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IMPACTS OF TECHNOLOGY INVESTMENT ON TOURISM GROWTH AND EMPLOYMENT

REGIONAL RESEARCH CONNECTIONS

REGIONAL AUSTRALIA INSTITUTE

University of South Australia

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Regional Research Connections (RRC) is a partnership with Universities that provides new capacity for regional policy research in Australia. Four Universities have joined with the Regional Australia Institute (RAI) in 2018 to form RRC – University of South Australia, RMIT University, and Charles Darwin University. RRC supports RAI's Intergovernmental Shared Inquiry Program.

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Independent and informed by both research and ongoing dialogue with the community, the Regional Australia Institute develops policy and advocates for change to build a stronger economy and better quality of life in regional Australia – for the benefit of all Australians. The RAI was established with support from the Australian Government.

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EXECUTIVE SUMMARY

The following report has been prepared for the Regional Australia Institute by researchers from the University of South Australia Business School. The report presents findings of an investigation into the impacts of technology and innovation on the tourism industry in regional Australia. The scope of the research project included:

- Desk research to collate data on the economic impacts of tourism in regional Australia
- A scoping study on the application of technologies and innovation in the tourism industry
- A review of the empirical literature on the effects of technology and innovation on:
    i. tourism demand
    ii. enterprise performance
- Case study analysis of four tourism destinations impacted through technology. Case studies were developed through qualitative interviews and secondary data
- A quantitative survey of 200 tourism businesses operating in regional destinations

Major findings from the report include:

There is a major disparity between city and regional tourism destinations. In particular, increasing international visitors to regional areas presents a significant opportunity for Australia. With tourism investment being primarily directed toward city destinations, this disparity in visitations is likely to continue and the destination divide will further grow. This prompts the recommendation for government to incentivise tourism investment for the regional areas.

With respect to technology, our research suggests there are two primary applications for technology in the tourism sector. The first is driving demand through the adoption of technologies that promote destinations in new and interesting ways. The case examples we found suggest the use of Virtual and Augmented Realities (VR and AR) to orientate a potential visitor to a destination and entice a visitation. Furthermore, tourism businesses themselves are increasingly using online platforms, such as Facebook, Twitter, and Instagram to promote their products and services which in turn increases access to potential international visitors. The second application of technology drives entrepreneurship and growth at the business level. Technology is transforming the tourism experience and tourist purchasing behaviours and this significantly influences the growth and development of new business models that adopt mobile technologies, travel apps, sharing economy, and social media platforms. The use of big data, Google trends and search engine query data also provides deeper insights into the tourism consumer and their behaviours, and this can lead to the development of new products and services and continuous adaption to changing market trends.

Broadly, the tourism sector has challenges to confront with respect to the profiles of businesses within the tourism sector and the adoption of technology. The sector exhibits low levels of graduate and higher education and is largely represented by school leaver and vocationally trained owners and managers.

While this need not be a barrier in itself, it does suggest lower awareness and preparedness for the adoption of new technology. There is a predominance of small and micro businesses within the sector that are both poorly resourced for the acquisition and adoption of technology and relatively lightly serviced and under-supported. This highlights a clear need for training and development, awareness raising interventions, and investment in the building of skills and capabilities across the sector.

Technology presents opportunities for Aboriginal and Torres Strait Islander Operators who can leverage the sharing of experiences that social media technology enables. Increasingly, tourists are picking locations based on social media postings, so it is important that infrastructure and access support travel to regional destinations. Governance bodies are advised to work with Aboriginal and Torres Strait Islander tourism operators/regions in incorporating technology to develop a distinctive marketable identity. The establishment of unique brand identities driven by Aboriginal and Torres Strait Islander cultural custodians, and maximising the benefits of technology investment through improved customer reach and engagement, are also encouraged.

Increasing the adoption rates of technology will not fall to either the government or business sectors alone. While this may be the case, our survey work illustrates the relative weakness of business relationships with universities and state and federal tourism commissions. On the other hand, our case studies highlight the importance of partnerships between business, government and universities in building capacities and capabilities. Governments can facilitate destination based data monitoring and assist the establishment of shared targets and opportunities for tourism. Universities can provide specialist expertise for both technology use and data collection and analysis that may absorb and share the risks of setting up new tourism initiatives and ventures. Through collaboration the tourism sector can expand the rate of technology adoption to achieve greater attraction and better efficiencies and productivity in regional service delivery.

