LEISURE & TOURISM | RESEARCH ARTICLE

Agritourism resilience against Covid-19: Impacts and management strategies

Wei Lee Chin¹ and Siti Fatimahwati Pehin Dato Musa²

Abstract: The current Covid-19 pandemic has impacted tourism industry the hardest and has steered a total standstill in the multibillion industry, causing economic crisis globally. This paper attempts to assess the impacts and management strategies of agritourism in Brunei. Due to the constant evolvement of knowledge and management strategies during this unprecedented time, qualitative approach using semi-structured interviews was deemed appropriate for this research. This paper focuses on agritourism farms in Brunei during Covid-19 to study the implication and contingency plans to divert such crises. Findings from this study indicates that strategies employed by the Brunei agritourism farms were (1) the diversification of economic activities towards product innovation and agribusiness expansion to mitigate tourism revenue loss; (2) digital transformation such as, contact tracing app, the introduction of virtual tourism as well as the use of social media to promote agritourism as lower-risk tourism; (3) adaptive human resources strategy by encouraging community capacity building such as upskilling and training of local farmers to stimulate new agritourism skills and establish more future-ready workforce. The strategies adopted by the agritourism farms in Brunei could provide lessons to neighbouring countries and the ASEAN region to prepare for a crisis-resistant agritourism in the future.

ABOUT THE AUTHOR

Wei Lee Chin is an Assistant Professor in the Faculty of Arts and Social Sciences, Universiti Brunei Darussalam, specialising in destination competitiveness specifically in developing countries in Asia. Her research interest also includes small-scale island tourism, tourism community development, smart tourism, socio economic sustainability as well as tourism impacts in Asia. She has field experience in Southeast Asia and is also a recipient of several University grants. She has also published in international journals like Current Issues in Tourism and Tourism and Hospitality Management.

Siti Fatimahwati Pehin Dato Musa is a Lecturer in UBD School of Business and Economics, Universiti Brunei Darussalam. She has a PhD in Agricultural Economics and Rural Development from Newcastle University, United Kingdom. She is a recipient of several University grants and welcomes research collaboration in the areas of food security and sustainability, youth and agriculture, youth unemployment, agritourism and rentier economies.

PUBLIC INTEREST STATEMENT

This paper investigates the impact of Covid-19 pandemic on agritourism in Brunei by exploring three main farms in Brunei. Among the strategies applied by the farms in order to be more resilient during the crisis were product diversification, the use of technology and human resources adaptation. Product diversification by developing sustainable products and focusing on food localism in the existing agribusiness is a key strategy in creating multiple sources of income for the farms. The implementation of digital technology and the use of social media was a vital strategy to familiarise travellers with the new normal and rebuild their confidence. At the micro level, the challenges of the pandemic have made the farmers multi-skilled and more adaptive to the changing working environment and less susceptible to prolonged job insecurities. These strategies could provide lessons to neighbouring countries in order to prepare for crisis-resistant agritourism during the pandemic and for the future.
1. Introduction
It is now established that the novel coronavirus (Covid-19) pandemic has reached the level of worldwide catastrophe. In late 2019, even at its infancy stage the pandemic overwhelmed health institutions and healthcare capacities at a fast pace (Leite et al., 2020). Wuhan was the virus epicenter but asymptomatic international travelers from the bustling city became the catalysts of the global outbreak (Mackenzie & Smith, 2020). While vaccines are still being developed, new social behaviors appeared such as, social distancing measures and the culture of wearing masks have been normalised as protective measures (Dzisi & Dei, 2020). The tumultuous journey in the “new normal” era demonstrates a shift from the public into the private sphere, such as remote working and online learning (Jamaludin, 2020).

Among other non-medical industries, the global travel and tourism sector is heavily affected and the occupancy rate in the hospitality industry has dropped significantly (Fu, 2020; Gössling et al., 2021). In this paper, we focus on the challenges and recovering strategies of the local agritourism industry during the early Covid-19 restrictions phase and the final de-escalation phase. A lot of other countries are still in the midst of dealing with Covid-19, however Brunei has seen an increase in domestic tourism particularly in nature-based destinations (Borneo Bulletin, 2020a). The border closure has in turn stimulate local interests in domestic tourism activities at ecotourism and agritourism sites in Brunei. Among all the nature-based tourism locations in the country, agritourism farms are perceived as safe tourism destinations by domestic tourists. This paper therefore studies the implications of Covid-19 on agritourism and the recovering strategies employed by those agritourism farms. It attempts to assess the crisis management strategies of agritourism in Brunei. Diversification of economic activities, digital transformation and adaptive human resources were some of the strategies identified. The strategies and approaches adopted by the agritourism farms in Brunei could provide lessons to neighbouring countries and the wider ASEAN region to evolve as crisis-resistant.

2. Literature review
In the era of a global pandemic, ease of travel has become a double-edged sword. The virus was exacerbated by the undetected spread catalysed by air travellers who carried the virus outside of China (Wilson & Chen, 2020). The high risks of international travel lead to the implementation of non-pharmaceutical interventions (NPIs) (Ryu et al., 2020): lockdowns, travel bans, border closures, quarantines and cancellations of global events. According to the data by Gössling et al. (2021), the debilitating impacts on the global tourism industry are: (1) decreased in tourism activities; (2) decline of international flights; (3) visitor arrivals dropped by 50% or more; (4) reduced tourism workforce; (5) the rise of economic difficulties (pp. 7–9). The global tourism industry has experienced pandemics in the past, such as the severe acute respiratory syndrome (SARS) outbreak in 2003, but Covid-19 was able to cease tourism operations and shrink the global economy within the matter of months (Gössling et al., 2021, pp. 3–6). The statistics by the United Nations World Tourism Organizations (UNWTO) showed a 70% reduction of international tourist arrivals from January to August 2020, causing USD$730 billion revenue loss of international tourism (UNWTO, 2020).

