A Pre-Science Style Model of Aquaculture Tourism Businesses

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Abstract

This research note introduces a research agenda for the development of aquaculture tourism. The first aim of this research piece is to present the emerging phenomenon of tourism based on aquaculture operations. These businesses may conveniently be collected under the umbrella term aquaculture tourism by designing tourist experiences based on aquaculture farm setup. The second aim is to provide a structure for the investigation of these facilities. Building on three pillars of allied academic effort-sideline tourism, lifestyle entrepreneurship and tourism

engagement, this study offers a pre-science model for aquaculture tourism businesses. A model with an incremental insight is introduced based on the notion of visitor engagement, connecting engagement to economic performance in a new context wherein existing aquaculture enterprises adopt tourism to present a new product. The value of this kind of model lies in its potential benefit to those who seek to offer and market a range of opportunities for small scale, less resilient businesses.

Keywords: Aquaculture tourism; sideline tourism; tourist engagement; lifestyle entrepreneurship; small aquaculture businesses.

INTRODUCTION

Aquaculture is the farming of aquatic organisms such as fish, crustaceans, molluscs, algae/seaweeds and even amphibians and crocodiles (Lucas *et al*., 2019). Emerging in the 1970s and 1980s, it is a relatively new, dynamic, and rapidly growing global food production sector (Kim *et al*., 2017). Aquaculture is increasingly lauded as a major supplier of high-quality animal and plant protein and is primarily practised in rural areas along the coastline, inland in lakes, rivers, and earthen ponds, and industrial urban areas using recirculated systems (FAO, 2018). Aquaculture as an industry has witnessed impressive, sustained growth of 10% per annum across the 1990s and 5.8% per annum between 2000 and 2016 (FAO, 2018). The industry has grown so quickly that half of humanity's consumption of seafood is now derived from aquaculture sources (FAO, 2018). Aquaculture has a global footprint with the majority of aquaculture production originating from Asia and largely stemming from family-based, or small-holder enterprises (Edelman *et al*., 2014). While the focus of aquaculture is food production, select other high-value products, such as skins and pearls for jewellery, are also produced (Faganel *et al*.,2017). However, unlike that seen for terrestrial food production sectors where integration of aligned tourist opportunities is well-recognised (McGehee, 2007),

the socio-economic links between aquaculture and tourism have to date been poorly investigated and aquaculture tourism as a distinct offering is only now being appreciated as a value-adding activity existing aquaculture enterprises can diversify into.

MODEL DEVELOPEMENT

The work is based on three pillars of academic endeavours. The first pillar to be used in formulating the nature of aquaculture tourism is side-line tourism (Kelly & Dixon, 1991) that involves commercial sites conducting non-tourist activities as their core activity and adding value by offering a tourist experience linked in some way to their core undertakings (Table 1). An example of this may be where an aquaculture enterprise is producing a commodity such as pearls but offers an experience of interest to tourists that introduce them to the pearl production process, opportunities to seed their own oyster with a pearl, and then have a gift shop on-farm to help sell their product to tourists. Aquaculture operations fit well under this definition and benefit from its potential to develop tourism. As aquaculture tourism is based on a non-tourist product, it will be less fragile to tourism super-shocks, or other disruptive events making it resilient to business shocks. The tourism related side-line activities will bring benefits to both aquaculture enterprises and tourism engaged in the service delivery. The interdependence ensures business resilience to cover and support the peer industry at the time of crisis. Consequently, the risk of investment in comprehensive infrastructure development will decrease in the current rapidly changing operating and consumer environment enhancing business viability.

