Feng-En Lo
Asia University, Taichung 41354, Taiwan

Li-Shiue Gau
Corresponding author, Asia University, Taichung 41354, Taiwan

Yu-Yin Hsu
Asia University, Taichung 41354, Taiwan

Rick Gage
Marshall University, WV 25755, U.S.A.

Chien-Yun Hung
Asia University, Taichung 41354, Taiwan

An Impact Model for Experiential Activities of Farming and Food Education in Agricultural Sustainable Tourism

This paper examines the development, implementation, and implications of farming and food experiential activities and the effects of these activities on agricultural sustainable tourism. A model is proposed that examines the major correlates and possible impacts related to these variables. A heuristic inquiry research design was adopted, employing a major multiple case study approach. In addition to secondary data, primary data were collected through 18 interviews with farmers, customers, government employees, community leaders, and scholars, and quantitative surveys with 132 tourists and visitors involved in the activities on site.

The focal cases of the Small Bee Project, Pitaya Tour, and three other examples of farming and food education programs are introduced. Results show that farming and food educational experiences provide participants with more awareness of ecological sustainability, food safety, and a sense of sociability, and an appreciation of the linkages between farming and safe food. Farming and food education are still developing and need more promotion, training, and support. More cooperation is desired among both the private and public sectors, as well as the local community. The local farmers could benefit from training to increase knowledge about the latest scientific advances and technology tools, adopt practices that are less harmful to the environment, reduce food contamination, build professional tours for farming and food education, and increase profits.

This study concludes that a comprehensive farming and food education program includes farming experiences, nutrition, food safety, and environmental education about respecting sustainable development. The major correlates of farming and food educational experiences include positive attitudes towards green tourism and potential demands for authentic experiences and educational experiences in food safety. These correlates contribute to the perceived value of experiential activities in farming and food education. Further, possible impacts of these experiential education activities on participants in this type of agricultural sustainable tourism include more awareness of ecological sustainability and food safety.

Keywords: Experience economy, Community-based tourism, Anthropocene education, Environmental ethics, Authentic tourism, Green tourism

Dr. Feng-En Lo
Associate Professor
Department of Leisure and Recreation Management
Asia University, Taichung 41354, Taiwan
Email: felo@asia.edu.tw
Consultant
Department of Medical Research, China Medical University Hospital
China Medical University, Taichung 40402, Taiwan

Dr. Li-Shiue Gau
Corresponding author
Professor
Department of Leisure and Recreation Management
Asia University, Taichung 41354, Taiwan
Research Consultant, China Medical University Hospital
China Medical University, Taichung 40402, Taiwan.
Phone: +886 4 2332 3456
Email: lsgau@asia.edu.tw

Dr. Yu-Yin Hsu
Assistant Professor
Department of Business Administration
Asia University, Taichung 41354, Taiwan
Email: gm0955331491@gmail.com

Dr. Rick Gage
Assistant Professor
Department of Natural Resources and the Environment
Marshall University, WV 25755, U.S.A.
Email: gager@marshall.edu

Ms. Chien-Yun Hung
Asia University, Taichung 41354, Taiwan
Beemax company, New Taipei City, Taiwan
Email: abby7432@gmail.com

Feng-En Lo is an Associate Professor at Asia University, Taiwan. She has a PhD from Michigan University, Ann Arbor, USA in public health. Her research interests are health promotion, tourism management, environment management, ecotourism, and community development.

Li-Shiue Gau is a Professor at Asia University, Taiwan. He completed his PhD from Florida State University in sport management. His research interests are societal and life values associated with spectator sports, sports consumer behaviour, and leisure studies.

Yu-Yin Hsu is an adjunct Assistant Professor at Asia University, Taiwan. She got her Ph.D. from Asia University in business administration. She is a senior English tour guide and a tour-guiding teacher with expertise in tour guide practices.

Rick Gage is an Assistant Professor of Natural Resources and the Environment at Marshall University in Huntington, WV, USA. Rick earned a dual-title Ph.D. from Penn State University in Recreation, Parks, and Tourism Management and Human Dimensions of Natural Resources and the Environment. His research focuses on human-environment interactions, social sustainability, and sustainable tourism and recreation development.

Chien-Yun Hung earned her master degree from Asia University in leisure and recreation management. She is an entrepreneur and one of founders of Beemax company.

Introduction

In recent years, many scandals about unsafe food have occurred in Taiwan and other countries. Examples of food safety issues include the plasticizer-contaminated food incident (Li & Ko, 2012; Lu, 2011), the gutter oil scandal (The International New York Times, 18 September 2014), and the toxic eggs scare (Boffey, 3 August 2017). Incidents like this make farming and food education more urgent and important. Farming and food education can teach tourists and visitors involved in the activities on-site to understand and appreciate the origins of their food, establish healthy eating habits, and be aware of the importance of examining whether food is safe or not.

Along with more conventional tourism attractions, many farm tourism ventures develop DIY (Do It Yourself) activities for visitors, including farm fieldwork and safe meal preparation from fresh food produced on-site. These types of DIY activities provide educational experiences to help consumers gain knowledge about farming and food. For example, Cornwall Food & Farming Group and Royal Cornwall Agricultural Association organized a farming and food

education event for third and fourth-year pupils in Cornwall to learn, hands-on, about where their food comes from and understand the links between farming and food production (Royal Cornwall Show, 29 November 2017).

This paper examines the development, implementation, and implications of farming and food experiential activities and introduces a model that examines the major correlates and possible impacts of experiential education activities on participants in agricultural sustainable tourism. A background on rural, agricultural, and community-based tourism is introduced, followed by concepts about authentic experiences, Anthropocene education, environmental ethics, and food safety. Finally, a stakeholder theory framework is introduced.