Other scholars observed that there are micro-level impacts of Covid-19 particularly in the change in tourists’ behaviours and perceptions towards tourism (Garibaldi & Pozzi, 2020; Kock et al., 2020; J. Li et al., 2020; Shamshiripour et al., 2020; Zheng et al., 2021). Changes of tourists’ collective psyche centralises on the motive of disease avoidance when travelling, which lead to the increase xenophobia, ethnocentricism, fear of crowdedness (Kock et al., 2020; Ullah et al., 2020). The post-pandemic travel behaviours suggest that anxious future tourists would prefer to travel in...
groups, obtain travel insurance and choose familiar destinations, to provide “a feeling of security that lowers travel-related risk perceptions” (Kock et al., 2020, p. 11). Z. Li et al. (2020) discovered that there are two types of tourists’ behaviour: intra-pandemic (during pandemic) and post-pandemic. The majority are “crisis-sensitive tourists” who are only willing to travel six months after Covid-19 is successfully contained and plan for shorter post-pandemic holidays. On the other hand, the smaller group of “crisis-resistant tourists” are generally older with higher education background, that are less likely to reduce their post-pandemic travel duration (Z. Li et al., 2020).

Additionally, Z. Li et al. (2020) found three main types of tourism patterns caused by travel risks perceptions. (1) The “general to elaborate” pattern suggests that tourists have now become more elaborate in choosing specific travel destinations and only spending shorter travel duration. (2) Tourists have also become more psychologically “closed”, intending only to choose “sparsely populated destinations” to increase physical distancing for lower likelihood of infection, such as nature-based tourism sites. (3) To reduce travel-related health risks, tourists prefer to do conservative tourism activities that are in familiar and safer destinations. Overall, the literature suggests that there are indeed more negative changes in tourists’ behaviours exposed by underlying anxieties provoked by the fear of high infection risks and growing reluctance on new holiday experiences.

2.1. Resilience of agritourism destinations

Nature-based tourism places are considered as low risk during the pandemic and guarantee space for physical distancing or “closed” tourism sites. Agritourism farms are the preferable tourism destination for domestic tourists in Poland, Italy, California and Australia. A survey showed that a majority of Polish respondents perceive agritourism farms as the safer holiday destination because of four main reasons: “to spend holidays in peace and quiet”, to consume healthy food served at the farms, competitive prices, safer travel destination for families with small children (Wojcieszak-Zbierska et al., 2020, pp. 10–11). In Italy, agritourism farms diversified their economic activities to accommodate the increased demand of farm fresh products sold at competitive prices than supermarkets, to augment direct sales of agrifood to consumers, such as direct product deliveries, and to provide new agricultural jobs for the recently unemployed (Mastronardi et al., 2020).

Similarly, agritourism farms in California, are able to operate despite Covid-19 regulatory challenges, with 61% of revenue direct sales of agricultural products such as a bi-monthly subscription-based delivery of fresh farm products to consumers (Hardesty & Leff, 2020). Covid-19 generated a “rebirth of local farm movement” with the increased demand for fresh local produce, and social media or websites enable the promotion of family-safe farm tours with social distancing measures (Hardesty & Leff, 2020, p. 126). In Western Australia, agritourism is appraised as the possible “industry recovery engine” to quickly rebuild the local economy because the promotion of regional agriculture products increased domestic sales. Agritourism farms are safe destinations because of the low infection possibilities (Martinus & Boruff, 2020). The reports of agritourism resilience from the four countries indicate that the socio-economic NPIs such as diversifying farm economic activities and adaptive responses of agritourism farm owners, result in positive contributions towards domestic tourism.

Agritourism has always been an adaptive tourism sector and quite agile in devising diverse solutions when experiencing any socio-economic crises. The receptiveness towards embracing Covid-19 technologies are not solely triggered by the latest pandemic but rather due to the reflexive capabilities of agritourism in resolving past issues. Pre-Covid-19 studies discovered that in order to ensure sustainable development in rural areas, agritourism farms had to be innovative and highly competitive (Bhatia & Ohe, 2020; Palmi & Lezzi, 2020; Roman et al., 2020a, 2020b). The objective to develop sustainable agritourism required a common strategy that involved creating agritourism innovations. There are various interpretations or types of innovations found in the studies but the term itself generally refer to the development of original products, development of creative marketing based on nature and local culture, and improving existing tourism products (Roman et al., 2020a). Palmi and
Lezzi (2020) study on Italian farms found that agritourism innovation products consist of both tangible and intangible local traditions in the community and territory. “The traditions are sourced from the firm (farm products), the destination (geographic landscape), historical events, and inspirations from previous industrial heritage” (Palmi & Lezzi, 2020, pp. 14–15). The combination of these sources leads to the “successful innovations in effective farm management, in improved products or business models, in attractive tourism marketing and other processes that involve the creation of new agritourism ventures” (Palmi & Lezzi, 2020, p. 15).

In the authors’ case study, the morphing of traditional resources and natural assets, such as the promotion of gastronomic bio-products, are successful in prompting sustainable-oriented rural development. Similar case studies on Poland and developing countries, agree that the contributions of agritourism innovativeness is not only improving the socio-economic conditions of the locals but also strengthening sustainable practices within rural areas (Bhatta & Ohe, 2020; Roman et al., 2020b). The aforementioned studies confirm that physical or intangible innovations help agritourism farmers gain a competitive advantage needed to boost tourism attractiveness and to generate more income for the rural community. The literature on agritourism innovativeness depicted in the studies represent a form of building resilience. The capability of turning local resources into creative innovations reveal that agritourism can adapt well in the face of adversity, an advantage that became a crucial defence during the Covid-19 pandemic.

2.2. Covid-19 and health tourism technology

The relationship between agritourism and healthcare is not entirely unusual, the hybridity of agricultural health farms is a well-established health phenomenon. Farms have a multifunctional role in providing a space where patients can experience wilderness or horticulture therapy; services that mainstream healthcare are unequipped to deliver. Farms have existing capacities or utilities to create a natural therapeutic atmosphere for patients. The innovative service of agritourism farms that specifically utilises the healing power of nature is popularly known as “green care” or “care farming” (Boer et al., 2017; Haubenhofer et al., 2010). Green care is a natural therapy that unites “aspects of the traditional healthcare systems to agriculture (care farming), gardening (healing gardens), landscape or nature conservation (eco-therapy), animal keeping (AAI) or animal husbandry” at the farms (Haubenhofer et al., 2010, p. 107). Patients receive healing benefits of green care primarily through two main types of therapies: “experiencing the natural environment” for example, green exercise or wilderness adventures, and “physically interacting with natural elements” for example, animal-assisted activities (Haubenhofer et al., 2010, pp. 107–109). Active participation of patients with the natural elements is a key component in improving their overall wellbeing, and several reports have confirmed long-term positive results of care farming. The reported efficacy of green care proves that agritourism has a potential in facilitating services and tools. Existing green care literature asserts the suitability of agritourism farms in supporting pro-health services. Additionally, the knowledge gained from the development of health in green care farming, may improve farmers’ understanding of health risks and to prepare safe procedures during global crises, such as implementing Covid-19 technology (NPIs).

