

Agro-tourism: A Sustainable Adoption Strategy for Rose Hall Estate in Guyana

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Abstract: *The Guyana Sugar Corporation has experienced a series of misfortune, which has resulted in the Government of Guyana taking steps to diversify its operation. Through a mix method research (qualitative and quantitative), this study purpose was to determine whether agro-tourism can be a sustainably viable diversification strategy for Rose Hall Estate in Guyana. The Mendelow's stakeholder matrix was used to identify all the relevant stakeholders. Key informant interviews were conducted with the High Power/Influence-High Interest and High Power/Influence-Low Interest categories of stakeholders, which provided data for a qualitative content analysis. While the Low Power/Influence-High Interest and Low Power/Influence-Low Interest categories of stakeholders were given questionnaires as their surveyed instruments. Binary logistic regression analysis was used to predict the likelihood of adoption. The finding of this study predicted that agro-tourism can be adopted as a sustainably viable diversification strategy for both education extension agro-tourism and leisure recreation agro-tourism services, which were statistically significant predictors for the likelihood of adoption. However, poor stakeholder coordination, lack of supporting policies, market, and finance and investment problems would hinder the adoption of agro-tourism.*

Keywords: Agro-tourism, Sustainable, Diversification, Stakeholder.

1. Introduction

In 1976, all sugar plantations were nationalized in Guyana and the Guyana Sugar Corporation (GuySuCo) was established. This company until 1996 was able to maintain an average production of 328,000 tonnes of sugar. The decade following sugar production declined to an average of 284,000 tonnes. After the election of the present Government of Guyana in 2015, a commission of inquiry (COI) launched to determine the current economic status of the Guyana Sugar Corporation (GuySuCo), since this corporation considered as a vital industry to Guyana's economy. Finding from the Commission of inquiry revealed the Corporation was in debt and between 2004 to 2014 sugar production fell from 325,318 metric tons to 216,358 metric tons. However, these losses in production increased drastically during the latter half of the decade, and 68 billion Guyana dollars or \$340 million USD in losses incurred by 2016. The Government of Guyana as a result of these losses provided \$29.1 billion Guyana dollars or 145.5 million USD dollars in subsidies to GuySuCo during 2011 to 2015 [1].

Recommendation from the COI was for GuySuCo's sugar production levels to be reduced and the lands should be utilized for other form of agriculture production (diversified). Diversification considered one of the strategies of adaptation by businesses in times of lasting crisis, and when there are structural reductions in profits. In agriculture, however, diversification has mainly taken on the meaning of a survival

strategy, with particular reference to small businesses located in the most outlying, disadvantaged rural areas [2].

Agro-tourism has existed in one form or another throughout the world and has proven to be a viable diversification strategy for farmers in European, Canada, Mexico, America and China; but very few academic studies focus on the Caribbean and even fewer on Guyana. Some of the most notable reviews in the Caribbean have concentrated on countries such as Jamaica, Bahamas, St. Kitts, US Virgin Islands and Martinique. The fact that very little research has focused on the relationship between tourism and agriculture production in Guyana is one reason why this research will be of paramount importance to the Government of Guyana, investors, and literature. Thus, the Government of Guyana is currently seeking more sustainable agricultural ventures to feed the Guyanese people, reduce food importation and create employment to reduce social unrest, unemployment and emigration of skilled labors.

Therefore, the purpose of this research is to determine whether agro-tourism could be a sustainably viable diversification strategy for Rose Hall Estate in Guyana.

2. Research Objective

The objectives of this study is to identify enablers and constraints for Rose Hall Estate to adopt agro-tourism as a sustainably viable diversification strategy; since it can

provide benefit for all categories of stakeholders within the pillars of sustainability.

2.1 Research Question

Is agro-tourism a sustainably viable option to pursue economic development at Rose Hall Estate? With the impending financial crisis, difficult economic times in 2017 and beyond; can agro-tourism serve as a vehicle to revitalize Rose Hall Estate economic status; towards a broader diversification strategy where all stakeholders can receive benefits within the pillars of sustainability. A series of specific research questions have guided this dissertation.

2.2 Specific Research Questions

- a) Can Rose Hall Estate adopt agro-tourism?
- b) What type of agro-tourism should be adopted by Rose Hall Estate?
- c) What factors would enable the adoption of agro-tourism by Rose Hall Estate?
- d) What are some of the perceived constraints or hindrances to the adaptation of agro-tourism at Rose Hall Estate?

3. Literature Review

The term agro-tourism is used to describe nearly any activity which involves a visit to a farm or other agricultural setting consider to be a farm landscape; it may also be relate to an appreciation of nature or participation in an agrarian process for recreation or leisure purposes [3], [4].

Agro-tourism is usually understood to take place on a working farm or other agricultural setting in order to generate income or to add value to the farm [5] - [7].