IMPACTS OF TECHNOLOGY INVESTMENT ON TOURISM GROWTH AND EMPLOYMENT

INTRODUCTION

This report presents the findings of a project on the impacts of technology investment on tourism growth and employment. The research project was conducted in response to the Regional Australia Institute's (RAI) brief as part of the Shared Inquiry Program on The Future of Regional Jobs initiative. Tourism continues to play an important role in the Australian economy, with a direct contribution of $55.3 billion to Australia's GDP. The tourism sector accounts for 10% of total export revenues and employs over 920,000 people (equivalent to 1 in 13 Australians) (Tourism Research Australia 2019). The number of full-time employees in the tourism industry has increased from 477,500 in 2000-2001, to almost 600,000 in 2016-2017 (ABS 2018).

Data from the Tourism Satellite Account shows total tourism expenditure by domestic and international visitors was almost $136 billion in 2016-2017. More significantly, 43% of all tourism expenditure occurs in regional Australia (Tourism Research Australia 2019). Australia Tourism Investment Monitor shows that investment in tourism reached $44 billion in 2017-2018, an increase of $6.2b from previous years. This represents over 200 projects in aviation, arts, recreation and accommodation.

In 2017 there were an estimated 288,614 tourism related businesses in Australia, which are predominantly micro, small and medium enterprises. Only 5% of tourism enterprises employ 20 or more staff. However, recent trends show a shift away from small/ micro enterprises to medium and large businesses due to expansion and consolidation among smaller firms. The rate of business growth is fastest among larger enterprises with higher turnover and greater number of employees (Tourism Research Australia 2019).

RESEARCH OBJECTIVES AND QUESTIONS

This project focuses on tourism development in regional Australia and how technology can support tourism demand, entrepreneurship and business performance. It explores the factors driving business and employment growth and examines the impacts of innovation and technology in:

- Supporting the capabilities and performance of tourism enterprises in regional Australia
- Creating opportunities for increasing the level of employment in the tourism industry by expanding tourism capabilities in regional destinations.
- Creating opportunities for increasing domestic and international demand for tourism in regional destinations

The research addresses the following questions:

- How can technology be used to drive tourism development and growth in regional Australia?
- How can technology be used support regional destinations and tourism enterprises to access international tourist markets.

- How does technology investment and innovation contribute to tourism entrepreneurship, business performance and employment growth in regional Australia?
- What other factors influence tourism innovation, entrepreneurship and business growth in regional Australia?
- What strategies are suggested by the evidence that Governments and destination managers may implement to support tourism growth and employment in regional destinations?

PROJECT SCOPE

To address the research questions, the scope of the project included the following activities:

1) Desk research to collate, analyse and interpret economic data on tourism impacts and growth in Australia, with focus on regional areas.
2) A scoping study on recent advances in technologies and innovation being implemented across the tourism industry.
3) A review of the academic literature on the impacts of technology and innovation on tourism development- including the impacts of technology on driving tourism demand and supporting tourism enterprise performance.
4) Case study analysis of four tourism destinations impacted through technology. Case studies are developed through primary (qualitative interviews) and secondary data.
5) Conducting a quantitative study on technology and innovation in tourism enterprises in regional Australia. This involves telephone survey of 200 regional tourism business operators to examine:
    a. Business use of technologies and different types
    b. Perceived impacts of technologies
    c. Barriers and challenges to technology access and adoption.
6) Preparing a consolidated report based on the case study analyses and quantitative survey results that presents implications for research, practice and policy.

REPORT STRUCTURE:

The following report is presented in several sections:

Section1: Empirical studies on the impacts of technology and innovation in tourism.

This section presents a review of literature on tourism and technology, covering empirical research over the past 5-year period. The literature review explores the evidence on how technologies have created opportunities for developing tourism demand for destinations, as well how technologies are implemented in tourism enterprises and the outcome of their adoption on business performance.

Section 2: Economic analysis of tourism in Australia

Section 2 presents an overview of tourism economic data in Australia, focusing on regional tourism and regional destinations.