The role of digital technologies as NPIs or referred as “Covid-19 tourism technology” (CTT) in this paper, are significant strategies. Essentially, CTT refers to any digital technology employed at tourism destinations as protective measures to lower infection risks that allow tourists to safely participate in tourism activities. There is a growing evidence of innovative technologies programmed to reduce the human-to-human transmission of Covid-19 (Garibaldi & Pozzi, 2020; Gretzel et al., 2020; Mbunge, 2020’ Shin, 2020). Lockdowns in Italy triggered the emergence of “digital home-based gastronomy tourism experiences” to accommodate virtual tourism dining activities, such as remote social dining and partying; online cooking classes and courses (Garibaldi & Pozzi, 2020, p. 47). The purpose of virtual tourism, is to simulate gastronomic activities via video conferencing and to inspire visitations at the physical tourism destinations in post-pandemic travel (Garibaldi & Pozzi, 2020).
One of the most popular CTT is the contact tracing application, used to monitor mobility and to automate the process of finding the infected person's contacts. Contact tracing apps (CTAs) are also multipurpose when merged with other emerging technologies to form other functions such as: provide real-time Covid-19 data, store national health information systems of the populace, or even provide online counselling services to authenticate Covid-19 patients before entering quarantine phase (Mbunge, 2020). CTAs are useful in preventing further community transmission however, several scholars have expressed concerns mainly on the ethical management and security of the apps (Cho et al., 2020; Gasser et al., 2020; Sigala, 2020). Due to the apps' ability to store private information, there is a need to ensure ethical compliancy to prevent legal issues, such as data breaches, and create better security for public use (Gasser et al., 2020). Data vulnerability is a major obstacle of the contact tracing strategy, which also indicates that CTT has to be carefully applied in certain extents. The literature suggests that CTT are efficient in lowering tourists' perceived risks but should not be misinterpreted to guarantee total security.

3. Case study: Covid-19 in Brunei
Brunei is one of the few ASEAN countries that has a small number of Covid-19 cases and considered as a low risk country. At the time of writing, the national tally recorded 187 positive cases as of March 2021 (Ministry of Health, 2021). From the first imported case on 9 March 2020, the government was able to prevent community transmission by introducing early preventive measures. The travel ban starting 16 March 2020 and fast execution of social distancing measures were crucial to prevent more imported cases (Djalante et al., 2020). Individuals and industries were subjected to the de-escalation plans that cautiously lifts Covid-19 restrictions in four phases. The first phase started from 16 May 2020, public premises especially dine-in restaurants, were allowed to accommodate patrons up to 30% capacity only at one time, while others were still closed (The Bruneian News, 2020a). On 15 June 2020 the second de-escalation phase increased the seating capacity to 60% for big food businesses, while mosques and small premises were allowed to operate in limited capacities (The Scoop, 2020a).

The third phase was on 6 July 2020 where the maximum capacity of public facilities was increased to 90% including schools (The Bruneian News, 2020a). The final de-escalation phase on 27 July 2020 allowed mass gatherings of maximum 100 people, while all public premises such as restaurants, mosques, offices could operate at full capacity (The Scoop, 2020d). Fortunately, with the aid of strategic de-escalation plans, Brunei remains diligent in controlling the pandemic. Although international flights are still restricted, the unlimited mobility within the country has stimulated growing interests of nature exploration and domestic tourism (Borneo Bulletin, 2020a).

4. Materials and methods
Three farms were selected as study areas: Sumbiling Eco Village (SEV), Tasbee Meliponiculture Farm (TMF), and Ecoponies Garden (EPG), located in two remote districts in Brunei (See Figure 1). To assess agritourism resilience, the study must investigate farms with certain criteria that include actively operating any combined elements of authentic agriculture activities (planting food for production, gastronomy) and tourism services (farm stays, tours, fruit-picking, recreational outdoor activities). Though Southeast Asia typically engages in massive agricultural production, Brunei Darussalam is a small sultanate on Northern part of Borneo island with only around half a million population. The common agricultural heritage in the country is based on traditional farming methods, such as the swidden agriculture or shifting cultivation. Although there are different kinds of farms in the country, small-scale agriculture is the main mode of operation. Within the limited sample, there are only three working agritourism farms that matched the selection criteria for the purpose of this study.

SEV and EPG revolve around farming wild fruits and plants, while TMF focuses on api-tourism based on local stingless bees. The three farms are the only community-based, small-scale production farms in Brunei and have been operating for around thirteen years. In this study, agritourism represent real working agriculture sites that tourists can visit to participate in both farming and tourism activities such as fruit-picking, while communicating directly with the local food producers. Local media
The main agritourism activities at the three locations are:

- Harvesting produce and honey
- Farming
- Cooking demonstrations and classes
- Commercial or educational tours
- Farm-to-table dining
- Farmers’ Market
- Forest trekking
- Nature and outdoor sports
- Cultural events
- Farm stays

Information pertaining to agritourism in the context of Brunei has not been thoroughly investigated in recent years. With little information to start, the research requires an exploratory approach, paying particular attention to the agricultural background of the farmers as well as their tourism services. To explore the largely unknown details of the agritourism operators, a qualitative methodology using the interview technique is employed in order to gain thick data from the interviewees. Historical origins and objectives of the agritourism farms are difficult to quantify, therefore narratives or descriptions directly collected from the interviewees are crucial in understand the entirety of the developing industry. Although time-consuming and long interview responses are two main issues of interviews, the probing technique prominent in the semi-structured questions format are used to filter and gather granular details or specific information that are deemed crucial to the study.
To understand the perspectives of the farm owners and entrepreneurs are essential in agritourism study, therefore, similar studies have also chosen semi-structured interviews (SSI) as the reliable method of directly speaking to interviewees (Mastronardi et al., 2020; Palmi & Lezzi, 2020). In our research, the SSI is conducted physically at the three farms. Conducting research fieldwork during the pandemic was allowed because the SSI was conducted during the first two levels of the de-escalation period, when mass gathering restrictions were slowly lifted. The probing or follow-up questions based on the responses helps to extend the meaning behind vogue statements and get additional explanations on any unknown terms or events to avoid misinterpretation of data. All interviewees are asked similar questions ranging from defining individual role agritourism farmers or entrepreneurs, to broader opinions and suggestions on the applicability of agritourism. The main questions are divided into various topics including conceptualisation of agritourism, environmental and socio-economic impacts of Covid-19, identifying sustainable solutions or crisis management strategies.