For this research, agro-tourism will be summarized as any activity, business or enterprise that links agriculture with products, services, and experiences in tourism. It may involve staying on or visiting a farm, where the visitor can watch or help farmers or workers to grow, harvest and process fruits and vegetables such as cocoa, corn, pineapples, carrots, mangoes, and yams; or take care of animals like chickens, pigs, cows and sheep, or even participate in agricultural fairs, fruit festivals, and food and craft markets. There are many exciting places where persons can visit to participate in agro-tourism activities in the Caribbean. These activities may range from farm-Based tourism, daily visits (e.g., orchard tours, hayrides), recreational self-harvest (e.g., pick-your-own operations), hunting and fishing for a fee, horseback riding, nature and wildlife observation, and other outdoor activities [8] - [10]. Health and Wellness Tourism, Community base Tourism, Culinary (Food) Tourism, Cultural Heritage Agro-tourism and Agro-Trade base Tourism [11].

3.1 Agro-tourism and Sustainable Development

Sustainable development is development that reaches or maintains a viable state [12]. Agro-tourism compared to other farm entrepreneurial ventures, is more successful in

delivering benefits within the three pillar of sustainability [13]. Furthermore, farms with agro-tourism tend to develop more sustainable techniques that have positive impacts on the biodiversity and the natural resources [14]. Agro-tourism encourages a variety or an assortment of crops and products to be produce in order to meet the demands of tourist for a wide range of products. Agri-tourism has an excellent growth potential in rural areas characterized by the high quality of landscape [15].

3.1.1 Socio-cultural Benefits of agro-tourism

Within the socio-cultural dimension, agro-tourism can strengthen farm institution, preserve rural heritage, minority customs and traditional architectural styles, increase community pride and farmers' social status, empower female farmers, and foster relationships across cultural groups [15], [6], [13], [16], [17].

3.1.2 Environmental Benefits of Agro-tourism

Environmental pillar of sustainability and corporate management agro-tourism preserves the environment through the cautious use of inputs, thus protection of natural habitats and ecosystems, conserve water, minimize environmental damage, improve the surrounding village scenery and built infrastructure thus creating touristic farm/food maps, which serves as a guide towards farm and community development [13], [17] - [19]. Briefly, this pillar tries to create an ecologically sound agricultural system, which integrates a wider ecological system and focuses on maintaining and enhancing the natural resource base and its biodiversity.

3.1.3 Economic Benefits of Agro-tourism

In economic terms, agro-tourism can create jobs, increase agricultural revenues and farm household incomes, also create new marketing opportunities local products as well as influence the establishment of a marketing center or a market place, stimulate value addition and processing of seasonal crops as well as making of food souvenirs that are not perishable and can be transported, it also stimulate the formation of cooperatives to overcome constraints which small producers face in accessing markets [13], [17], [18], [20], [21].

However, agro-tourism within these three pillars of sustainable development is not exempt of challenges and obstacles, especially in their start-up phase. Lack of professionalism and suitable training are two common human limitations to successful agro-tourism operations. Social responsibility is an ethical structure which suggests that an entity, be it an organization or an individual, must act for the benefit of society at large. Social responsibility is the duty of every individual or organization to function in a manner that preserves the balance between the economy and the ecosystems and big enterprises are increasing coming under regulatory regimes aimed at reassessing and improving their social obligation, since corporate social responsibility has its limitation on long term sustainability. Thus, the corporate accountability movement has developed regulatory obligations as opposed to responsibility [22].

3.2 Stakeholder Theory

For this study Mendelow's stakeholder mapping was chosen, which distinguishes between four main groups of stakeholders of the organization. The basis for the adoption of this model was to identify those persons or organizations who are stakeholders of Rose Hall Estate since they have the potential to influence the success or failure of Rose Hall Estate diversification strategy.

		Stakeholder Interest →	
		Low	High
Stakeholder	Low	Crowd:	Subjects:
Power/	Power	Residents	Employees
Influence	High	Context settlers:	Players:
	Power	Local Government	Central Government and Unions

Figure 1: Rose Hall Estate Stakeholder Matrix

4. Methodology

This study was conducted on Rose Hall Estate and in the East Canje district where Rose Hall estate is found during 2017/2018. This research utilized a mixed method approach (combining both qualitative and quantitative methods). This synchronized mixed methods design was used to collect data on the various stakeholders' perception to determine whether agro-tourism would be a viable venture for Rose Hall Estate.

4.1 Study Location

Rose Hall Estate (Figure 1) is located in the East Canje District in the county of Berbice (Figure 2); Region numbered six, which is referred to, as the East Berbice Courtyene Region. This estate is three miles away from the town of New Amsterdam and has been in existence long before independence. It has documented history just over one hundred years. The field operation of this estate covers 6688.5 hectares of land and water resources, with various soil types. This estate is located on the east bank of the Canje river and is has a breathtaking view at sunrise and sunset and it is a great place to get it touch with nature. This estate also has several facilities that can be utilize by guest and residence within the community for recreation, relaxation and education purposes.

The East Canje area on the other hand has several small villages and it is one of the most prosperous districts in the region. Approximately 20% of the working class citizens in this area are self-employed; while 60% are employed by Rose Hall estate of the remaining 20%, 12 % are employed by private company while the other 8% are unemployed.