Section 3: Case studies on technology and tourism development in regional Australia

This section presents the analysis of four case studies conducted to explore:

- How can technology be used support regional destinations and tourism enterprises to access international tourist markets.
- How can technology be used to drive tourism growth in regional destinations
- How does technology investment and innovation contribute to tourism development, business growth and employment?

The four case studies presented include:

- Case Study 1: Innovation in wine tourism: Evidence from South Australia
- Case study 2: Impact of technology on regional tourism development in Queensland
- Case study 3: Impact of technology / innovations on regional tourism development in Tasmania: The Tourism Tracer project.
- Case study 4: The use of technology in developing Aboriginal Tourism

Section 4: Quantitative survey of tourism business operators in regional Australia.

This section presents the results of a quantitative study on technology and innovation in tourism enterprises in regional Australia. Data was collected through telephone interviews with 200 tourism business operators in VIC and NSW to examine: 1) Business use of technologies and different types; 2) Perceived impacts of technologies; 3) Barriers and challenges to technology access and adoption.

Section 5: Conclusions and recommendations

This section presents the conclusions of the report with emphasis on addressing the research questions for this study:

- How can technology be used to drive tourism development and growth in regional Australia?
- How can technology be used support regional destinations and tourism enterprises to access international tourist markets.
- How does technology investment and innovation contribute to tourism entrepreneurship, business performance and employment growth in regional Australia?
- What other factors influence tourism innovation, entrepreneurship and business growth in regional Australia?
- What strategies are suggested by the evidence that Governments and destination managers may implement to support tourism growth and employment in regional destinations?

SECTION 1: EMPIRICAL STUDIES ON THE IMPACTS OF TECHNOLOGY AND INNOVATION IN TOURISM

This section presents a review of literature on tourism and technology, covering empirical research over the past 5-year period. The literature review explores the evidence on how technologies have created opportunities for developing tourism demand for destinations, as well how technologies are implemented in tourism enterprises and the outcome of their adoption on business performance.

INTRODUCTION

Recent research has highlighted that "the tourism industry has undergone a drastic transformation with the arrival of information and communication technologies (ICTs) since the 1980s, and especially with the advent of the Internet since the late 1990s" (Navío-Marco, Ruis-Gómez & Sevilla-Sevilla 2018, p. 460). New technologies and the proliferation of the mobile Internet have challenged and disrupted the tourism industry during the past years. Mobile technologies are playing an increasing role in the tourist experience – visitors search for attractions, accommodations and services online, using mobile devices, travel apps and social media platforms. Tourism service providers make extensive use of online platforms, such as Facebook, Twitter, and Instagram to promote their products online. User-generated content (UCG) such as reviews on TripAdvisor are increasingly adopted by tourists in their purchase sections. However, tourism businesses located in less developed regions face many challenges in keeping up with the pace of technological change and adopting technologies to create value.

This literature review is developed from a search of the empirical research on tourism and technology over the past 5 years. Empirical papers were collated from leading academic journals in tourism management field including Annals of Tourism Research, Tourism Management, and Journal of Travel Research. Evidence shows that innovation and technologies have impacted tourism through: 1) driving tourism demand for destinations; and 2) Changing business practices and strategies related to tourism products, services, operations, marketing distribution (i.e. the supply side of tourism). These are discussed in the following sections.

TECHNOLOGICAL IMPACTS ON TOURISM DEMAND

As a result of the unprecedented growth of the global tourism industry, tourism demand forecasting turned into a relevant objective for Destination Management and Marketing Organizations (DMOs) as well as for various service providers. Since tourists use search engines as a leading tool for their vacation planning, researchers have adopted search engine query data to predict the consumption of tourism products (Dergiades, Mavragani & Pan 2016). Search engine queries, also understood as one form of big data, have turned into a new information source to forecast tourism demand (Li et al. 2018; Sun et al. 2019). Sun et al. (2019), for example, propose in their study a forecasting framework that combines machine learning approaches with internet search indexes to predict tourist arrivals in popular Chinese destinations. Bokelmann & Lessmann (2019), in contrast, analyse the frequency of hits for tourism-related search terms from Google Trends Data as a predictor for short-term tourism demand in

Germany. Other researchers have also pointed out the challenges to forecast international tourist arrivals due to search terms used in different languages and the varying dominance of search engine platforms used in different countries (Dergiades, Mavragani & Pan 2018).