The focus of this study is to explore farming and food education as a type of agricultural sustainable tourism in conjunction with other rural and agricultural community-based tourism and agricultural experiential activities (Figure 1). Stakeholders such as experts in food safety, nutrition, environmental protection, and experiential agriculture activities are thought to contribute to the success of this type of agricultural sustainable tourism.

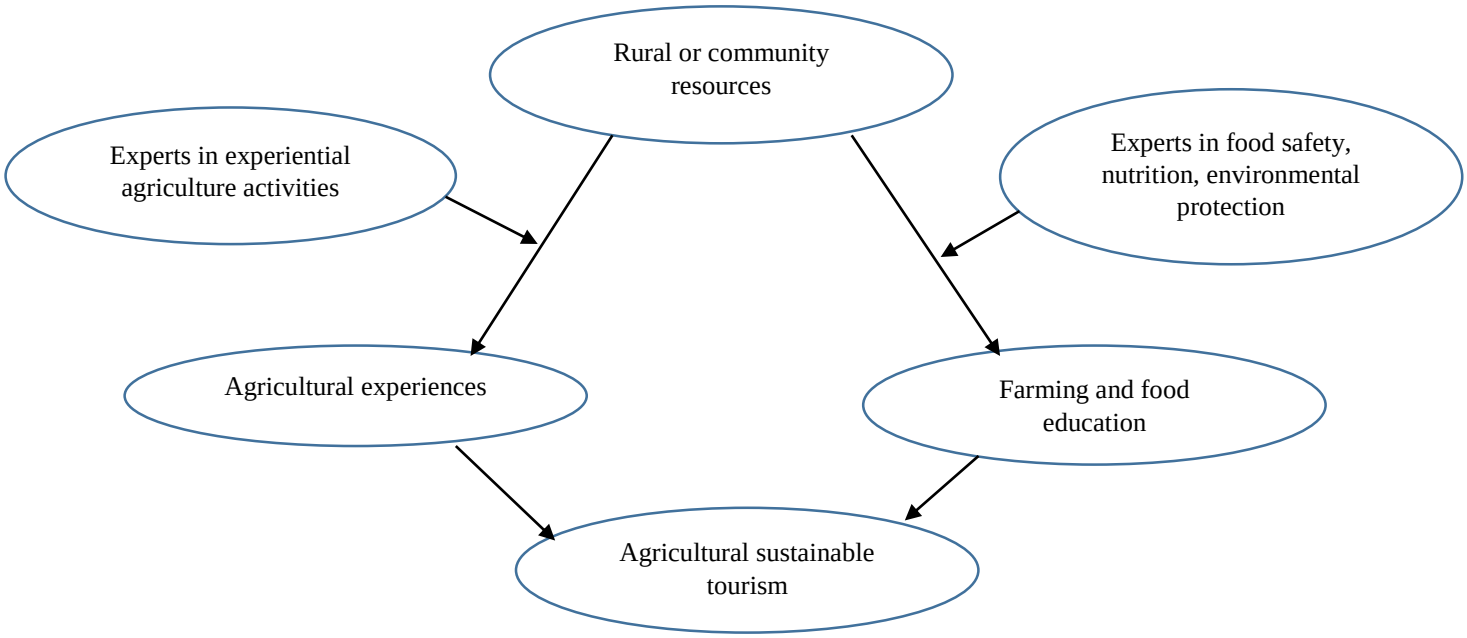

Figure 1: Experiential Activities of Farming and Food Education as a Type of Agricultural Sustainable Tourism

Literature Review

When sustainable tourism is applied to experiential activities of farming and food education in agricultural areas, the emphasis is to be responsible for respecting and preserving economic, environmental, and socio-cultural balances (Kisi, 2019). Educational programs or activities in a farm tour with a consideration of sustainability would take account of economic, social, and environmental impacts, addressing visitors' needs, the industry, the environment, and host communities (UNEP/WTO, 2005). While tourists, farmers, and destination marketers are important stakeholders, community residents are also important stakeholders when the farm tour is associated with community-based tourism in rural areas (Boley, McGehee, & Hammett, 2017). Involving residents in the tourism planning process is crucial for successful sustainable tourism development (Yu, Chancellor, & Cole, 2011) because the daily lives of community residents are likely impacted by the tourism industry (Boley, McGehee, & Hammett, 2017). On the one hand,

farmers, program educators, agricultural practitioners, or community host organizations want to bring authentic and unforgettable experiences to tourists so that their businesses may be successful. On the other hand, they are expected to address environmental concerns by promoting green tourism and sustainability principles during the experience. The intent is for customers to gain exposure to these initiatives and develop pro-environmental attitudes and behaviors in their own lives, leading to the formation of a virtuous cycle. The following sections review literature about the relevant concepts.

Community-based tourism and authentic experiences. Tourism conducted by the local community in a rural area is known as Community-based tourism (CBT). According to Goodwin and Santilli (2009), CBT can be defined as tourism owned and managed by a community and intended to deliver wider community benefits. In other words, CBT encourages the local community's participation, and handing over the control to the community will result in more benefits to its livelihood (Anuar & Sood, 2017; Mitchell & Reid, 2001). CBT enables tourists to discover local habitats and authentic rural lives and celebrates and respects traditional cultures, rituals, and wisdom (Responsible Travel, 2018). On the other hand, the community residents would be aware of the commercial and macro-social values placed on their natural and cultural heritage through tourism, thus fostering efforts to conduct community-based conservation of these resources (Responsible Travel, 2018).