[Table 1 near here]

Table 1 Aquaculture Tourism Related Activities

Farmed Species	Example species	Possible tourism activity
Fish	Salmon	- Educational tour
	Barramundi	- Catch and take
	Tuna	- Cooking lessons
	Trout	- Culinary experiences
Molluscs	Pearl oysters	- Pondside accommodation

	Edible oysters Giant clams Mussels	- Ecotours - Gift shops
Crustaceans	Shrimp Crayfish	
Algae	Seaweed Microalgae	
Reptiles	Crocodiles Alligators	
Ornamentals	Marine aquaria species Seahorses	

Sideline tourism as an offering has been popular for some time in European countries and more recently in Asian destinations, especially in agritourism (especially in remote and regional locations). Two of the primary food production activities in rural areas based on their geographical setting are agriculture and aquaculture. The economic structure in rural areas has been changing over time and increased expansion of agritourism in rural areas has helped diversify economic activities, as well as provide improved social outcomes (Santeramo, 2015). The growing benefits of agritourism have encouraged entrepreneurs, small businesses, farmers, and tourism boards, to focus on this new emergent sector (Sgroi *et al*., 2018; Streifeneder, 2016). Although agriculture tourism and its potential are well studied and developed, aquaculture tourism is in a nascent stage of development and is characterised by a lack of knowledge. Although these two areas of special interest tourism are closely related examples of industrial tourism, aquaculture tourism has distinctive and differentiating characteristics in terms of location, controlled water-based farm practices, the uniqueness and novelty of species being farmed, and sensory attractiveness. Aquaculture has different attributes compared to agritourism, so the development barriers and benefits present a unique set of considerations to deliver purposeful tourism activity.

Across the aquaculture producing regions of the world, and especially the tropics, the need to build income and preserve food resources are compelling reasons to consider aquaculture diversification through tourism (Edelman *et al*., 2014; Filipski & Belton, 2018). The potential conjunction of aquaculture and tourism clearly brings together two contributors to national

income and employment in many countries. The demand and competition for the farmed aqua product are increasing worldwide, as is the awareness of the importance of the further development of sustainable small businesses. Small scale aquafarms are important sources of livelihood to many people through Southeast Asia and the Pacific, although the industry in these regions is currently impacted by production constraints and migration from rural areas to cities (Primavera, 2006). Providing additional sustainable livelihood approaches for aquaculture communities could mirror successful outcomes as seen for family-based fisheries in the same region (Diedrich *et al*., 2019).

Only a few studies consider the potential of aquaculture enterprises to create value through tourism and tourist engagement. These studies have considered the willingness of ecotourists to pay for fish farm-based recreation sites; tourist perception of a developing coastal farm (Outeiro *et al*., 2018; Nimmo *et al*., 2011); and potential diversification in aquaculture activities (Faganel *et al*.,2017). This literature serves the first aim of the study; to present the merging nature of aquaculture operations and situate this set of facilities within the field of attraction research built on other industries.

A second pillar is concerned with tourist engagement. Here the long-standing tradition of analysing the extent to which tourists are interested and engaged in a tourism activity provides a basis for building an organising model of aquaculture tourism business. Engagement is where the tourist develops a deeper relationship because of the experience (Loureiro & Sarmento, 2019). Engagement as a concept stretches beyond involvement. Huang and Choi (2019) argue that involvement is only one phase of engagement that encompasses occupation, attention, absorption, dedication, interaction, or engrossment. Tourist engagement is a two-way interactive, co-creative relationship between tourists and the

attraction/activity/people/encounter in the destination resulting from a personalized tourist-centric experience (Choi, 2017).

Engagement as a context-based concept is more studied in marketing under two perspectives: psychological (So *et al*., 2014) and behavioural (Romero, 2018). The focus of marketing studies is on how to engage the customers to make them more satisfied and loyal. Engagement can be distributed through suggestions, recommendations, blogging, comments, share, likes, writing reviews, loyalty programs and interactions (Choi, 2017). In the marketplace, engagement is critical due to its value for making tourists loyal (Romero & Okazaki, 2015). Engagement adds value to the business by bringing experience and knowledge to the system (Choi, 2017). Tourists can play active roles if the business provides the resources such as time, money, and human resources (Huang & Choi, 2019). The ultimate objective of investing in tourist engagement is making and keeping tourists loyal and influencing others.

