor público quanto no privado. Eles têm que coordenar de perto para melhorar as práticas agrícolas atuais e, em seguida, gerenciar a rede da cadeia de suprimentos, bem como questões logísticas reversas, juntamente com considerar estratégias para apoiar o desenvolvimento sustentável. O governo também deve considerar políticas e leis mais eficazes para incentivar o investimento na produção sustentável de café e expandir o mercado para este produto. Além disso, o preço premium do café certificado é conhecido como aproximadamente 10-20% mais alto do que o preço normal. Na pesquisa, mostra-se uma relação positiva entre a propriedade da certificação e o maior lucro econômico; no entanto, pesquisas futuras devem medir e provar os benefícios financeiros para os agricultores persuadi-los a aderir a programas sustentáveis. Outra contribuição que pesquisas futuras devem examinar é o benefício de produtividade quando os agricultores mudam do plantio de café normal para o café certificado. Os pesquisadores devem fornecer-lhes orientação para ajudá-los a gerenciar a qualidade de suas fazendas de café. Finalmente, sugere-se que o modelo de regressão logística ajude o governo e programas de café sustentáveis a escolher os agricultores com condições adequadas para alcançar mais sucesso.

Confirma-se que os regimes de café sustentáveis devem ser aprimorados graças aos seus benefícios. No entanto, existem algumas limitações deste estudo que pesquisas futuras devem considerar. Devido às limitações de tempo e experiência, os pesquisadores não conseguiram estudar uma amostra maior, o que poderia gerar um resultado mais preciso. Além disso, a pesquisa não mediu os impactos financeiros do programa café sustentável.