CBT is just one of a number of terms used to describe holidays that benefit both the traveler and the destination. Hard and fast definitions may not exist, but the words "green," "responsible," "fair trade," "positive," or "ethical" tourism all refer to these types of experiences. Key components of this form of tourism are treading lightly on people's homes and cultures, facilitating positive interactions between guests and hosts, and developing awareness among tourists of the impact of

tourism on the well-being of the host communities (Tourism Concern, 2018). When CBT is developed in rural and farming areas, activities focused on Do-It-Yourself farming, food safety, and agricultural sustainable tourism are often designed to attract participants who have a demand for authentic and educational experiences.

Many tourists are interested in finding items and phenomena during their tour that are considered to be authentic. For the tourist who seeks to enjoy novel and real experiences, this authenticity can originate with the destination itself (i.e., a farm), where the tourist finds himself in a different place from his home environment. However, the perceived authenticity can also be evoked by original items within the destination, such as locally-grown food from the farming field (Tourism Theories, 2018). A tourist's expectations and past experience help to inform his evaluation of authenticity. If, from the tourist's perspective, authentic farming should not involve chemical additives, preservatives, or synthetic packaging materials, then the tourist may seek a tour in which these expectations about farming and food are satisfied through the experience.

The experiential activities of farming and food education can be combined into CBT, contributing to enhanced economic benefits or income for community residents (Russell, 2000) and provide educational forums for community school children. In addition to providing DIY activities for school children, many providers may have strategic alliances with other business operators and non-profit organizations to offer lodging accommodations on-site and other agritourism amenities, further enhancing their ability to develop economically while providing meaningful educational experiences for guests. When a group of residents provides these first-hand farm education opportunities through a co-op or community collective, cost burdens and economic benefits can be shared throughout the community, ultimately creating more capacity overall for these initiatives (Dernoi, 1991).

Anthropocene education and environmental ethics. The "Anthropocene" is used to denote the present time interval, in which human activities profoundly alter many geologically significant conditions and processes. These include changes in agriculture, urbanization, and climate change. The chemical composition of the atmosphere, oceans, and soils, with significant anthropogenic perturbations of the cycles of elements such as carbon, nitrogen, phosphorus, and various metals, are influences of climate changes, ocean acidification, and spreading oceanic "dead zones" (Anthropocene, 2018), which would impact food provision and food safety.

From the perspective of Anthropocene education and environmental ethics, farming and food education can also play a role. Recent research has indicated concern that there is a declining interest in farming around the globe, particularly among children (White, 2012; Sylvester, Bianco, Greenwood, & Mkanthama, 2017). This further exacerbates the problems regarding a disconnect between food production and consumption, particularly among youth, potentially leading to food safety issues. However, agricultural education that happens in experiential learning environments (i.e., on working farms rather than a classroom) helps to promote agriculture, develop an interest in food production, and encourage the development of environmental ethics (Jaffe & Gertler, 2006).

Capitalism, consumerism, and other markers of the Anthropocene have led to a perceived binary perspective whereby humans are set apart from the natural world (Brennan, 2017). This perspective has contributed to the decline in small-scale agriculture, reduced interest in farming among youth, and diminishing knowledge regarding food production and other links between humans and nature. By providing exposure through farm and food education and tourism, these links can be reestablished, potentially leading to increased knowledge, appreciation, and support for conservation initiatives.

In a diverse ecological context, by engaging with the environment, experiential education will be more effective and contribute to conservation values and further inform sustainability practices (Kassam & Avery, 2013). Connectivity to the environment is central to the development of conservation values. Therefore, this research examines the role of bees in agriculture as a major case study and reveals how flat belly small bees can be used as a natural enemy to control lychee giant stink bugs. This case teaches a more benign ecological circle, as compared to using pesticides to kill the pests. By understanding the role bees play in agricultural production (as pollinators, biological controls, and direct producers of honey and other products) and in the environment, students are better positioned to acknowledge the harms of chemical pesticides and contemplate other more sustainable solutions to problems in the long-term.

Possible stakeholders. Lee and Hsieh (2016) developed 141 indicators for sustainable wetland tourism from the perspectives of relevant stakeholders, including visitors, residents, for-profit organizations, government entities, non-profit organizations, and environmental scholars. As mentioned above, residents seem to be among the most important stakeholders in CBT development because they interact with tourists directly and provide unforgettable and authentic experiences for them. Thus, residents with positive perceptions and attitudes would become a major issue and asset in this type of tourism planning and management (Lee & Hsieh, 2016).

The local community has been divided into four factors: Economic, socio-culture, environmental, and destination image (Anuar & Sood, 2017). From the economic perspective, while combined with CBT to assure a positive approach and possible benefits for the local community, experiential activities of farming and food education in agricultural sustainable tourism have to ensure that the tourists' needs are satisfied, and at the same time, can contribute to

"word-of-mouth" promotion among tourists. This would attract profit agents such as travel companies and organizational welfare committees to arrange tours for these experiential activities.

From the socio-culture and environmental perspectives, CBT with experiential activities of farming and food education is likely conceived in terms of why and how it takes place and its possible objectives and outcomes, particularly including as a form of sustainable development (Okazaki, 2008). Therefore, governmental consulting or support and expert opinions from relevant higher educational sectors might be helpful. Students would be interested in and become important potential customers for these experiential activities in CBT on the demand side.

Finally, as a destination image, CBT might seek to achieve sustainable development through community citizen control (Esteban, 2011). Thus, when designing activities of farming and food education in CBT, smooth cooperation with local community associations and non-governmental organizations is crucial. Further, visits from other communities become a possible market. In short, possible relationships among stakeholders explained above are demonstrated in Figure 2.