In total, 23 research participants were interviewed, 19 people represent internal data and 4 people provide external information (See Table 1). The internal group consists of direct members of the three farms: owners, co-founders, managers, farmers and volunteers. The external group is represented by a tourism advisor, government officials and marketing promoter. A simple thematic analysis using manual coding on the transcribed interview data was applied to identify the crisis management strategies in three

| Table 1: Table of agritourism farm interview participants |
|----------------------------------------------------------|
| Farm name           | Respondent no. | Role          | Gender | Interview duration (minutes) |
|---------------------|----------------|---------------|--------|------------------------------|
| ECOPONIES GARDEN    | R1             | Founder       | Female | 240                          |
|                     | R2             | Co-founder    | Female | 80                           |
|                     | R3             | Farmer        | Female | 66                           |
|                     | R4             | Farmer        | Male   | 66                           |
|                     | R5             | Volunteer     | Female | 63                           |
|                     | R6             | Volunteer     | Male   | 72                           |
|                     | R7             | Volunteer     | Male   | 66                           |
|                     | R8             | Volunteer     | Female | 78                           |
|                     | R9             | Staff         | Male   | 64                           |
| TASBEE MELIPONICULTURE | R10           | Owner         | Male   | 82                           |
|                     | R11            | Volunteer     | Female | 72                           |
|                     | R12            | Volunteer     | Female | 75                           |
|                     | R13            | Volunteer     | Female | 84                           |
| SUMBLING ECO VILLAGE | R14           | Owner         | Male   | 95                           |
|                     | R15            | Manager       | Female | 78                           |
|                     | R16            | Farmer        | Male   | 63                           |
|                     | R17            | Farmer        | Male   | 60                           |
|                     | R18            | Farmer/tour guide | Male | 65                           |
| GOVERNMENT INSTITUTIONS | R19           | Tour guide    | Female | 72                           |
|                     | R20            | Product promoter | Female | 60                           |
|                     | R21            | Officer at Department of Agriculture & Agrifood | Female | 60                           |
|                     | R22            | Officer at Tourism and Development Department | Female | 66                           |
main themes: economic, technological and human resources. Participant observation method was also briefly conducted at tourism events, during the final de-escalation phases. The main aim of the observation is to discern the positive or negative implications of the crisis management strategies.

5. Results/discussion: crisis management strategies

5.1. Diversification of economic activities

The border closure and travel ban, consequently did not only stop international tourist arrivals but also domestic tourist visits to the farms. With neither visitations nor public events allowed, tourism activities at the farms were slowly deactivated, and farm owners struggled to recover from income loss within months. The economic struggle meant that farm owners struggled to pay staff salaries, that was previously sourced from tourism income, for instance, the devastating impact had SEV owners resorted to using their personal money to pay their staff. Eventually, with the absence of tourism activities and minimal farm works, the staff were granted furlough. Crisis like this not only affect businesses economically but have negative implications to the quality of life for residents which should not be ignored (Chin, 2017; Chin & Hampton, 2020). Only EPG and TMF remained open, while SEV decided to temporarily close for two months. The farm owners reverted back to their agriculture activities, while maintaining the facilities. All the three farms faced different struggles and challenges ranging from loss of tourism revenue due to the decline on tourists' visits. A summary of the main strategies employed by the three farms are highlighted in Table 2. One of the farms mentioned that they had lost an approximate of 30,000 USD–$35,000

| Main strategies | Application at agritourism farms |
|----------------|---------------------------------|
| DIVERSIFY ECONOMIC ACTIVITIES | EPG  
• Still receive small income from various efforts and activities.  
• Brunei Covid-19 de-escalation phases introduced. Visitor capacities at the farm gradually increased.  
• New service: Home/direct delivery of fresh organic products and healthy cooked meals.  
• New collaboration product: Innovated organic food hamper baskets consisted of local produce.  
• Used online marketing/social media to promote food localism and their new organic food product.  
• New gastronomy events organised. |
| TMF  
• Honey extraction and production still ongoing albeit less frequently.  
• Still gain limited income from domestic tourists and honey sales.  
• Two months later Brunei Covid-19 de-escalation phases were introduced. Visitor capacities at the farm gradually increased.  
• New collaboration product: Innovated organic food hamper baskets consisted of local produce.  
• Used online marketing/social media to promote food localism and their new organic food product. |
| SEV  
• Despite temporary closure, owner decided to build new recreational and accommodation facilities to enhance tourism attractiveness.  
• New sports activities such as rafting and camping to attract large family groups. |

(Continued)
| COVID-19 TOURISM TECHNOLOGY | All three farms:  
|-----------------------------|---------------------------------------------------|
|                             | • Temperature checks at entrances and exits       |
|                             | • Limiting the number of visitors from small to  |
|                             | medium groups only.                               |
|                             | • Adhered to social distancing measures.          |
|                             | • Utilised the national BruHealth contact tracing |
|                             | app to reduce health risks.                       |
|                             | • Managed visitation capacities at designated    |
|                             | time slots to prevent negative environmental      |
|                             | impacts.                                         |
|                             | • Social media platforms used to keep engaging    |
|                             | with potential visitors and promote positive     |
|                             | destination brands.                               |

| ADAPTIVE HUMAN RESOURCES   | EPG:                                              |
|-----------------------------|---------------------------------------------------|
|                             | • Local farmers/villagers are multitaskers.       |
|                             | • They act as forest tour guides for tourists     |
|                             | while foraging food for themselves.               |
|                             | • Farmers quickly adapt and innovate new          |
|                             | entrepreneurial projects.                          |