Figure 2: Location of Guyana Sugar Corporation Estates
Source: Plantation Railways in Guyana, 2014, Part 1



Figure 3: East Canje Berbice District in Guyana

4.2 Sample Size

[23] says that purposive sampling is whereby a sample of participants is chosen for their experience and perspectives relating to the investigation. Ideally, one wants to get all relevant stakeholder involved; however, it is not possible or unfeasible to do so, and therefore one must settle for a sample [24]. However, because of the nature of the research the following formula (Equation 1) was used to calculate the sample size of 145 respondents for this study.

$$N = \left(\frac{Z}{2} \times \frac{\sigma}{E} \right)^2 \quad \text{Equation (1)}$$

Where N is the estimate sample size, Z score is calculated from the confidence interval, E is the error and σ is the standard deviation.

4.3 Data collection Technique

A nested model of both qualitative and quantitative survey instruments were used to collect data, so that the researcher can gain broader perspectives on the research topic from all stakeholders as opposed to using a predominant method [25]. The principal qualitative methods, uses interviews and participants observation (content analysis) while the nested way applied a survey instrument. However, the first method used to collect data was literature reviews, where concepts and definitions of agro-tourism were reviewed and the contributions of such ventures to sustainable development were analyzed. Secondly, Mendelow's stakeholder matrix

was used to identify the relevant stakeholders and group them into their specific category.

The first group high power/influence and high interest (HP/I-HI) category of stakeholders were interviewed for their perception on the diversification of Rose Hall Estate into an agro-tourism business. The second category of low power/influence and high interest (LP/I-HI), employees at all level, sometimes called the hostage group had two informal presentations and one formal group discussion with the researcher (one with senior management only and another with a cross-section of workers). The formal presentation and group discussion with a cross-section of workers; was facilitated by the Human Resource Manager and Rose Hall Estate's "Estate Manager." The third category of stakeholders that were identified was the high power/influence and low interest (HP/I-LI) group; which included members of the local government or bureaucrats (elites and academics); they were interviewed as well. The last group low power/influence and low interest (LP/I-LI) stakeholders were residents and business owners from the East Canje district, these stakeholders were given a similar questionnaire to those in the hostage group. The third and fourth survey instruments were developed and administered within the same time frame. Interviews conducted with HP/I-HI and HP/I-LI categories of stakeholders took 7-days of field research while the self-administered questionnaires, were randomly distributed to employees of Rose Hall Estate at all levels (senior staff, junior staff, and labors) and residents within the East Canje communities where RHE is located; and this was done over three weeks.

One hundred (100) employees from Rose Hall Estate (LP/I-HI stakeholders) and one hundred (100) residents from the East Canje communities (LP/I-LI stakeholders), were given questionnaires as their survey instrument which was distributed by the researcher based on random encounter. From the questionnaires distributed only 70 were completed satisfactorily by the LP/I-HI stakeholders and 75 were completed satisfactorily by LP/I-LI stakeholders. Seven (7) key informants, face to face interviews were conducted; three (3) HP/I-HI stakeholders and four (4) with HP/I-LI category of stakeholders.

4.4 Data Analysis

To predict the likely of agro-tourism adoption by Rose Hall Estate, the binary logistic regression model was used to analyze primary data in SPSS version 23 from the survey given to the LP/I-HI and LP/I-LI category of stakeholders. The binary logistic regression model was selected because the parameters estimates the likelihood of an event occurring and the parameters are estimated using the maximum likelihood. That is, the coefficients that make the observed results most likely are selected. For each possible value a parameter might have, SPSS computes the probability that the observed value would have occurred if it were the true value of the parameter. Thus to predict the likelihood of agro-tourism adoption from the stakeholders perspectives, Mendelow's stakeholder theory was used to identify the relevant stakeholder Ackermann & Eden, 2011, [3]. While content analysis was used to analyze the data collected from the

interviews given to the HP/I-HI and HP/I-LI category of stakeholders.

4.4.1 Model Specification

Binary Logistic Regression Model

To predict the likelihood of agro-tourism adoption by Rose Hall Estate the binary logistic regression model used. In this study, the binary outcome either adopted or not adopted. The equation (2) used in this study is of the form:

$$\text{Logit}(Y) = \ln(\text{odds}) = \ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \dots + \beta_k X_k + \varepsilon_i \quad (2)$$

Where,

- Y = Preferred outcome
- β_0 = logistic intercept
- β_k = coefficient, ($k = 0, 1 \dots n$)
- n = total number of independent variables
- X_k = k_{th} independent variable
- p = probability of interested outcome
- 1 - p = probability of interested outcome not occurring
- ε_i = error term

The variables applied in the binary logistic model were:

- Y = Agro-tourism adoption (1 = Yes, 0 = No)
- X_1 = Agriculture occupation [0 = No (reference category), 1 = Yes]
- X_2 = Achieved target [0 = No (reference category), 1 = Yes]
- X_3 = Extension education services [0 = No (reference category), 1 = Yes]
- X_4 = Leisure services [0 = No (reference category), 1 = Yes]
- X_5 = Government support [0 = Policy & coordination (reference category), 1 = Research & Promotion, 2 = Financial support]
- X_6 = Problems [0 = Marketing (reference category), 1 = Policy & political systems, 2 = Stakeholder coordination, 3 = Investment & finance]
- ε_i = Error term