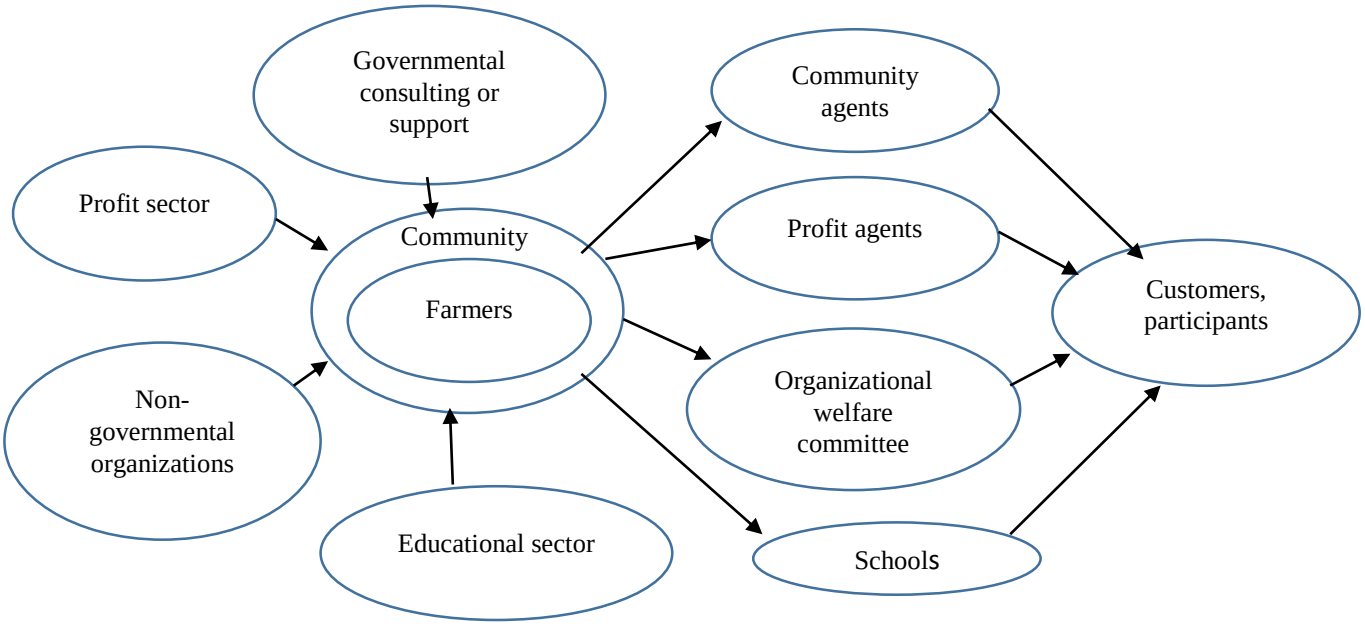

Figure 2: Relationships among Stakeholders

Experience economy. Pine and Gilmore (1998, 1999, 2011) proposed a 4-E model referring to four main experience dimensions: Educational, Entertainment, Esthetic, and Escapist experiences. Among the four types of experiences, the educational experience in leisure farms implies active participation in their DIY activities and relevant information absorption during the process, particularly for pupils participating in outdoor education trips. When included in a field trip to a farm, educational programming and DIY activities can teach children about farming and food production (Armstrong, 23 October 2017). Participants can learn where their food comes from and be aware of food safety and sustainable ecological issues.

Methodology

Heuristic inquiry research design. In order to examine how community-based tourism contributes to agriculture and sustainability through farming and food experiential activities, a heuristic inquiry research design was adopted. Data collection, analysis, and interpretation relied

on the researchers' observations and personal experiences to acquire insights. Two major cases are included in the paper: "Honey Bank" and "Pitaya Tour." One of the authors owns a bee business with a focus on farming and food education. In her company's business model, a project called "Small Bee Project, Honey Bank" is implemented to help students understand the relationships between the environment and human beings through studying bee behavior (Emachang, 15 May 2018).

Another case called the “Pitaya Tour” held in the Erlin Recreation Agriculture Area, Changhua County, Taiwan, is implemented to help tourists understand the relationships between farming and food education through experiencing the Pitaya Tour. Another one of the primary researchers has worked as a tour-guiding teacher for ten years in a community-university and maintains a close relationship with the tourism industry in the Erlin Recreation Agriculture Area, hence having the advantages of persistent observation and prolonged engagement that can enhance the credibility of the study. Additionally, a tour guide helped the interview process make the participants more comfortable and maximize mutual understanding.

Participants. Interviews and surveys were related but in separate investigations. In total, 18 interviewees were recruited from seven farm managers, four government employees, three scholars, and four visitors (tourists). Another 132 tourists and visitors who were involved in the activities on site completed the surveys in the bee farming experiences (60 participants) or the "Pitaya Tour" (72 participants).

Data collection. This paper adopts a multiple case study methodology. According to Glaser and Strauss (1967), the purpose of case study research is to discover grounded theory by comparing different cases. To increase the dependability and confirmability of the research, interview questions were carefully designed and focused on the basis of multiple in-depth

discussions with stakeholders such as farmers, experts, industry professionals, government employees, non-profit organization managers, and participants.

In addition to secondary data from relevant media news about farming and food DIY activities and education and government regulations about food safety, primary data were collected in multiple cases through 18 interviews, including seven farm managers, four government employees, three scholars, and four visitors or tourists. Interviewees were selected by purposive sampling to cover diverse perspectives from important stakeholders. The interviews primarily included questions about the details and the correlates of farming and food experiential activities and educational programs or courses. Information about activity participants' responses, comparison with other leisure activities, suggestions for the government, and any plans or improvements for the future were also collected in the interviews. The semi-structured interview outline primarily contains questions about designing the activities, which factors motivate the development of this farming and food tourism and attract participants, and possible impacts and future plans.