|                             | SEV:                                              |
|-----------------------------|---------------------------------------------------|
|                             | • Local villagers are encouraged to use their     |
|                             | knowledge on wild food in the forest, while being |
|                             | trained as tour guides.                           |
|                             | • Took advantage of the indigenous agricultural   |
|                             | heritage and transformed it into various eco-     |
|                             | tourism services.                                 |
|                             | • Promoted the direct foraging of wild fruits,    |
|                             | vegetables and herbs from the forest as a tourism |
|                             | attraction.                                      |

|                             | TMF:                                              |
|-----------------------------|---------------------------------------------------|
|                             | • Build farm facilities using own resources.      |
|                             | • Learned the setting up of a meliponiculture     |
|                             | farm through independent research and courses.    |
|                             | • Creating awareness on the preservation of       |
|                             | stingless bees with limited support.              |
|                             | • Innovated various products from honey and       |
|                             | propolis while conducting small courses on how    |
|                             | to make organic bee products.                     |
|                             | • Collaborated with local institutions to         |
|                             | organise educational programmes, e.g. trained     |
|                             | young tourism students on the essentials of tour |
|                             | guiding.                                         |

in revenue during the short few months of the pandemic. “This is a tough time for us. Imagine losing your entire income without warning. We still have to pay our farmers and employees. We have no choice but to shut temporarily to re-strategise our business model” (SEV respondents). Besides losing revenue, farm owners were also facing difficulties in paying local communities like farmers and guides. One of the owners mentioned that they have been sustaining their farms by using their own savings for the period of the lockdown. “I have to use all my savings to sustain the farm at this time. Nothing else could be done, so we will just have to sacrifice during this hard time. I believe we will bounce back!” (EPG respondent). The temporary closures of farms and the short-term employee furlough have taught them how vulnerable their business and farming communities are.

Despite the stagnant businesses, the idleness however did not remain long. When businesses are permitted to operate at varying capacities, farm owners began to employ innovative new sale
methods based on their produce. Similar to other cases of agritourism resilience (Hardesty & Leff, 2020; Martinus & Boruff, 2020; Mastronardi et al., 2020; Wojcieszak-Zbierska et al., 2020), the local farms in Brunei also ventured into the direct delivery of fresh farm products. The cultivation of different crops such as maize, corn, green leafy vegetables are in high demand by consumers due to movement restrictions in markets. Besides, EPG was the first to organise delivery of freshly cooked food to a nearby café, where consumers could purchase safely. They also collaborated with local delivery company for food delivery options as dine-in were still limited at the time. EPG owners observed that there was an increasing demand for their pre-packed healthy meals and have quickly respond to the demand, by innovating more unique meals made from organic ingredients grown at the farm.

Agritourism has always been the medium of establishing connection between food producers and consumers (Schnell, 2013). The organic meals are used to retain indirect connection between the farmers by invoking fresh tastes from the farm to their homes. Allowing consumers to bring products at home is a temporary compensation for not being able to participate in the usual activity of on-site food tasting done during pre-Covid times. Maintaining tourist interests through food or farm products, helps to reinforce the long-term resilience of agritourism against future crises. Sustaining competitiveness is essential in any case to stay afloat in such situation (Chin et al., 2017). A similar phenomenon is also experienced by Italian farms that still choose to stay connected with consumers through direct deliveries to build anticipation for post-pandemic tourism (Wojcieszak-Zbierska et al., 2020). The duality or plurality of the concept of agritourism is a major advantage that supports the possibility of economic diversification. When tourism activities halted, farmers as well as owners, could still rely on their conventional agriculture production. For instance, when SEV furloughed non-essential staff, they utilised their hunter-gathering skills to forage resources for their own consumption. During temporary closure, SEV remains active on their new organic farm project and building new cabins for their overnight stays package, to prepare for post-pandemic tourists. Moreover, owners became more innovative in coming up with different new products such as offering school trip tours, film events to attract different segments of the population.

Diversification of economic activities is not new within the agritourism sector; farmers are keen on making new products to add more values. Agritourism is intricately linked to agribusiness, which involves innovation or management of “valued goods and services derived from the sustainable orchestration of food, fiber, and natural resources” (Edwards & Shultz, 2005). Agritourism farmers and community are familiar with the entrepreneurial concept of making sustainable products, much like the case of the local farmers in this case study. Together with the help of a marketing start-up, EPG and TMF collaborated to innovate a food hamper package consisting of butterfly pea flower tea (wild herbal tea), pusu rice (traditional local variety), and stingless bee honey. The new product was sold out during the Eid festive month, a period traditionally known for gift-giving usually in the form of food baskets.

The success of the hamper suggests that the pandemic caused a renewed appreciation for local food over imported food. Local food subsequently gains a competitive edge, and the hamper success is synonymous with the current boost in food localism. Food localism induces increased awareness of “supporting local small-holding farmers and developing community-supported agriculture” (Chan, 2016, p. 314). For instance, local food producers are now refocusing their product distributions to hundreds of retail outlets nationwide, to fill in the import-export food demand gap caused by the global supply chain disruptions and logistical limitations during the pandemic (The Scoop, 2020g). According to the owner of EPG, by collaborating with other local farmers the new product is a form of profitable social entrepreneurship intended to not only increase income but also to amplify the promotion of organic local products. Due to travel restrictions, the farmers diverted their efforts to regain connection with consumers through their organic food products. Therefore, by multitasking and being proactive in their agrifood business, the farmers were able to combine pre-existing agricultural resources and marketing to commercialise new products, which in return support their agritourism operations.
Around the final de-escalation phases, agritourism activities have slowly resumed. All three farms have reported to experience an increase in domestic tourism. New marketing strategies were also adopted by all the farms to attract local taste such as incorporating culinary activities, including more family activities such as river rafting, camp site, tubing or foraging to meet demands of domestic tourism in Brunei. Diversification and innovation of new products, agribusiness collaboration between farms, growing demand of food localism have resulted in multiple income sources for agritourism.