Finally, the third pillar considers the relationship between the central enterprise's industrial operation and the more specific tourism counterpart. Such links have been studied in several areas, including lifestyle entrepreneurship. The work of Ateljevic and Doorne (2000) about lifestyle businesses identifies the relationships between suppliers and the market that can be reformulated for the present interests. Lifestyle entrepreneurship explained the significance of lifestyle motives for small scale enterprise development. Lifestyle motives stimulate development by targeting niche markets informed by common values. The focus of lifestyle entrepreneurs is on introducing innovative products to the industry by considering sustainability and a sense of community (Wang *et al*.,2019; Sweeney *et al*., 2018). This concept discusses the four principles of lifestyle entrepreneurship including market, industry, organization, and culture (Ateljevic & Doorne, 2000).

In the lifestyle entrepreneurship environment concept, sense of place and community identity are significant elements of the business culture (Ateljevic & Doorne, 2000). The high dependence of aquaculture operations on environmental conditions highlights the importance of diversifying livelihood options (Ambelu *et al*., 2017). Dependence on natural resources exposes aquaculture operations to multiple stresses. According to Matarrita-Cascante and Trejos (2013), the many changes that resource-based communities have experienced in recent decades are changing the economics of these communities from extraction to services. In addition, aquaculture livelihoods in developing countries often depend on family members as a key input in the production process. Each aquafarm household must have the necessary workforce to operate as a production unit. Thus, the shortage of an active population due to outward migration and demographic shifts will reduce the production capacity of these communities and will weaken their financial base. Lack of financial resources also makes these households vulnerable. Tourism can act as a resilience-building tool to buffer enterprises against production challenges, costs, and declines in human resource capacity. Importantly, aquaculture tourism may generate reasons to hold labour in a community and thus portray a purposeful ideological position.

Considering lifestyle enterprises, aquaculture tourism activities at the micro-level (i.e., individual enterprises) potentially offer opportunities for producers to supplement their income. At the macro-level, aquaculture tourism could contribute to several pillars of sustainability in aquaculture-based communities, particularly as these are more than not rurally situated. Building tourism infrastructure and using the aquaculture sites for tours and in regions with low socioeconomic status may target several of the United Nations Sustainability Development Goals (2021), namely providing increased employment, stimulating educational offerings, empowering women, boosting gender equality; and, through economic growth, contributing to viable communities. The evolutionary history of agriculture and its links to

tourism reveals a development pathway that can be applied to aquaculture. Key considerations for this succinct review include the stimulus for development, the need for educational programs, community resilience and tourism development options.

The second aim of the work employs the material from all three pillars to construct an *a priori* account of the nature of aquaculture tourism operations. This model (figure 1) investigates the success of aquaculture tourism operations based on the level of investment and tourist engagement. The rationale for this model lies in the particular challenge of assembling and organising results as studies emerge in this relatively understudied field. A troubling issue for many new themed areas in tourism is the lumping together of variants of a type of tourism. A failure to differentiate variability in the types of businesses being studied results in difficulties in planning research, challenges in executing studies and mistakes in interpreting findings across published work. By way of contrast, a structure that proposes meaningful initial classifications of a topic area may be helpful in forcing researchers to consider how their specific work fits into a larger framework, even if that framework evolves. The rationale being proposed here is consistent with work that has been described as pre-science, the systematic identification of likely variables of interest before the study of individual cases (Corley & Gioia, 2011). These authors suggest that pre-science should involve a careful review of the topic involving "discerning what we need to know and influencing the intellectual framing of what we need to know to enlighten both academic and reflective practitioner domains" (2011: 23).