Additionally, 132 quantitative surveys were collected from customers who participated in the activities, programs, or courses to determine their level of understanding of farming and food education. This survey examines the effectiveness of those activities, programs, or courses. Items in the survey include perceived knowledge, value, attitude, and satisfaction after the experiences.

Results and Discussion

Case: Small Bee Project. In the case of the Small Bee Project proposed by the Beemax company, an ecological cycle was demonstrated (Figure 3). Originating in mainland China, the lychee giant stink bug (Tessaratoma papillosa, 荔枝椿象 in Chinese) could damage lychee and longan fruit

harvests. Farmers might use pesticides to kill the pests but, unfortunately, might also kill bees essential to the lychee plants (Strong, 4 April 2017). As such, the number of bees might be an index of environmental pollution from pesticides.

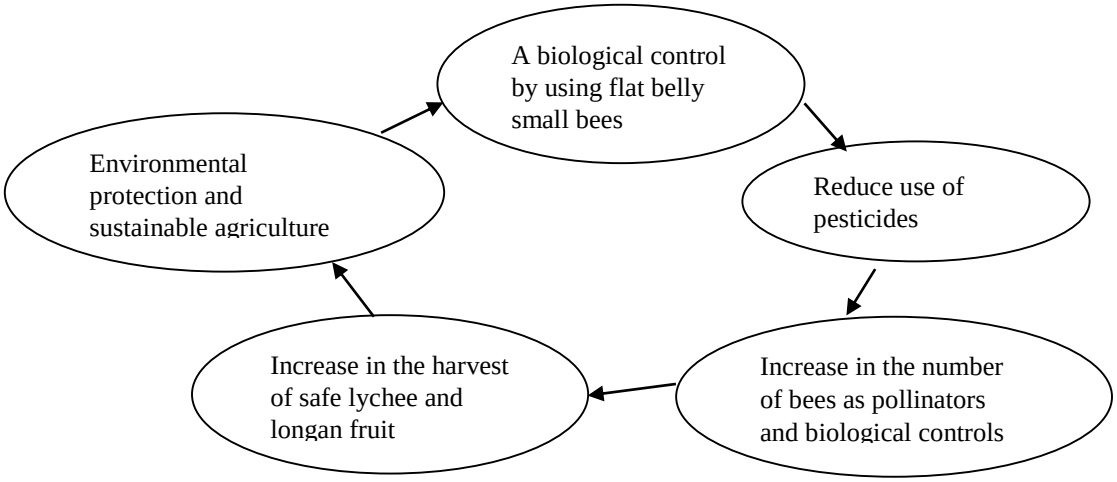

Figure 3: An Ecological Cycle (Beemax, 2018)

In this farming and food education project, the introduction of bees and honey also teaches pupils about the importance of environmental protection. Instead of insecticides, the biological control of the lychee or longan stink bug is encouraged to promote healthier food and a safer environment (Beemax, 2018; Salmonsen, 26 February 2018). The flat belly small bee (Anastatus japonicas, 平腹小蜂 in Chinese), an egg parasitoid of the lychee stink bug, can be mass-reared and used in lychee orchards to control Tessaratoma papillosa (Beemax, 2018; Li, Liao, Zhang, & Song, 2014).

The case study explains a relationship between the bees, stink bugs, and biological control species. This information is presented to farm education participants. Activity participants

provided positive feedback about this information in the survey. This increases the awareness of sustainability and willingness to protect the environment among participants of the program.

Pitaya Tour and three other examples of farming and food education. The Changhua Erlin Recreation Agriculture Area in central Taiwan is famous for its agricultural products such as grapes, pitayas, and buckwheat by the Erlin Farmers' Association of Changhua (Liu, Chen, Yang & Chiang, 2007), and places a focus on community-based tourism. The region of Erlin is a rural township with agritourism located in Changhua County on the west coast of Taiwan with plenty of flatlands. The case presented here was originally a traditionally agricultural community in an area of 92.85 square kilometers (Changhua County Erlin Town, 2019), which is the largest township in Changhua County. Later, following the policy of agricultural regeneration and young farmers returning home, implemented by the Taiwanese government, and the trends of authentic and sustainable tourism, experiential activities of farming and food education in agricultural sustainable tourism were introduced.

Based on secondary data (Food and Agriculture Education Platform, 2018), three examples of farming and food education in Taiwan were identified. In the first program, elementary school teachers in Taiwan bring students to grow vegetables in a garden on campus. When the vegetables are ripe, students cook the vegetables by themselves. Through the process, students learn to use the kitchen waste (i.e., vegetable peels and trimmings) to generate compost for fertilizing the soil, which is then used to plant new vegetables. Used oil and dirty water were not introduced into compost bins. Students experience the joy of farming and understand the importance of waste reduction through the experience.

In the second example, at an organic grape farm in central Taiwan, the farm owner introduces how the organic grapes are produced and lets tourists experience the fun of fruit picking.

Then, lunch or dinner is set in the garden under the grapevines so that the tourists can eat food that was grown and prepared on-site while listening to the farm owner playing the guitar and explaining the nature of farming, farm stories, music, and such activities. Through this process, tourists learn about organic grape production and local culture and draw direct connections between their food and the means of production, highlighting the importance of sustainable agricultural practices. This experience also helps to foster a sense of appreciation for the host community and the way of life of rural farmers.