During pre-Covid, the farm visitation was roughly made up of 80%-90% international tourists mostly from Europe and other Asian countries such as China and Korea. Local tourists only made up a small percentage, which in total amounted approximately 2000 visitors every year. During the pandemic, domestic tourists’ visits are evident to surpass expectations. Respondents such as farmers and volunteers expressed that due to restrictions of international travel, locals have limited choice but to try out different tourism activities which help boost visitors at their farms. In addition, the increase in bi-monthly event such as culinary classes, pop-up sale on local produce also help with the visibility of the farms. While the farms are resilient, their revenue were still affected, and would have only recovered approximately 50% or less than the pre-Covid income, said the respondents. To emphasise, our data are only recorded from the early to late phase of the pandemic within the country, with global tourism still affected, the economic progression of agritourism post-Covid remains to be seen. On a positive note, the economic resilience as explained in this section, is a good indicator that although tourism is greatly impacted, the economic diversification of agritourism may provide lessons for the domestic tourism industry during post-Covid-19 to become more crisis-resistant and future-ready.

5.2. Digital transformations: Covid-19 tourism technology (CTT)

Covid-19 Tourism Technology are non-pharmaceutical interventions that are compliant with social distancing protocols to help ensure health security at travel destinations. The Brunei government is quite receptive to adopt transformative digital innovations, such as the contact tracing BruHealth mobile app, using online education platforms when schools were closed, smart helmets to check temperature at mosques, and iMSafe wristbands to track discharged Covid-19 patients (The Scoop, 2020c; The Scoop, 2020h). It is reportedly a step forward for Brunei to accelerate towards effective digitalisation (ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME), 2020).

The Bluetooth-based app was launched on 16 May 2020 to avoid community spread by providing real-time data to authorities with information on the people whereabouts at a specific location and time. To gain entry or exit in any establishment, the health risks of patrons are determined using five-color coding system: green and yellow codes indicate healthy users that are granted public access, while the red, blue and purple codes will not be given any access due to potential health risks (The Scoop, 2020a). About 94.9% of the population are registered on BruHealth, and the massive reception prompted additional app features to accommodate digital integration with the national health system named BruHIMS. The updated version will be connected to the BruHIMS giving access to patient’s medical records, equipped with options for users to book appointments, virtual consultations and make online payments (The Scoop, 2020f).

Collectively, these are the in-app features of BruHealth powered by artificial intelligence (AI) (Ministry of Health, 2020):

- Self-assessed health status
- Personal contact information and location data
- Granting or denying access to public spaces
- Access medical records
- Pre-booking spots at mosques
• Pre-booking physical medical appointments
• Virtual consultation with doctors
• Real-time data of Covid-19 statistics
• Archive of government announcements and news
• Showing nearby cases of infected patients

The app has undergone many updates with multi-purpose features advised by the Ministry of Health. The usage of BruHealth’s contact tracing primary feature is mandatory to officially comply with Covid-19 restrictions, hence all the farms have to allocate printed copies of the QR code at all entrances or exits for visitors to scan, to be allowed access and safely participate in tourism activities. EPG owner states that their quick decision to implement BruHealth scanning was because they were “afraid” of being shut down or considered unsafe by visitors due to non-compliancy of Covid-19 restrictions. Cooperation of agritourism farms with the contact tracing protocol has proven to be a good recovering strategy, motivated by two factors: firstly, to prevent delays in resuming their normal operations, and secondly, to attract visitors by proving that the farms are prioritising safety by using a government-issued app. Another benefit of implementing BruHealth is the ability to manage visitors easily in regulated capacities according to the mass gathering protocols. This is particularly useful for the small-scale farms because traditionally they had difficulty in managing large groups and dividing visitors into designated time slots to protect the environmental integrity of forest plants and animals, especially for the bee farm.

The BruHealth QR code posted on doors and gates becomes an undeclared token of safe tourism destinations. Additionally, the BruHealth phenomenon right now, suggests that perhaps digital technologies will have a larger role in the future of tourism. A foreseeable era of tech-driven tourism that can ensure health security while travelling, which can be a long-term strategy for a crisis-resistant tourism. Adaptation of new Covid-19 technologies with ethical, technical and social issues will however be challenging. A number of studies (Cho et al., 2020; Gasser et al., 2020; Mbunge, 2020; Sigala, 2020) have brought up the issue of data privacy with such health-based digital applications. The long-term reliability of such technologies is questionable, and it invokes a re-thinking of whether CTT will have other negative repercussions towards society. Long-term surveillance of citizen’s data might provoke socio-political issues. While the literature has underlined ethical and cyber security issues, the Human Rights Watch group emphasises the political ramifications of digital surveillance (Human Rights Watch, 2020a; Toh & Brown, 2020; Human Rights Watch, 2020b). Activists believe that location tracking programmes is an invasive data collection method because “excessively compromising privacy is a gateway to undermining other rights, such as freedom of movement, expression, and association” (Toh & Brown, 2020). Furthermore, disparities in access to proper digital technologies could leave many disadvantaged groups at high risk, and living conditions without digital facilities are not compatible for contact tracing. There are perceivable risks of using contact tracing technology, ranging from mild technical issues to more serious human rights risks. With the benefits and risks, it is advised that governments around the world should carefully consider creating digital surveillance systems that are socially inclusive and respectful to human rights with privacy-preserving protocols (Human Rights Watch, 2020b). Currently, the implications of contact tracing in local tourism has not been thoroughly investigated in Brunei. However, after the final de-escalation phase, farm owners reported to manage visitations using BruHealth as their new monitoring system and organise public events at lower risks, suggesting more positive than negative outcomes.

Besides BruHealth, EPG owner and co-founders in particular, were inspired by the virtual tourism movement organised by collaborating with a tourism advisor in Malaysia, during the early phases of the pandemic. Their version of virtual tourism involves live broadcasting on travel websites such as Airbnb, where web users are able to view a walking guided tour around the tourism site. Similarly, gastronomic tourism sites in the heavily infected nation of Italy, is also facilitated by interactive online tourism experiences in the form of “augmented and virtual reality experiences
for e-food and e-wine destinations” to maintain relationships with consumers (Garibaldi & Pozzi, 2020, pp. 46–47). The digitisation of tourism experiences is significant during the pandemic because the virtual space is flexible enough to accommodate different types of activities such as: virtual tours; remote or digital dining experiences; online cooking classes or courses; virtual food tasting events (Garibaldi & Pozzi, 2020, pp. 46–48). Virtual tourism during Covid-19 is intrinsically digitally home-based. The case studies in Italy demonstrates the capabilities of virtual tourism as a substitute of on-site tourism because digital home-based tours can “create a pre-experience of a place that can be visited afterwards” (Garibaldi & Pozzi, 2020, p. 48).