Search engine query data has become one information source that is increasingly used in both tourism research and practice, other forms of big data exist that are equally relevant. Li et al. (2018) summarize three main categories of big data and how they are employed in tourism.

- User-generated content (UGC): data that includes online texts and photos – data that can be found on review platforms, such as Yelp and Trip-Advisor, but also on social media platforms, such as Facebook and Instagram.
- Device data: data that is transmitted from mobile devices – including GPS, mobile roaming data, Bluetooth etc.
- Transaction data: data that is derived from web search, webpage visits, online bookings etc.

While web search data has already been discussed, geotagged data has turned into a new tool for service providers to predict tourism flows within a destination.

GEOTAGGED DATA FOR PREDICTING TOURISM FLOWS

Understanding the mobility of visitors plays a crucial role for the administration and design of destinations, the marketing of attractions, and the planning of on-site visitor flows. Several studies have used visitors' GPS data at destinations ranging in size from whole countries (Raun et al. 2016) to single attractions (East et al. 2017), such as museums or zoos, to investigate visitors' space-time activities. Such approaches were used to identify localities of tourist crowding that could lead to safety and security issues, to determine sights that attract most visitors or to just pinpoint the 'main path' that tourists stay on when exploring a destination (De Cantis et al. 2016; Chua et al. 2016; East et al. 2017; Raun et al. 2016). Even more information can be gathered when geotagged data is combined with survey data or other information sources, which can be used for customer segmentation (East et al. 2017) or a more detailed picture of resident's attitude towards tourism in intensively visited destinations (Ayscue et al. 2016). Some researchers have also used GPS tracking technologies to "predict the tourist's next location within a given attraction" (Zheng et al. 2017, p. 267).

USER-GENERATED CONTENT ON SOCIAL MEDIA PLATFORMS

User-generated content on various social media channels provides another important data source for tourism organizations and service providers to gather information about their customers. Contrary to the previously mentioned data sources, user-generated content allows tourism professionals to gain insights into the visitors' perspective. As such, several studies revealed that Destination Management Organisations analyse social media data on picture sharing platforms, such as Instagram, in order to explore to most popular local cuisine (Yu & Sun 2019) or to identify visitors' favourite places (Augustí 2018). A content analysis of user-generated content also provides valuable insights into visitors' expectations about places and attractions and their satisfaction with a destination (Kaosiri et al. 2019). Finally, the analysis of user-generated content is also applied as a means for visitor segmentation (Hernández et al. 2018) and for capturing movement and travel pattern through check-in data (Vu et al. 2018).

In addition to the framing of social media platforms as a source of information for tourism professionals, these platforms also function as new marketing and communication channels between service providers and their customers. Shao et al. (2016), for example, highlight in their study the success factors for micro-film marketing via social media channels; Mariani et al. (2016) and Villamediana, Küster & Vila (2019) pinpoint metrics for capturing high user engagement with Facebook posts and Sparks et al. (2016) investigate the relevance of an organizational response to a negative customer review. This brief overview gives a glimpse into the large potential that social media platforms provide for user engagement and a viable business-to-customer communication (and vice versa).

SHARING ECONOMY PLATFORMS

Another technological innovation that has disrupted the tourism industry, even more than social media channels, is the rise of the so-called *sharing economy*. Made possible by the widespread use of digital technologies, such as smartphones, and the ubiquitous availability of the mobile Internet, peer-to-peer sharing platforms like Airbnb have revolutionized tourism in the aftermath of the global financial crisis. Scholars are currently investigating the effects of these platforms on both tourism demand and supply.

From the supply side perspective, numerous studies were carried out focusing on the spatial pattern of Airbnb across cities or countries (Gutiérrez et al. 2017; Volgger et al. 2019; Yang & Mao 2019). These studies aimed, for example, at detecting those parts of a city facing the greatest visitor pressure due to Airbnb listings (Gutiérrez et al. 2017) or at investigating the determinants that affect the supply of Airbnb listings, such as hotel and housing market demand and supply, as well as short-term rental regulation (Yang & Mao 2019). Apart from the analysis of the spatial expansion of Airbnb across cities and countries, researchers also investigated technical changes on the platform itself, which were mainly carried out to increase the trustworthiness of the platform (Wang et al. 2019) and its offers (Ert & Fleischer 2019). Trust, in general, is a central concept for Airbnb, or how Ert and Fleischer (2019) put it: “trust is what makes Airbnb work”. Against this background, it is less surprising that many scholars dealt with the creation of trust on sharing platforms. Liang (2019), for example, investigated the determinants of hosts’ information disclosure on the Airbnb platform, Wang et al. investigated the antecedents of hosts’ trust toward the platform and Randle and Dolnicar (2019) researched how hosts select their guests and whether people with impairments were excluded.