In the third example, at a plum farm in Xinyi Township, Nantou, the farmer first lets tourists experience a plum harvest and then teaches the tourists how to pickle this fruit. During the pickling activity, participants learn that although saccharin, dehydrated acetic acid, benzoic acid, and sorbic acid are common preservatives added to processed foods (National Environmental Health Research Center, 2 December 2013), they are not necessary, for example, in the preparation of pickled plums. Issues of food safety are explained as traditional preservation methods are demonstrated and practiced. This helps raise awareness of food safety among participants and develop an appreciation of culturally authentic food preparation.

Content analyses and the survey. In addition to the researcher's observations and personal experiences, content analyses of data and the 132 quantitative surveys showed that farming and food educational experiences provided participants with more awareness of ecological sustainability, food safety, and a sense of sociability. For example, in the survey, 96.21% of activity participants said that they would pay more attention to environmental protection than they did before the experience. Farm tours can positively affect elementary school-aged children's food and nutrition knowledge and fruit and vegetable consumption behavior (Moss, Smith, Null, Roth, & Tragoudas, 2012), and also encourage the consumption of locally grown foods to support

farmers and reduce food's carbon footprint due to almost zero distance the food travels (National Farm to School Network, 2018; Consumer voice, n.d.) in local food systems from where it is grown or raised to where the consumer or end-user ultimately purchases it.

Not only did participants have a positive feeling of unity with nature, but the experience also enhanced their ability to appreciate the linkages between farming and food. Farming and food education programs appear to be worthwhile, and participants have positive attitudes toward the DIY activities with benefits for the brain, body, and social life. In the survey after activities, 96.21% of participants said they liked the farming and food education programs, 92.42% would like to share these experiences with friends and relatives, and 83.33% would be willing to attend similar programs in the future.

Interviews. Interviews conducted with various stakeholders helped to clarify findings. Farm managers mentioned that farming and food education is still developing and needs more promotion and support from the government and the community. More cooperation is also desired among the private and public sectors and the local community. Currently, in the introductory and growth stages, these educational programs may need some financial support from the public sector.

Local farmers could benefit from training to increase motivation for developing farming and food education experiential activities, which might be combined into community-based tourism. Relevant national institutes of food and agriculture may initiate education and training programs to increase farmers' knowledge about the latest scientific advances and technology tools, help farmers adopt practices that are less harmful to the environment, reduce food contamination, build professional tours for farming and food education, and increase profits (National Institute of Food and Agriculture, n.d.). School and community education systems may consider combining

the idea of farming and food education into current courses or designing new courses about farming and food safety.

Impact model. Previous studies have suggested that CBT is an effective method for alleviating poverty (Lepp, 2007). Four government employees indicated that experiential activities of farming and food education in CBT play an important role in poverty alleviation because their perceived values contribute to economic benefits and community development, thereby providing helpful information about healthy food and protecting the natural environment by the residents and visitors.

Farm managers and scholars mentioned that experiential activities of farming and food education in CBT need more marketing promotion and support from the government, and the community should be integrated to cooperate with the development. However, the trends of demand for authentic and sustainable tourism encourage the development of these experiential activities.

Visitors indicated that the experiential activities could provide participants with more awareness of ecological sustainability, food safety, nutrition, and a sense of sociability. For example, in the survey after activities, 91.67% of visitors said they would pay more attention to whether pesticide residue may remain in food after pesticides were applied to food crops during production. In addition, most of the visitors understood the farmer's hard work after the farming experiences and indicated that they would reduce food waste. Results also suggest that participants are more willing to purchase locally-produced farm products and protect the environment. Given the results and discussions above, from a consumer perspective, an impact model is developed to conclude major correlates and contributions from experiential activities of farming and food education (Figure 4).

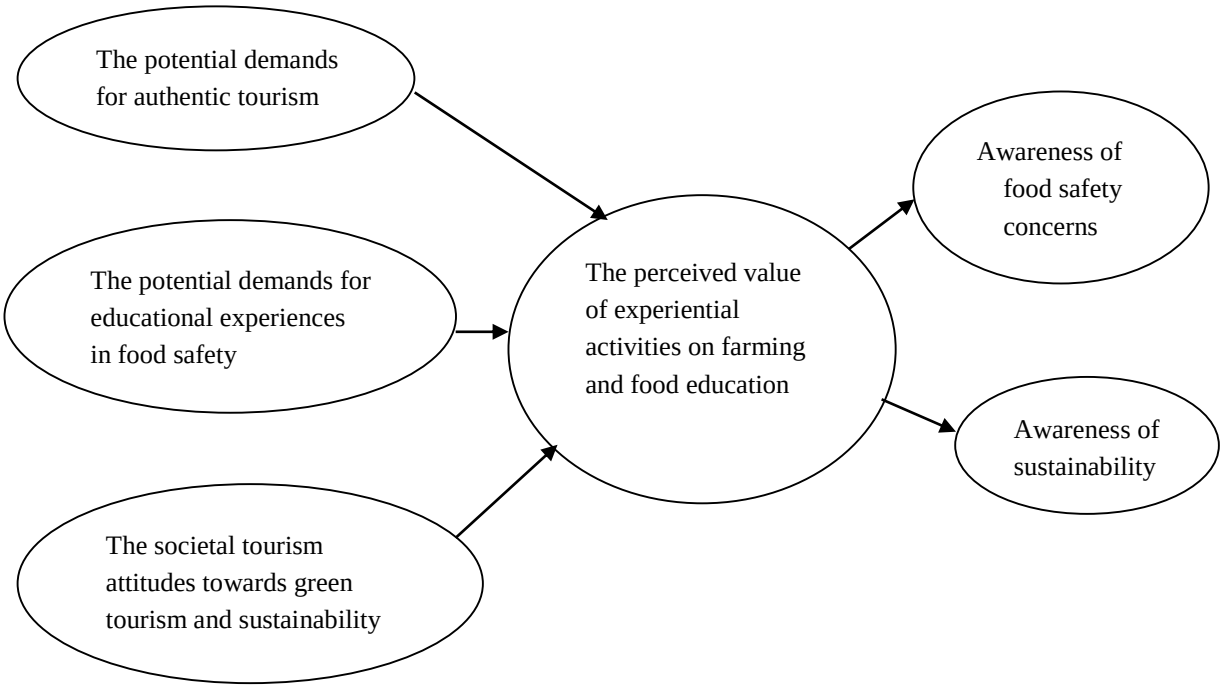

Figure 4: An Impact Model of Experiential Activities on Farming and Food Education