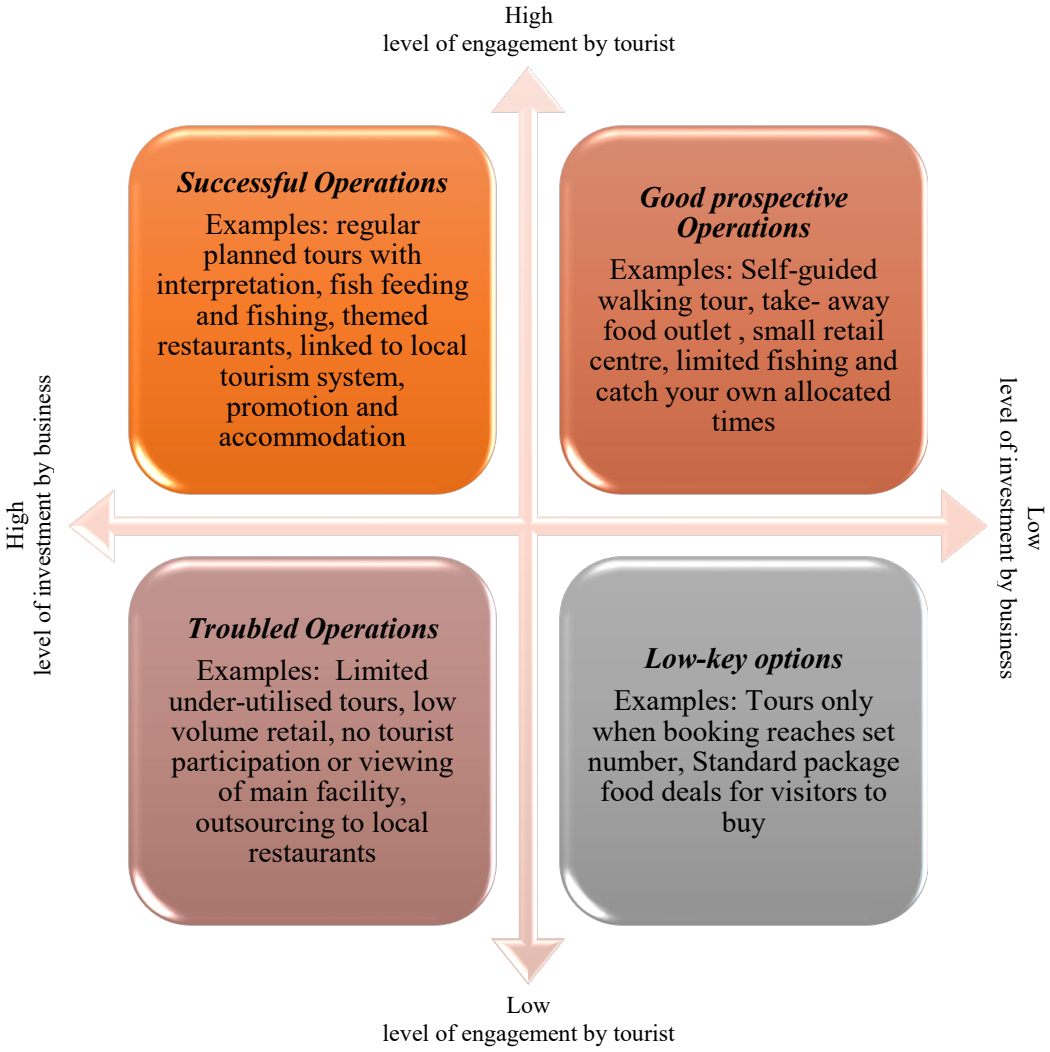

Figure 1. A pre-science style model of aquaculture tourism businesses

CONCLUSION

This research proposes a model with an incremental insight based on a tourist engagement concept, which relates the engagement to the business success in a new context of aquaculture enterprises adopting tourism. The scientific utility of the model is its potential to test the success of aquaculture enterprises through the level of tourist engagement. There are practical implications for aquaculture tourism developments as well, notably incorporating the options into a community's economic system in terms of provision of materials, maintenance, servicing, and cultural links. As Nair and Hamzah (2014) point out, critical success factors for creating community-based tourism depend on both servicing basic needs and creating a novel or interesting local experiences. Further, if an external entrepreneur participates in the

development, carefully calculated and equitable distribution of benefits are important for the success of the project (Sharpley, 2018). The practical utility of the model refers to aquaculture business managers who can apply different strategies to provide resources and improve the dimensions of the tourist engagement and experience. As it is discussed in the pre-science model, enhancing the level of engagement and the level of investment and allocation of resources can lead to increased success of the business and the tourist operation through making previously engaged tourists loyal to return and attract new tourists. The proposed model (Figure 1) could act as a market segment tool to classify tourists into categories to facilitate integrated marketing to each heterogeneous segment.