SHARING ECONOMY AND REVIEW PLATFORMS

Research has also focused on the demand side of Airbnb and investigated how guests evaluate the trustworthiness of their hosts and how trust between strangers is established in network hospitality (Ert et al. 2016; Luo & Zhang 2016) and the platform economy in general, which also includes a large variety of review platforms, such as Yelp and TripAdvisor (Bilgihan et al. 2016; Filieri 2016; Filieri et al. 2015). In the case of Airbnb, research suggests that the host's photo played a crucial role and that guests infer the host's trustworthiness from these photos (Ert et al. 2016). Regarding user-generated content on review sharing platforms, Fang et al. (2016) found that text readability and reviewer characteristics affect the perceived value of a review and its trustworthiness. Further demand side aspects that scholars investigated are, among others, guests' motivation to use Airbnb (Guttentag et al. 2018) and how an increased usage affects travel behaviour (Tussyadiah & Pesonen 2016). Information gathered through these technologies were used as a means for customer segmentation.

A final aspect that is of importance and that has been analysed in recent years is residents' attitude towards home sharing platforms. Researchers have begun to explore residents' perceptions of short-term vacation rental since Airbnb-related conflicts with locals have arisen in different destinations (Garau-Vadell et al 2019; Yeager et al. 2019). However, results indicate that resident support is directly and positively affected by their perception of the economic impacts; that means residents' support increases when they benefit personally from vacation rental (Garau-Vadell et al 2019).

VIRTUAL AND AUGMENTED REALITY

Advances in virtual and augmented reality technology exert increasingly influential impacts on tourism (Wei et al. 2018). Tussyadiah et al. (2018, p. 140) summarize recent innovations in the realm of Virtual Reality (VR) as follows: "platforms, devices, and content production tools allow for VR to evolve from a niche technology mainly enjoyed within the gaming communities into the realm of everyday experiences. The availability of low-cost VR viewers such as Google Cardboard and the abundance of tourism-related VR content make it easier for anyone to experience virtual tours of cities and tourism attractions from anywhere in the world. Therefore, VR today offers unbounded potentials for mass virtual visitation to actual tourism destinations". This perspective is shared by several researchers who investigated the effects of VR technology for shaping tourists' intention to visit (Kim et al. 2019; Tussyadiah et al. 2018) or revisit and recommend tourism destinations (Wei et al. 2018). Kim et al. (2019), for instance, found that authentic experiences are an important factor in VR tourism that supports the intention to visit a destination and Tussyadiah et al. (2018, p. 140) highlighted that the "feeling of being there results in stronger liking and preference in the destination", which again leads to a higher level of visitation intention.

The use of Augmented Reality technologies in tourism is gaining traction. Contrary to virtual reality, augmented reality (AR) is "a visualization technique that superimposes digitized virtual information on top of the real-world view of a location [and thus] is a popular method for enhancing users' cognitive capability to appreciate the surroundings in real time" (Chung et al. 2017, p. 627). Chung et al. (2017) analysed augmented reality as a tool to provide visitors with better experiences while preserving the integrity of a heritage destination.

TECHNOLOGY, CONNECTIVITY AND (DIS)CONNECTION

The ownership of multiple technology devices is growing, and mobile technology is playing an increasing role in tourism demand and supply. New technological innovations have disrupted the tourism industry in recent years, and they play a major role for tourism growth. Consequently, there is an implicit assumption that both, tourism service providers and their guests must be constantly connected through digital technology. Nevertheless, research has shown that both sides sometimes become disconnected – for different reasons.