5. Results and Discussion

RHE is one of the eight sugar estates owned and operated by the government of Guyana. This estate employed twenty four hundred employees 600 in the processing unit or the factory and 1800 in the cultivation. However because of the present economic crisis of this corporation RHE was identified for diversification. Rose Hall Estate is located in the East Canje area of East Berbice Courtyene Region and it is one of the most prosperous districts in the region. This area is referred to as an economic hub with several striving businesses, eg. Supermarkets, car dealership, restaurants, furniture stores, and agro-production businesses like poultry centers and vegetable seedling markets just to name a few. RHE recorded the highest absenteeism rate in the industry for the production year 2014/2015; while the factory recorded the highest sucrose content in final molasses, worse of all the plant canes produced only 65 tonnes cane per hectare when almost ten years ago plant canes were producing 90-100 tonnes canes per hectare. Canes are replanted every five years, thus starting with such poorly performing plant canes will significantly increase the cost of production over the next

five years. Poorly performing plant canes and high sucrose content in final molasses are clear indications that this estate operation will not be profitable; thus it was selected for diversification. However because this estate sits on the east bank on the Canje Creek with environmental sceneries that are breath taking at sunrise and sunset; it is an environment that would foster tourism. The historical contribution of RHE to GuySuCo and Guyana is remarkable but it is clear that this estate can no longer continue in sugar production and so in order to conserve the historical events which took place on this estate and in the Canje Creek area; which is the natural habitat to our national bird; locally called the Canje pheasant. Agro-tourism should be adopted since it would by afford us the opportunity to promote, protect and propagate our history and culture that has shaped us into becoming one people, one nation with one destiny.

5.1 Agro-tourism Likelihood of Adoption

A binary logistic regression using the enter method was performed to examine nine predictor variables (including dummy variables) likelihood of agro-tourism adoption by Rose Hall Estate (RHE). The binary logistic regression model was statistically significant and good-fit model, χ^2 (9, $n = 137$) = 98.791, $p < 0.001$ (Table 1). The model estimated 70.3% of the variance in the dependent binary variable (adoption of agro-tourism) explained by the predictor variables.

The Wald criterion shows that achieved target, extension education services, leisure services, financial support and problem significantly predict agro-tourism adoption by Rose Hall Estate (Table 9). While agriculture occupation and research/ promotion were not significant predictors of the likelihood of agro-tourism adoption by RHE.

Table 1: Binary Logistic Regression Predicting the Likelihood of Agro-tourism Adoption by RHE

Variable	β	SE	Wald	p-value	OR
Agriculture occupation	0.661	0.722	0.839	0.360	1.937
Achieved target	1.736	0.811	4.585	0.032*	5.676
Extension education services	4.378	0.748	34.284	0.001**	79.670
Leisure services	1.999	0.750	7.110	0.008**	7.381
†Government support			9.604	0.008	
Government support(1)	2.066	1.274	2.630	0.105	7.893
Government support(2)	3.041	0.991	9.419	0.002**	20.930
†Problems			8.809	0.032	
Problems(1)	-3.496	1.368	6.537	0.011*	0.030
Problems(2)	-3.573	1.250	8.173	0.004**	0.028
Problems(3)	-3.812	1.414	7.271	0.007**	0.022
Constant	-3.548	1.620	4.795	0.029	0.029
Pseudo R ²	70.3%				
Chi-Square value	98.791				
Df	9				
p-value	0.001**				

*, ** shows values significant at 5% & 1% levels of significance, respectively.

† Reference categories for the categorical predictor variables Government support (0 = Policy & coordination) and Problems (0 = Marketing).

The predictor variable achieved target significantly predicted

the likelihood of agro-tourism adoption by RHE, χ^2 (1, $n = 137$) = 4.585, $p = 0.032$. The odds ratio of 5.676 for achieved target variable indicates that Rose Hall Estate (RHE), when it achieves all targets, is 5.676 times more likely to adopt agro-tourism than when it does not achieve set targets, whilst controlling for other predictor variables in the model.

[26] Agricultural diversification is “the development of on-farm, non-food activities” which provides “new sources of income and employment” and it is “oriented at newly emerging markets.” Taking into account the urgent need for RHE to increase its revenue base, the adoption of agro-tourism was supported by the majority of stakeholders, even though the policymakers’ representative did not mention, which estate would adopt sugar tourism, it was mention as part of the diversification strategy for GuySuCo. [27] Warns, “agro-tourism has great potential for farmers seeking to generate additional revenue, capitalize on underused assets, and educate the public. However, there will not be an automatic leveling between the difference of rural and urban communities. According to [28] agro-tourism is not a “magic bullet” and not all agro-tourism ventures have succeeded. However, [29] argues that the timing has never been more ideal for the transitioning of this corporation, into a true agri-business, which will increase its economic base while demonstrating and giving the communities around its operating units, techniques and technical support for a well-defined agro-business corporation. Agro-tourism farms approach sustainability to a greater extent than their counterparts, producing multiple environmental, socio-cultural and economic benefits for their farms, households and even society when compared with other type of farm entrepreneurial ventures. Thus, they are more successful in increasing farm profits, creating jobs and conserving the natural and cultural heritage [13]. Barbieri’s finding was supported by [30] who said that in Italy, agro-tourism has taken a substantial economic and social relevance with an increasing dispersion in all the Italian regions, and it is perhaps the most radical creation that was implemented in the national agriculture.