Conclusions

This study concludes that a comprehensive farming and food education program includes farming experiences, nutrition, food safety, and environmental education about respecting sustainable development. The major correlates of farming and food educational experiences include positive attitudes towards green tourism and potential demands for authentic experiences and educational experiences in food safety. These correlates contribute to the perceived value of experiential activities in farming and food education. In particular, farming and food education combined with DIY activities can more strongly motivate tourists to participate in community-based tourism with physical, mental, and social benefits. Further, possible impacts of these experiential education activities on participants in this type of agricultural tourism include more awareness of ecological sustainability, food safety, and a sense of harmony with people and the environment.

The practical implications of this research are that CBT and agricultural tourism experiences are not only a potentially lucrative economic opportunity for farmers to expand their businesses, but they also contribute to pro-environmental attitudes and behaviors among participants, particularly among children. By raising awareness of key issues (the role of bees in food production, food safety issues, nutrition, local culture, etc.), these programs leave a lasting impression on participants that may translate into changes in behavior and more responsible decision-making in the future. From a theoretical standpoint, this study identifies key elements of the agricultural tourism experience and presents a model for ascertaining the relative importance of various correlates on desired outcome variables. Future work should refine and test this model for reliability and validity and apply it in various contexts to assess generalizability.

While these experiences can raise awareness for key issues and develop support for sustainability initiatives, farm, and food tourism is a very small sector of the broader tourism industry. Efforts should be made to develop and promote these experiences to a broader market. Along with farm trips and DIY activities, social media such as Facebook (for example, Honey Bank, 2018) can also generate awareness and support. Future studies should investigate the effects of using social media to promote the tour and activities. An examination of factors which will influence the success of farming and food education program is needed in further studies. Further empirical research is also required to examine the impact model of experiential activities on farming and food education.

Farming and food education is still developing and needs more promotion, training, and support. Consulting from experts in experiential agriculture activities, food safety, nutrition, and environmental protection will be helpful. More coordination or cooperation is desired among the private, public, and non-profit sectors and the local community. The local farmers could benefit

from training to increase knowledge about the latest scientific advances and technology tools, adopt practices that are less harmful to the environment, reduce food contamination, build professional tours for farming and food education, and increase profits. To succeed in the operation of experiential farming and food education activities in agricultural sustainable tourism, farmers need to know about key stakeholders and engage with channel agents, including profit agents, school, community, and organizational welfare committees to access target customers.

Acknowledgement

Our gratitude goes to Michael Burton, Asia University, for English editing.

References

Anthropocene (2018). *Anthropocene*. From http://sustainability.edu.au/about-sustainability/anthropocene/.

Anuar, A. N. A., & Sood, N. A. A. M. (2017). Community based tourism: Understanding, benefits and challenges. *Journal of Tourism & Hospitality*, *6*(1). doi: 10.4172/2167-0269.1000263.

Armstrong, P. (23 October 2017). Farming and food education hits the road to educate pupils on where their food comes from. *South West Farmer*. From http://www.southwestfarmer.co.uk/news/15612989.Farming_and_food_education_hits_the_road_to_educate_pupils_on_where_their_food_comes_from/.

Beemax. (2018). *Biological control*. From https://www.beemax.com.tw/biological_control_03/.

Beemax. (2018). *flat belly small bees*. From https://www.beemax.com.tw/biological_control_02/.

Boffey, D. (3 August 2017). Millions of eggs removed from European shelves over toxicity fears. *The Guardian, International Edition*. From https://www.theguardian.com/world/2017/aug/03/eggs-removed-from-european-shelves-over-toxicity-fears-fipronil.

Boley, B. B., McGehee, N. G., & Hammett, (2017). Importance-performance analysis (IPA) of sustainable tourism initiatives: The resident perspective. *Tourism Management, 58*, 66-77. http://dx.doi.org/10.1016/j.tourman.2016.10.002.

Brennan, M. (2017). Struggles for teacher education in the age of the Anthropocene. *Journal of Education, 69*, 43-66.

Changhua County Erlin Town (2019). *Introduction* (in Chinese). From https://town.chcg.gov.tw/erhlin/01local/local02.asp.

Consumer voice. (n.d.). *How to reduce food carbon footprint*? From https://www.consumer-voice.org/food/reduce-food-carbon-footprint/.

Dernoi, L.A. (1991). Canadian country vacations: The farm and rural tourism in Canada. *Tourism Recreation Research, 16*(1), 15-20.

Emachang (15 May 2018). Honey Bank, small bee plan. *Beemax*. From https://www.beemax.com.tw/author/emachang/.

Esteban, R. B. (2011). Social-ecological resilience and community-based tourism: An approach from Agua Blanca, Ecuador. *Tourism Management, 32*(3), 655–666.

Food and Agriculture Education Platform (2018). Council of Agriculture, Executive Yuan, Republic of Taiwan. From https://kids.coa.gov.tw/food_agri/ (in Chinese).

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine.

Goodwin, H., & Santilli, R. (2009). Community-Based Tourism? A success? ICRT Occasional Paper, 11, 1-37.