Dickinson et al. (2016, p. 193) investigated camping tourists' desire for (dis)connection and revealed the dilemma regarding the value of connectivity versus the desire to 'get away from it all'. At some point, some visitors desire to abandon digital connectivity for other experiences (i.e. get off the grid). Rodríguez Sánchez et al. (2019) looked at innovations in tourism in a broader sense but they also found that technological innovations often encounter resistance from sceptical customers, either because the latter associate the innovation with a particular risk or because they lack understanding of the innovation value. Thus, while technologies have infiltrated the tourism industry and tourism experiences. Some tourist segments are looking for experiences that exclude interference from technologies.

Tourism businesses, on the other hand, face different issues such as the lack of access to technologies (including internet access). Salvati & Hashim (2015) investigated the website adoption and performance of Iranian hotels; they found that e-commerce is still extremely rare in Iran and that none of the hotels analysed at the time offered online reservation. In the case of Taiwan, Wang (2016) explored the adoption of mobile reservation systems and found that complexity is a significant barrier to the adoption of mobile hotel reservation systems.

The review of empirical studies over the past five years has identified the significant impacts that technologies have had on the tourism destinations, tourism products, services, and experiences, as well as tourist behaviours. However, for tourism destinations and organisation the challenge is to understand how technologies can be used to effectively add value to the tourist experience.

CONCLUSIONS

The review of the literature identified that various ways in which technologies are transforming the tourism experience, tourism products and services, as well as tourism enterprises. For tourism destination in regional Australia, there is opportunity for technology to be used as a mechanism for monitoring tourism demand and behaviours through the use of big data, Google trends and search engine query data. The use of geotagged data is growing in tourism and is adopted in Tasmania through the 'Tourism Tracer' initiative. A case study of 'Tourism Tracer' is presented in Section 3 of this report and presents evidence into how technology and big data is utilized to manage tourism demand and travel patterns in regional destinations.

Technologies are also playing an important role in how destinations, especially regional destinations, can promote themselves to domestic and international market segments as well as accessing new markets. Technologies such as Virtual Reality and Augmented Reality can have a positive effect on growing tourism demand for destinations through creating awareness, interest and tourist desire to visit. Section 3 of this report presents a case study on how VR and AR are being implemented to drive tourism demand for wine tourism in the Riverland region of South Australia.

New technologies are having a transformational effect on tourism enterprises regarding 1) creating opportunities for new business models, 2) facilitating innovation in tourism products and experiences, 3) changing business operations including marketing, distribution, booking systems and e-commerce. Section 3 of this report will present case studies on the use of digital/cryptocurrencies in regional tourism in Queensland, as well as a case study on how digital marketing technologies and app technologies can drive marketing and promotion strategies for Aboriginal tourism.

The review of the literature highlighted the challenges facing tourism enterprises in adopting and utilising technology to create value. This is particularly the case for tourism businesses in regional communities where access to technologies and expertise on the use of technologies are restricted. The issues around the value of technologies for regional tourism enterprises, how technologies are used, the perceived benefits of their adoption, as well the barriers to implementing technologies is presented in Section 4 – Quantitative study of regional tourism business operators.

The following section of the report will present an overview of economic data on tourism in Australia, including regional data.

SECTION 2: ECONOMIC ANALYSIS OF TOURISM IN AUSTRALIA

Tourism continues to play an important role in the Australian economy, with a direct contribution of $55.3 billion to Australia's GDP. The tourism sector accounts for 10% of total export revenues and employs over 920,000 people, equivalent to 1 in 13 Australians (Tourism Research Australia 2019). Full-time employment in the tourism industry has increased from 477,500 in 2000-2001, to almost 600,000 in 2016-2017 (ABS 2018), more than a 25% increase. The Tourism Satellite Account shows total tourism expenditure by domestic and international visitors was almost $136 billion (2016-2017), and 43% of all tourism expenditure occurs in regional Australia (Tourism Research Australia 2019). Australia's Tourism Investment Monitor shows that investment in tourism reached $44 billion in 2017-2018, an increase of $6.2 billion from previous years. This represents over 200 projects in aviation, arts, recreation and accommodation. In 2017, there were an estimated 288,614 tourism related businesses in Australia, which are predominantly small and medium enterprises – only 5% of all enterprises employing 20 or more staff.