Virtual tourism benefits unlike conventional tourism are not instantaneous, but rather seen as a marketing strategy that focuses on two possible future outcomes. Firstly, virtual tourism can provide additional income by selling tourism experiences online creating a “wont” which lead to secondly, stimulating interests for potential post-pandemic tourist visits. In Brunei, EPG aimed for the benefit of maintaining contact with potential tourists using the live virtual tours or cooking demonstrations. Being the only farm who took the effort in digital tourism experiences, this could indicate that virtual tourism is not yet a popular strategy used within Brunei. This might due to the persisting issue in the applicability of novel technologies to farm and that there might be lack of know-how from local capacities. Although the Brunei government has mentioned the possibility of venturing into augmented and virtual reality at the latest ASEAN Tourism Forum 2020, there is no official strategy and plan to support in setting up virtual tourism to date (The Scoop, 2020i). The absence of established virtual tourism practices in the country could possibly hinder EPG’s participation, and might also indicate that there is less demand for digital tourism experiences in Brunei’s tourism market.

Global social media statistics indicate that Brunei has a high 94% penetration rate (Borneo Bulletin, 2020b). The high amount of social media users can be a major advantage for the agritourism farms in Brunei because it allows their promotion efforts to reach a larger audience, thus increasing Instagram’s efficacy as a marketing tool during the pandemic. Although, EPG and SEV have their own official websites, Instagram is still the most actively used. The preference for Instagram according to farm owners is based on: (1) easy-to-use interface; (2) direct communication with tourists; and (3) attracting potential tourists by actively posting promotional contents. All the owners of the three farms have responded that almost 65% of their actual customers were engaged from social media ranging from Instagram and Facebook. TMF and SEV were in fact thinking of hiring a social media manager to handle their social media direct messaging service. This reflects highly on the effectiveness of social media engagement among domestic tourists during the pandemic. TMF and SEV also pointed out that the usefulness of social media to show their effort “in making the place safe” in order to dismiss any worries that potential visitors might have. “We show how we sanitise the cabin after each use and we have taken extra precautionary measures to ensure activities are in small groups with social distancing in place. This is to ensure a peace of mind for our customers” (respondent from SEV). “A lot of help were also given by local influencers who came and visit and post their experiences in their social media platform” (Volunteer from EPG). This has resulted in higher exposure of the farms and through the interviews, discovered higher engagement and awareness. “The Instagram and Facebook video sharing platform enables social media users to feel like there are here with us. We also show some snippets of local movie filmed here in the hope to create a deeper impression for viewers with the storyline” (TMF respondent).

Studies from Liu et al. (2020) and Chin and Liu (2018) shows that the visual representations of the destinations portrayed in films can have a significant role in influencing travel. This has created a powerful marketing strategy to agritourism in Brunei and could be a cost-effective strategy for small business like SEV, EPG and TMF to reach their target audience and to boost sales during this pandemic. Similarly, the agritourism farms in California have also reported that visitors who are willing to travel to farms during the pandemic are mostly social media users who have seen the promotion of new tourism activities online (Hardesty & Leff, 2020). Similar to the purpose of virtual
tourism (Garibaldi & Pozzi, 2020), social media is used to promote positive destination brands to attract future visitors as a form of crisis communication (Sigala, 2020). Social media is an effective tourism crisis management tool, to regain public trust and minimise negative associations of destination image, which can help lower tourists’ perceived risks (Sigala, 2020, 2011). For instance, UNWTO used the hashtag #traveltomorrow as part of their crisis communication to “promote a positive and uplifting message, build and associate destination brands with good values” (Sigala, 2020, p. 318). Online platforms of user-generated content, such as Instagram have significant role in perception formation of a place (Lopes et al., 2019). The ultimate goal of crisis management through social media in Brunei is to promote low risk tourism activities and to convince the public that agritourism farm is the safer destination choice. In our observations of their sold-out events and increased tourist visitations after the final de-escalation level, are indicative that their social media promotions can be considered as a cost-effective crisis communication tool.

5.3. Adaptive human resources
The action behind economic diversification and adaptation of Covid-19 Tourism Technology will be in vain if not for the agile thinking and adaptive capacities of the farm owners to mitigate the negative impacts of the pandemic. The most notable objective of agritourism farms is to make contributions to their respective village communities. Socio-economic capacity building is the core of community-based agriculture especially for small-scale farms that have limited funding or utilities. Though there are no associations or cooperatives in Brunei, the agritourism infrastructure is built by the joint effort between owners and the local farming community. The three farms are the first few agritourism operators in the country, by referring to the agricultural heritage of the villagers and learning new sustainable farming methods on their own, they were able to pioneer in the niche market.

As agritourism activities developed, the villagers experienced community capacity-building to assume the double role of being a sustainable farmer as well as being a tourism operator. Thus, agritourism farmers are already multi-skilled because they can perform different roles achieved by practicing new agriculture methods with their indigenous agricultural knowledge. At EPG for instance, farmers were also trained to be multitasking guides while teaching tourists about local foraging techniques in the forest and gathering wild produce for their own consumption. “At first my job is to farm as I have been farming since young. But as time goes by, I notice that tourists are curious about why I farm such crops and how I farm them. They also wanted to learn how to farm. I slowly learn better English and upgrade myself to explain different ways of farming and different wild herbs available within the surrounding” (Farmer from EPG). Similarly, villagers in SEV are also responsible in performing multiple roles. “I was good at farming different produce and all the produce are used for preparing meals for tourists. The owner later recognises my knowledge on wild animals and herbs and started to train me to become an eco-guide. I love it now that I have more than one role here. I now also bring tourists into the forest to see wild birds and animals (Farmer of SEV). “We plant different crops throughout the year as we have already predicted when the flood season is and adapt according to the weather. We learn this throughout the years by experiencing different farming methods, different natural fertilisers etc” (farmers from EPG). Owner of TMF similarly get their idea of showing their bee farm from their workers. Agritourism farmers are more entrepreneurial than traditional farmers (Barbieri, 2009) and historically to survive disasters, farmers must become adaptive to new agriculture systems or changes (Milestad et al., 2012). Local farmers are capable of being adaptive by learning new skills and organising new tourism activities. According to the ASEAN responses reports, the crisis will “accelerate the adoption of new ways of working and demand of new skill sets” (ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME), 2020, p. 17). ASEAN member states including Brunei, have been providing “workforce training” as a long-term structural measure to upskill and reskill temporarily displaced workers or the recently unemployed (ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME), 2020).