A review of the literature has revealed a lack of research that considers the potential of aquaculture enterprises to create value through tourism. Beyond payment for access to fishing sites, the wider options for aquaculture tourism developments can be canvassed, assessed, and researched. Taking a multi-stakeholder view, research efforts can be directed at selecting cases and building pre-construction evaluations of some of the following options. Educational tours combined with food tours represent a potentially low impact beginning for some locations. This kind of school and study tour income for guides has been the base for village community ecotourism development across several countries where aquaculture activities exist (Baiquni & Dzulkifli, 2020). Homestays, or the use of purpose-built specialist accommodation, are another possibility for communities that have aquaculture as their mainstay. There are implications for educators and planners with these kinds of developments, notably incorporating the options into community economic systems in terms of the provision of materials, maintenance, servicing, and cultural links. Unlike locations with fishing activities, aquaculture areas are sometimes considered less attractive and picturesque, but those enterprises can benefit from changes in the viewpoint of the contemporary consumer's perspectives; that is some market segments are no longer singularly concerned with buying

goods and services but are also concerned with engaging and potentially co-creating experiences (Kim *et al*.,2019). Future tourism growth comes from businesses offering enriched and distinct consumer experiences (Novelli, 2018).

This proposed model is a business-oriented model based on the economic pillar of sustainability and promoted by economic positive effects such as the generation of supplemental income and additional employment, as well as capital investment (Filipski & Belton, 2018). As a limitation, this model does not adequately account for the environmental and social costs and benefits associated with externalities. Each development has the potential for both positive and negative externalities and side effects. There are still negative public perceptions regarding the environmental impact of aquaculture due to waste generation, alteration of water quality, endangerment of marine life, and threat to consumer health (Tsani & Koundouri, 2018), despite the aquaculture industry's recent history of sustainable development and contribution to food security (Garlock *et al*., 2022). Education through tourism will inform and correct many unfavourable perceptions about aquaculture by engaging tourists in such activities and investing in information sharing to show the positive effects, such as food security, biodiversity, alternative lifestyles (Garlock *et al*., 2022; Urquhart *et al*., 2013), preservation of traditional skills (Symes and Philipson, 2009), reduction of migration (White & Costelloe, 1999), better quality of life, and wellbeing of communities (Stacey *et al*., 2019; Tsani & Koundouri, 2018). Additionally, adopting a Social Cost Benefit Analysis approach (Tsani & Koundouri, 2018) would enable aquaculture businesses to make decisions that are consistent with the ideas of environmental, economic, and social sustainability.

Four broad research areas of future interest arise from this discussion. Research is needed on the environment, resources/assets and unique features/products of aquaculture operations; the local community's perception, readiness and involvement; physical and psychological

requirements and barriers of aquaculture tourism development, and finally a market analysis would be a key component of studies to identify and consider the needs and demand of the target segments, analyse their perception towards this new niche sector, and recognizing collaborators and competitors in the market. Aquaculture undoubtedly will be a key provider of the world's protein in the future. Although the growth has slowed down in developed regions due to social-environmental challenges (Young *et al.*, 2019). A deeper study is needed to justify models for both developed and underdeveloped destinations. Tourism linked to this sector may buttress the resilience of the communities that serve these national and global interests. Educational steps and multiple studies are needed to prepare strategic business plans for aquaculture tourism options across the many and varied aquaculture enterprises on the sustainability journey.

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