The following section will focus on the economic impacts of tourism including tourism share of different industries, tourism employment, tourism expenditure by domestic and international tourists by state, as well as the amount of investment into tourism.[1]

DIRECT TOURISM GDP[2]

Data on the Direct Tourism GDP per year from 2004 to 2018 shows an increasing trend, with current direct tourism GDP almost double the amount back in 2004-05. During the same period, Australian GDP has also been increasing. Overall, the tourism share of the Australian GDP has been around 3%. (Figure A-1)

[1] The data for our analysis is from the ABS Tourism Satellite Account (2017-18) data set.

2 Direct tourism GDP is the direct tourism gross value added at basic prices plus tourism net taxes on tourism products.

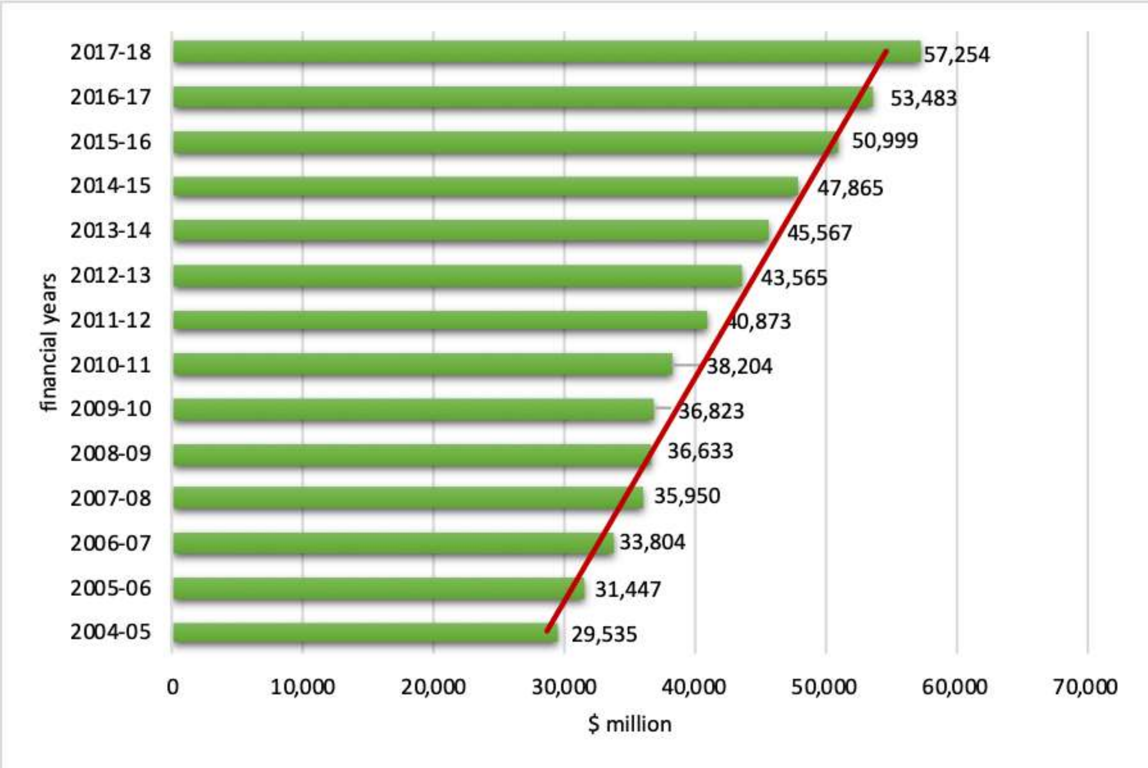


Figure A-1: Direct Tourism GDP

TOURISM CONTRIBUTION TO GROSS VALUE ADDED: BY INDUSTRY

The contribution of tourism industries in percentage terms to tourism gross value-added shows that the highest percentage of contribution is related to Air, water and other transport, with more than 20% contribution to the total value added of the sector. The accommodation sector is the next biggest contributor (18%) followed by cafes, restaurants and take away food outlets (15%) (Figure A-2).