5.2 Agro-tourism ventures Adoptable by Rose Hall Estate

The predictor variable extension education services significantly predicted the likelihood of agro-tourism adoption by RHE, χ^2 (1, $n = 137$) = 34.284, $p < 0.001$. The odds ratio of 79.670 for extension education services variable indicates that Rose Hall Estate (RHE), if offers extension education services to clients, would be 79.67 times more likely to adopt agro-tourism than when it does not offer extension education services to clients, whilst controlling for other predictor variables in the model.

The predictor variable leisure services significantly predicted the likelihood of agro-tourism adoption by RHE, χ^2 (1, $n = 137$) = 7.11, $p = 0.008$. The odds ratio of 7.381 for leisure services variable indicates that Rose Hall Estate (RHE), when it offers leisure services to clients, is 7.381 times more likely to adopt agro-tourism than when it does not offer leisure services to clients, whilst controlling for other predictor variables in the model.

The survey results show that education extension agro-tourism (EEAT) and, leisure and recreational agro-tourism (LRAT) can be adapted since they both positively and significantly predicted the likelihood of agro-tourism adoption by RHE at 5% level of significance. The benefits of adapting EEAT service was discussed by the majority of stakeholders from the HP/I-HI category, one but stakeholder from the HP/I-LI category discussed the benefit of RHE adapting an LRAT service. Since in their view, if a recreational facility or center is established it will reduce street liming and garbage heaps which remains on the streets of New Amsterdam during the weekends. [15] Made mention of the geological spread of agro-tourism in Italy, suggesting that it is has become an important component of the tourism framework and it has adapted its' supply to meet tourist demands. Haiwan Farm located in Nanchang, east of Jiangxi province, was an aqua-farm that was closed to bankruptcy but has been revitalized one decade later thanks to its successful transition into an agro-tourism base for urban residents. This farm has become a favorite weekend destination for many city dwellers from Jiangxi province. This farm is located just an hour away from downtown Nanchang, it is a garden cultivated with vegetables and fruits as well as a large fishery. Visitors have the opportunity to purchase these fresh fruits, vegetables and fishes or they can sample these delicacies in the restaurant as prepared by their expert chef. Hu Haishui, who took over the farm in 2002, said the farm received about 20,000 visitors in 2012 and generated 47.5 million Yuan. Thus, both EEAT and LRAT should be in co-operated into RHE agro-tourism venture to serve the interest of majority stakeholders. [32]. Advised that when scrutinizing for sustainability of tourism project, it is important to consider all aspect of sustainability, and not to assume that economic development automatically promotes sustainability.

5.3 Enablers for the Adoption of Agro-Tourism by RHE

The predictor variable government financial support is statistically significantly different from the government policy and coordination support, $\chi^2 (1, n = 137) = 9.419, p = 0.002$. The government financial support has an odds ratio of 20.930. A comparison with the reference category (government policy and coordination support) shows that if the government financially support the RHE, it is 20.93 times more likely to adopt agro-tourism than government policy and coordination support, holding constant other predictor variables.

The overall finding of the government support variable is consistent with [17], [31] who found that government support through financial assistance (loans, grants), policies (tax deduction) and infrastructure development would be vital to the development and sustainability of agro-tourism in Andean Altiplano as well as in promotion and marketing. [18]in her research stated, "the fact that there was no professional food processing infrastructure in the Kazbegi district made it difficult for local small-scale farmers to meet food safety standards, which was one of the main requirements for local hotels and guesthouses to buy agriculture food items from local farmers". Thus, suggested that as a starting point for the increasing linkage between

agriculture and tourism 'products with low food safety requirements be marketed to the tourism sector, for example, herbal teas and honey'. This suggestion can be adopted by RHE agro-tourism venture, since some of the abandoned canfields are located far away from residential communities, and are suitable locations for artificial beehives to be set up. As observed in China herbal teas can be packet with little processing as well as ginger and citrus eg; dried limes and lemons. Fresh cane juice can also be sold without much-suffocated processing. However, because Rose Hall Estate was earmarked for other agro-base production setting up an aquaponics operation like Nanchang farm is an operation to consider; since the commissioning of Guyana's off shore oil sector in 2020 will greatly reduce Guyana's marine fishing areas.

However because few studies have focused on agro-tourism development within the Caribbean [33], it is important for us to analyze the success and failures of those who endeavor to implement agro-tourism ahead of us [31]. When developing policies to support the implementation of agro-tourism at RHE. The Italian national legislation regulates its agro-tourism, differently from other forms of rural tourism. In this way, agro-tourism can only be performed by the farmer and his family and his family members. Moreover, agro-tourism activities must be connected to agriculture, which remains the fundamental enterprise of the farm. [34] The predominance of this activity is fixed with regards to working hours and not just income. This is so because the rationale of the Italian legislation is fourfold, in the pursuit of ambitious goals as it related to economic, Socio-cultural, environmental and occupational issues. [15]. However, since the Government of Guyana is interested in accomplishing similar goals in keeping with the green state development strategy of Guyana; we advocate for policies to support the adoption of agro-tourism by RHE to be drafted using the Italian legislation for agro-tourism as a guide.