The current workforce training strategy shows that tourism workers and operators must be multi-skilled and not over-reliant on outdated ways of working to manoeuvre around crisis impacts. The three
agritourism farms have also resorted to reskilling or upskilling at the early phases of the pandemic. The village farmers as a result of their participation in agritourism activities, have been able to expand their capacities or skillsets. Their engagement at the farms involve a major upskilling by learning new hands-on knowledge. Even at the early years of their operations, the farmers are adaptive learners, for instance, EPG learned how to become more sustainable by making their own bio-char fertiliser, TMF constructed the bee farm from independent research. During the pandemic, when their operations halted, they remain active in learning, and a good example is when EPG owner together with the co-founders attended an online course on virtual tourism. Despite the unlikelihood of introducing novel virtual tourism in the domestic market, the EPG farmers at the very least are future-ready with the basics of digital-based tourism experiences and are more likely to evolve by trying new agritourism approaches. Job insecurities and unemployment caused by the pandemic exposes the fragility of the local workforce and expanding their skillsets that match future outlooks is recommended to progress. The agritourism farm owners and their farmers exemplify the idea that the crisis offers a reflexive time and space to improve their operations with new knowledge and creative strategies.

6. Conclusions
Our research findings support the data by similar case studies in Italy, Poland, California and Western Australia, that indicate agritourism can achieve resilience and provide a low-risk travel destination during Covid-19. Agritourism resilience at the three local farms are aided by socio-economic and technological crisis management strategies. Additionally, Brunei’s tourism has an advantage due to the low infection rate and efficient Covid-19 restrictions. Moreover, the negative impacts are mostly experienced during the early phases of the outbreak. A common pattern of tourism revenue loss caused by the decline of international tourist arrivals is also discovered, which suggests that global tourism economy is still fragile against the pandemic. Economic diversification is a key strategy in creating multiple sources of income from new tourism activities. Agritourism economic activities can be diversified by innovating various sustainable products and focusing on food localism in the existing agribusiness.

CTT is also another common theme in the current local and global tourism industry. The purpose of CTT is to automate the management of safe tourism practices that adhere to Covid-19 restrictions. The mandatory technology employed at the agritourism farms is the contact tracing app, BruHealth. As a safety procedure the AI-powered app verifies the health status of visitors, only healthy visitors with green and yellow codes are granted access into the small farms and other public premises. The implementation of digital technology at the farms marks a small step towards digitalisation of Brunei’s tourism industry. In addition, social media such as Instagram is proven to be a transformative software in its role as a crisis communication strategy. Continually posting positive tourism contents online evidently helps to lower tourists’ perceived risks and reignite visitors’ interests on agritourism. Even after the ease of travel restrictions, the changing travel patterns and risks might tourism expectations. Virtual tourism or in this case the use of social media act as a vital tool to familiarise travellers with the new normal can help rebuild visitor confidence. While plans on virtual tourism is not yet solidified in Brunei, the potentials of creating digital home-based tourism experiences can be strategically applied in the future. At the micro level, agritourism farmers are now multi-skilled and this important advantage makes them an adaptive workforce and less susceptible to prolonged job insecurities. Another interesting point is the fact that the adaptive human resources is not a new strategy, rather it is a positive feature of agritourism that has existed even before the pandemic. In the literature, agritourism innovativeness can vary and requires smart solutions that come from pre-existing resources. At the core of agritourism is the essence of competitiveness and agritourism farmers are conditioned to be diligent for change and constantly reinventing themselves to avoid the debilitating pitfalls of entrepreneurial stagnation.

It is important to note that these Covid-19 recovering strategies are selective to Brunei and contingent upon the changing situations of the pandemic. Arguably, a smaller nation like Brunei, with about half a million populations will be able to contain the pandemic faster than densely populated nations. The strategies of agritourism in Brunei might be applicable to other ASEAN states facing similar socio-political background, and the long-term positive effects of the strategies
currently used will remain to be seen in a future investigation. The crisis management strategies offer valuable lessons to create a crisis-resistant and agile tourism industry in the future. The pandemic also reveals weaknesses of the existing tourism industry especially in health security and the lack of internal defence mechanisms against external crisis. Issues from the current CTI such as privacy and ethical issues will require more in-depth investigation in future research. Virtual reality or virtual tourism might or might not replace conventional tourism in the future, however it could create a “try before you buy experience” for the future market. Moving forward, the pandemic hints at the need to be proactive in creating crisis-proof tourism innovations to buffer any impacts from future challenges. Although the study is able to confirm the resiliency of agritourism in the case of recovering from the Covid-19 pandemic, it is unfortunately based on a small sample of agritourism in a country that has been relatively low risk since the first imported cluster. The applicability or the validity of the strategies used at the three farms may not be effective against large countries with high infected cases. Nevertheless, the pandemic has revealed that there is a need to develop a crisis-resilient tourism and learning from any of the strategies presented in this study would still be beneficial for future analysis. In investigating the unexpected resiliency in a small nation, the strategies discussed can also contribute to the underrated and growing knowledge that support the potentials of agritourism especially in developing countries.

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Author details
Wei Lee Chin1
E-mail: weilee.chin@ubd.edu.bn
ORCID ID: http://orcid.org/0000-0002-9297-283X
Siti Fatimahwati Pehin Dato Musa2
E-mail: fatimahwati.musa@ubd.edu.bn
ORCID ID: http://orcid.org/0000-0003-1987-4595
1 Faculty of Arts and Social Sciences, Universiti Brunei Darussalam, Jalan Tunku Link, Gadong BE1410, Brunei Darussalam.
2 UBD School of Business and Economics, Universiti Brunei Darussalam, Jalan Tunku Link, Gadong BE1410, Brunei Darussalam.

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