Honey Bank (2018). https://www.facebook.com/1PlanBee/.

Jaffe, J. & Gertler, M. (2006). Victual Vicissitudes: Consumer deskilling and the (gendered) transformation of food systems. Agriculture and Human Values, 23(2), 143-162.

Kassam, K.-A. S., & Avery, L. M. (2013). The Oikos of rural children: A lesson for the adults in experiential education. *Journal of Sustainability Education, 5*.

Kisi, N. (2019). A strategic approach to sustainable tourism development using the A'WOT hybrid method: A case study of Zonguldak, Turkey. *Sustainability, 11*, 964. Doi:10.3390/su11040964.

Lee, T. H., & Hsieh, H. P. (2016). Indicators of sustainable tourism: A case study from a Taiwan's wetland. Ecological Indicators, 67, 779-787. https://doi.org/10.1016/j.ecolind.2016.03.023.

Lepp, A. (2007). Residents' attitudes towards tourism in Bigodi village, Uganda. Tourism Management, 28, 876-885.

Li, D. S., Liao, C. Y., Zhang, B. X., & Song, Z. W. (2014). Biological control of insect pests in litchi orchards in China. Biological Control, 68(1), 23-36. DOI: 10.1016/j.biocontrol.2013.06.003.

Li, J. H., & Ko, Y. C. (2012). Plasticizer incident and its health effects in Taiwan. The Kaohsiung Journal of Medical Sciences, 28(7), Supplement S17-S21. https://doi.org/10.1016/j.kjms.2012.05.005.

Liu, C. L., Chen, Y. S., Yang, J. H., & Chiang, B. H. (2007). Antioxidant activity of tartary (Fagopyrum tataricum (L.) Gaertn.) and common (Fagopyrum esculentum Moench) buckwheat sprouts. Journal of Agricultural and Food Chemistry, 56(1), 173-178.

Lu, J. Y. (2011). Plasticizer event in Taiwan. Journal of the Formosan Medical Association, 110(9), 553-554. https://doi.org/10.1016/j.jfma.2011.07.002.

Mitchell, R. E., & Reid, D. G. (2001). Community integration. Annals of Tourism Research, 28, 113-139.

Moss, A., Smith, S., Null, D., Roth, S. L., & Tragoudas, U. (2012). Farm to School and nutrition education: Positively affecting elementary school-aged children's nutrition knowledge and consumption behavior. Childhood Obesity, 9(1), 51-56. Doi: 10.1089/chi.2012.0056.

National Environmental Health Research Center (2 December 2013). Eleven candied fruit products failed in an Examination by New Taipei City Government Health Bureau (in Chinese). From http://nehrc.nhri.org.tw/toxic/news.php?cat=news&id=98.

National Farm to School Network. (2018). About Farm to School. From http://www.farmtoschool.org/about/what-is-farm-to-school.

National Institute of Food and Agriculture (n.d.). Farmer education. United States Department of Agriculture (USDA). From https://nifa.usda.gov/topic/farmer-education.

Okazaki, E. (2008). A community-based tourism model: Its conception and use. Journal of Sustainable Tourism, 16(5), 511–529.

Pine II, B. J., & Gilmore, J. H. (1998). Welcome to the experience economy. Harvard Business Review, July-August, 97-105.

Pine II, B. J., & Gilmore, J. H. (1999). The experience economy. Boston, MA: Harvard Business School Press.

Pine II, B. J., & Gilmore, J. H. (2011). The experience economy. Boston, MA: Harvard Business School Press.

Responsible Travel (2018). Responsible Travel. From https://www.responsibletravel.com/copy/what-is-community-based-tourism

Royal Cornwall Show (29 November 2017). Farm & country days, farming & food education event for year 3 & 4 pupils in Cornwall. From https://youtu.be/KO1GsNiWxBQ.

Russell, P. (2000). Community-based tourism. Travel & Tourism Analyst, 5, 89-116.

Salmonsen, R. (26 February 2018). Taichung government buys stink bug larvae to protect lychee, longan crop: Solution to curb invasive fruit pests in central Taiwan enacted. Taiwan News. From https://www.taiwannews.com.tw/en/news/3371724.

Strong, M. (4 April 2017). Lychee giant stink bug from China threatens Taiwan harvest: Numbers of bugs found in Taichung suggest nationwide threat. Taiwan News. From https://www.taiwannews.com.tw/en/news/3132866.

Sylvester, O., Bianco, M., Greenwood, J., & Mkanthama, T. (2017). Breaking down barriers to university-community engagement: A Master's student-led sustainable agriculture workshop for children in Costa Rica. Journal of Sustainability Education, 16.

The International New York Times. (18 September 2014). Taiwan's 'Gutter Oil' Scandal. The New York Times. From https://www.nytimes.com/2014/09/19/opinion/taiwans-gutter-oil-scandal.html.

Tourism Concern (2018). Tourism Concern. From https://www.tourismconcern.org.uk/community-based-tourism/

Tourism Theories (2018). Authenticity and tourists. From http://www.tourismtheories.org/?p=719

UNEP/WTO (2005). *Making tourism more sustainable: A guide for policy makers*. United Nations Environment Programme/World Tourism Organisation: Paris, France; Madrid, Spain.

White, B. (2012). Agriculture and the generation problem: Rural youth, employment, and the future of farming. IDS Bulletin, 43, 9-19.

Yu, C.-P. (Simon), Chancellor, H. C., & Tian, S. (2011). Measuring residents' attitudes toward sustainable tourism: A reexamination of the sustainable tourism attitude scale. *Journal of Travel Research, 50*(1), 57–63. https://doi.org/10.1177/0047287509353189.