5.4 Perceived constraints to adaptation of agro-tourism by Rose Hall Estate

For this research four areas were identified as potential hindrances to the adoption of agro-tourism by RHE; 1) policies and political system, 2) stakeholder coordination 3) financial support and investment and 4) marketing. This list is in no way exhausted, however when these variables were entered in the binary logistic regression, the results indicated negative regression coefficients; which means that the presence of those constraints will hinder the adoption of agro-tourism or the less likely it would be for Rose Hall Estate to adopt agro-tourism.

The predictor variable policy and political system problem is statistically significantly different from the marketing problem, $\chi^2 (1, n = 137) = 6.537, p = 0.011$. The policy and political system problem has an odds ratio of 0.030. A comparison with the reference category (marketing problem) shows that if RHE is affected by policy and political system problem it is 0.030 times less likely to adopt agro-tourism than when it is affected by marketing problems, holding constant other predictor variables.

The predictor variable stakeholder coordination problem is statistically significantly different from the marketing problem, $\chi^2(1, n = 137) = 8.173, p = 0.004$. The stakeholder coordination problem has an odds ratio of 0.028. A comparison with the reference category (marketing problem) shows that if RHE is affected by stakeholder coordination problem it is 0.028 times less likely to adopt agro-tourism than when it is affected by marketing problems, holding constant other predictor variables.

The predictor variable investment and finance problem is statistically significantly different from the marketing problem, $\chi^2(1, n = 137) = 7.271, p = 0.007$. The investment and finance problem has an odds ratio of 0.022. A comparison with the reference category (marketing problem) shows that if RHE is affected by investment and finance problem it is 0.022 times less likely to adopt agro-tourism than when it is affected by marketing problems, holding constant other predictor variables.

These results are consistent with [4], [17], [31], who found; funding for marketing vital to the success of agro-tourism development. On the other hand, agro-tourism has both supply and demand factors that have to be taken into consideration when determining what ventures are best suited for a country. While tourist may demand certain activities, there has to be interest indicated by farmers to supply those activities [33]). Thus, for agro-tourism to be successfully adapted by RHE the supporting policies must take into account the law of demand and supply; and develop this venture to meet the needs of all stakeholders. Efforts must also be made to resolved or control challenges or obstacles; that can hinder the adoption of agro-tourism, keeping in mind that what so ever product you produce or create must be demanded or be marketable for this business to be sustainable.

However lack of awareness, expertise and appropriate skills has always proven to be major constraints to the development of agro-tourism [17]. All interviewees from both category of stakeholders interviewed identified the lack of awareness of agro-tourism ventures as a hindrance to the development of agro-tourism.

However because Agro-tourism establishment in developing countries is often a government project; [31] warns that it is imperative that the authenticity of the agriculture livelihood experience or its' diversity is not compromised. Compromising this business venture quality was also the concern of one of the stakeholders from the HP/I-HI group who advocated; for the adoption of agro-tourism by RHE to be developed by private individuals; since the political persuasion of the majority of workers and resident within the East Canje district, differs from that of the government. Majority of interviewees mention politicizing of the closure of RHE, would lead to poor stakeholder coordination which would hindering, the adoption of agro-tourism. But on the 20th of January 2018 the government met with the union and they have agreed that the economic status of GuySuCo is a national matter, not a partisan one, since everyone will lose if this industry has to be foreclosed. Thus, the HP/I-HI stakeholder has agreed to work together on a diversification

plan that would make this industry sustainably viable [13]. Agro-tourism farms approach sustainability to a greater extent than their counterparts. However if finance and investment problems persist as is the case with most agro-tourism business it would be 97.8% less likely for agro-tourism to be developed by RHE; [17], [31], [32] reported limited access to financial resources; as a major hindrance, to the development of agro-tourism.

5.5 Stakeholders' (interviewees) Opinions on Enablers and Obstacles to Adoption of Agro-tourism

The overall premise that emerged from this category of stakeholders was they all thought that agro-tourism would be a viable diversification program for Rose Hall Sugar Estate, once the propose closure can be viewed from an economic stand rather than a political stand.

All respondents were well versed and knowledgeable about agro-tourism. Both elites and academics were able to make the connection as to how this type of tourism would be beneficial in revitalizing Rose Hall Estate, increasing streams of revenue and creating new nontraditional job opportunities. However, the lack of awareness, government policies and the politicizing of the proposed closure were major obstacles that needed to be addressed for the adaption of agro-tourism by Rose Hall Estate to be a viable venture. Examples of these sentiments were taken from the (pseudo-named and numbered attached to the transcript for respondents):

Elite1: People may view the proposed closure as politically motivated rather than from a business stand point and that may make it difficult to get some people support especially those from the opposition party. Added to that Guyana is not a tourism base country, so we do not have policies to support such businesses in place; so in my opinion, during the initial stages there would be some challenges, in planning and attracting international tourist, but through promotion and satisfied customers, this venture will grow especially for Guyanese who live overseas; they will appreciate such a business ventures; on their return home for vacation since it will promote the rich history of our country; which they can experience with their children, grandchildren other relatives and friends who may not be Guyanese.

Elites 2: They are no policies to support this kind of business, because once they are policies and an agro-tourism facility is establish for such social gathering, systems can be put in place to prevent street liming. This behavior of residents gathering at sections of the main access road to socialize, during the weekend causes garbage and broken bottles to pill up on the roadsides over the weekends, and it adversely affects the garbage collection routine. So having an agro-tourism recreational center for such activities would bring great relief to this township.

The academics on the other hand felt that the lack of supporting policy and awareness of agro-tourism were not major obstacles to the adaption of agro-tourism by RHE. But funding and finding financiers to advance such a caused

would be the greatest obstacle to the adaption of agro-tourism

Lecturer 2: The absence of policies to support agro-tourism and the lack of awareness can prevent the development agro-tourism. But the most critical factor to any business idea is having the money to do what you say you will do. People will participate especially if the government and the opposition manage to leave their political race base arguments and focus on the interest of the people.

However, the absence of policies did not prevent this category of stakeholders from saying that training for diversification should have commenced already, since this type of business will create new categories of employment. Which will be an opportunity for workers to develop themselves and learn new skills in order to provide for their families, which is seen as the major enabler for the adoption of agro-tourism discussed by all stakeholders within this category; however other enabling factors for the adoption of agro-tourism mentioned by this category of stakeholders are as followed

Lecturer 2: It would provide an opportunity for collaborative research work between GuySuCo and the University; as well as an opportunity for our young children to be taught the importance of the sugar industry to our country's economic development and the significant role the sugar industry has played in our history. It will provide the opportunity for us to promote our culture, socialized and interact in a relaxed environment.

The fact that RHE has adequate physical infrastructure such as a recreation center, kids play ground, gym, tennis court, guest house, club and a processing plant or factory all of which can be used for education and recreational activities, makes it suitable for hosting and educating guest or tourist once these events can be coordinated properly.

In the area of funding there seemed to be some disagreement. All respondents thought that the government should play a role in the policy development, infrastructural development and assistance with technical services, yet the government fully funding this project received mixed reviews. All stakeholders advocated for collaboration between government ministries for the development of agro-tourism, but one said funding should be done indirectly through subsidies, loans and grants, while another thought it should be direct, funding and yet another suggest that this venture should be funded by private investors. While the last stakeholder from this category said both direct and indirect funding should be done by the government especially in the initial stages and by private investors in separate aspects of this diversification venture for it to be sustainably viable.

Table 2. High Power/Influence-Low Interest Stakeholders' Opinions (HP/I-LI)

Group Interviewed	Enablers to the adaption agro-tourism	Obstacles to the adaption of agro-tourism
Elite 1	Diversification of GuySuCo economic base (revenue) and job creation (income) Education - opportunity to Educate and share information Government Support Promotion and Marketing Infrastructure Renovation Funding and Investment Developing Policies	Education-Lack of knowledge and awareness of agro-tourism Investment and funding Policies-Lack of policy to support agro-tourism Politics
Elite 2	Diversification of GuySuCo economic base (revenue) and job creation (income) Education-Opportunity to Educate Provide Recreational Facility Physical Infrastructure Government Support- Grants and Loans, Tax reduction and Subsidize pricing for agro-producers	Education-Lack of knowledge and awareness of agro-tourism Policies-Lack of policy to support agro-tourism Politics Lack Investment and funding
Academic 1	Diversification of GuySuCo economic base (revenue) and job creation (income) Education - Research opportunities, extension and farmers training, agriculture practical for students Government support- Policies, Subsidies, and Access to loans and grants Community improvement-Infrastructure rehabilitative work	Education- Lack of knowledge and awareness of agro-tourism Policies- Lack of policy to support agro-tourism Politics Lack of Funds
Academic 2	Diversification of GuySuCo economic base (revenue) and job creation (income) Education- Opportunity to Educate public on the importance of agriculture Government support-Policies that support agro-tourism and Financial investment.	Lack of policy to support agro-tourism Education- Lack of knowledge and awareness of agro-tourism, Politics Poor collaboration among all stakeholder

All Stakeholders interviewed in this category knew what agro-tourism was but they all did not agree with the academics and elites that agro-tourism would be a viable diversification strategy for Rose Hall Estate. In fact one of the interviewee totally disagreed with the idea of diversification while the other two agreed that there is an urgent need for diversification, one stakeholder pointed out that RHE is not the only estate that needs to diversify but the sugar industry as a whole.

Policy maker 1: said yes! "We believe that agro-tourism is a viable diversification program, but for GuySuCo as a whole, since this corporation current economic status is not sustainable and thus we have embarked on a restricting program called "New GuySuCo" and Sugar Tourism." Sugar tourism is a tool we intend to use to educate people on sugar production and the history sugar has played in the evolution of our country while transforming GuySuCo into a business

model.” So that this industry can return to its former glory and become profitable again.

Even though both union representatives had some idea, of the agro-tourism concept both representatives had an issues with the idea of agro-tourism as a diversification strategy, since they felt like Guyana is not even classified as a tourism based country within the Caribbean and added to that fact we have many unexplored and undeveloped natural ecotourism sites within our rain forest for which we have yet to attract international tourist.

One union representative did not make the connection, that agro-tourism could be the vehicle that rejuvenates the sugar industry while developing the tourism industry. The lack of policy and its’ development was introduced as a challenge to the development of agro-tourism by both union representatives; while the lack of policy was only discussed briefly by the policy holder representative.

However, while one of the union representatives taught agro-tourism program could be beneficial, the other felt that there was no need to explore that issue because if “sugarcane” a crop we have produced for hundreds of years cannot survive at RHE no other business venture will ever survive.

The same union representative that discussed the benefits of agro-tourism as an enabler for its adoption, said it is a way of bring much needed finance into this company and it will promote sales and create jobs. This representative even went on to say having visitors would help to improve and maintain the surrounding communities and workers will be given an opportunity to explain to people what it is they do and why it is important, boasting their self-confidence and performance on the job. The other union representative sentiments were “sugar should be privatized as was recommended by the commission of inquiry, not closed or diversified!”

However, there were inconsistencies in what both union representatives thought were on obstacles to the development of agro-tourism. While one union representative thought that policies and proper coordination among stakeholders would be the main challenges and was hesitant to even call them obstacles to the development of the program, the other union representative comments stood in stark contrast. This union representative response was, “Guyana is not a tourism base country so i don’t think it would be a viable diversification strategy for RHE or any other estate.

In summarizing the finding of this category of stakeholders on whether agro-tourism can be a viable diversification strategy for Rose Hall Estate the Union representative that said it would not be; was the same Union representative which said that if the government was going to diversify Rose Hall Estate into an agro-tourism business then the government should develop policies to support the implantation of agro-tourism and the local media will have to be used to educate people about this diversification strategy. In addition the Government should play a major role in training, funding and coordination of all activities as well as the designing and developing the physical infrastructure. Tax deduction and duty free concession should also be given as

incentives to those persons willing to invest in this venture. While the other union representative who said that agro-tourism would be a viable diversification strategy for Rose Hall Estate felt it might be better for private investors to set up such a business venture at Rose Hall Estate rather than the Government. Because the political persuasion of most residents within the Rose Hall Estate area; aligns with the union which is affiliated with the present opposition party, not the government. The policy maker representative on the other hand has embraced agro-tourism as a viable diversification strategy not just for RHE but GuySuCo as a whole.

Table 3: High Power/Influence-High Interest Stakeholders’ Opinions (HP/I-HI)

Group Interviewed	Enablers to the adaption agro-tourism	Obstacles to the adaption of agro-tourism
Policy Maker Representative 1	Diversification of GuySuCo economic base (revenue) and job creation (income) Education – an opportunity to educate citizen and train and retrain worker under Livelihood training. Government support-funding directly and indirectly, Market mapping (locally, regionally and internationally), Contractual price, Leasing of lands and collaboration with local, regional and international investors	Lack of Policies to support agro-tourism. Poor collaboration among relevant stake Holders. Politics Lack of knowledge and awareness of agro-tourism, absence of supporting research and expertise on how to develop such business. Education- Lack of awareness of agro-tourism physical infrastructure will need rehabilitation work
Union Representative 1	Government Support –funding, both directly and indirectly Train workers Promote and market agro-tourism	Education- Lack awareness of agro-tourism and the worker is not an educated person difficulty in learning new skills. Lack of policy to support agro-tourism Politics <u>Lack of Investment and funding</u>
Union Representative 2	Diversification of GuySuCo economic base (revenue) and job creation (income) Education Collaboration Government ministries Adequate infrastructure Government Support – Policies that supports agro-tourism. Promotion	Education -Lack of knowledge and awareness of agro-tourism Policies- Lack of policy to support agro-tourism Politics Lack of Investment and funding

6. Limitations

The researcher had only six weeks to conduct the field work, for this study with limited funds, thus only stakeholders that are considered main actors of RHE were asked to participate in this study.

Stakeholders, within the tourism sector were not consideration, thus the information gathered does not reflected their perception, but a general view of the residents within the East Canje community

7. Conclusion and Recommendation

This research concludes that agro-tourism would be a sustainably viable diversification option for Rose Hall Estate.

Since this venture augment reserves, and create new employment opportunities for farmers, while providing much needed agriculture extension services for agro-producers and students in the field of agriculture. On the other hand it will also provide a recreational facility for locals and tourist visiting the community.

This will encourage policies to be established to reduce liming on the streets of New Amsterdam by residents. Ultimately improving the garbage collection cycle and enhancing the environment.

In view of the findings we recommend that a mixture of both EEAT and LRAT be developed in other to meet the needs of all stakeholders. However because few studies have focused on agro-tourism development within the Caribbean [33], it is important for us to analyze the success and failures of those who endeavor to implement agro-tourism ahead of us [31].

7.1 Recommendations For Further Study

Study should be done to determine the type or categories of agro-production residents within the East Canje, Berbice area are involved in, their level of production, challenges faced in producing these products and their need, for training and technical support through the establishment of an extension, education service center.

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