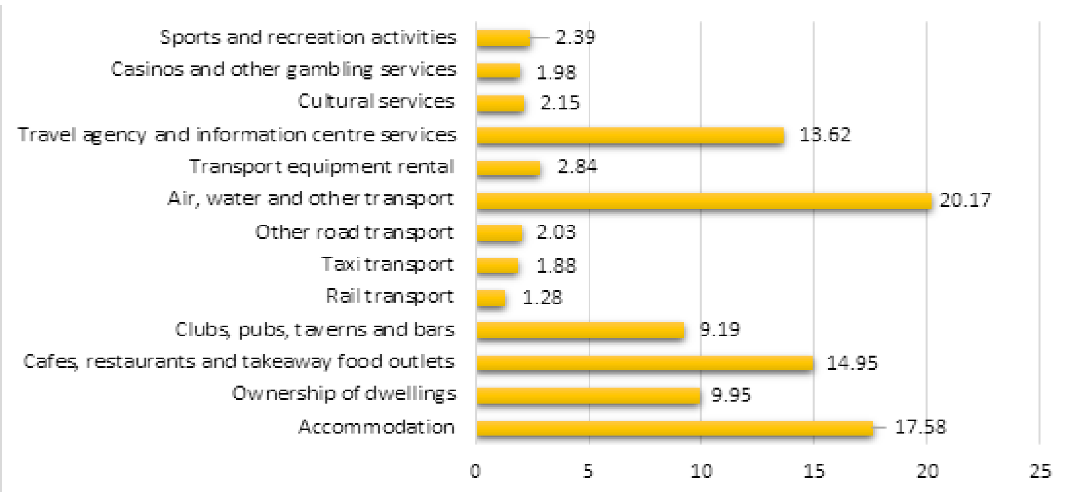


Figure A-2: Tourism Industries' Contribution to Gross Value Added (%)

TOURISM SECTOR CONTRIBUTION TO GROSS VALUE ADDED

Figure A-3 presents the percentage of tourism contributions to the gross value added (GVA) for each industry listed. We observe the highest percentages of contribution to the GVA comes from industries directly related to tourism such as accommodation and food services (37.3%). This is followed by arts and recreation services (16.9%) and transport, postal and warehousing (12.5%). The contributions of other industries, while still considerable, do not exceed 10% in any category. Figure A-4 shows that total spending by domestic visitors is higher than by international visitors. The growth rate of the domestic spending over the years is also higher by comparison.

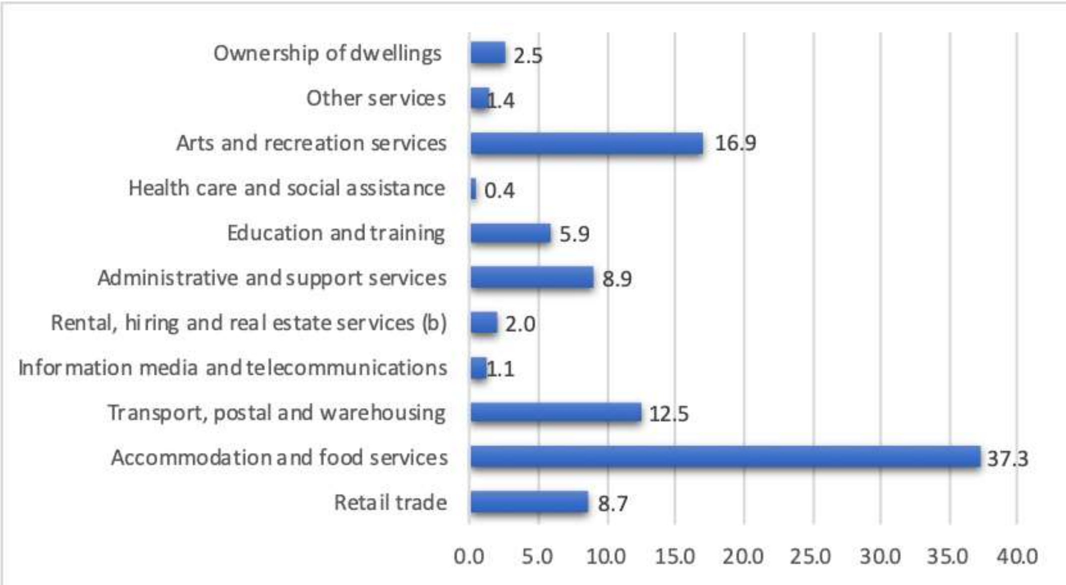


Figure A-3: Tourism Sector Contribution to GVA

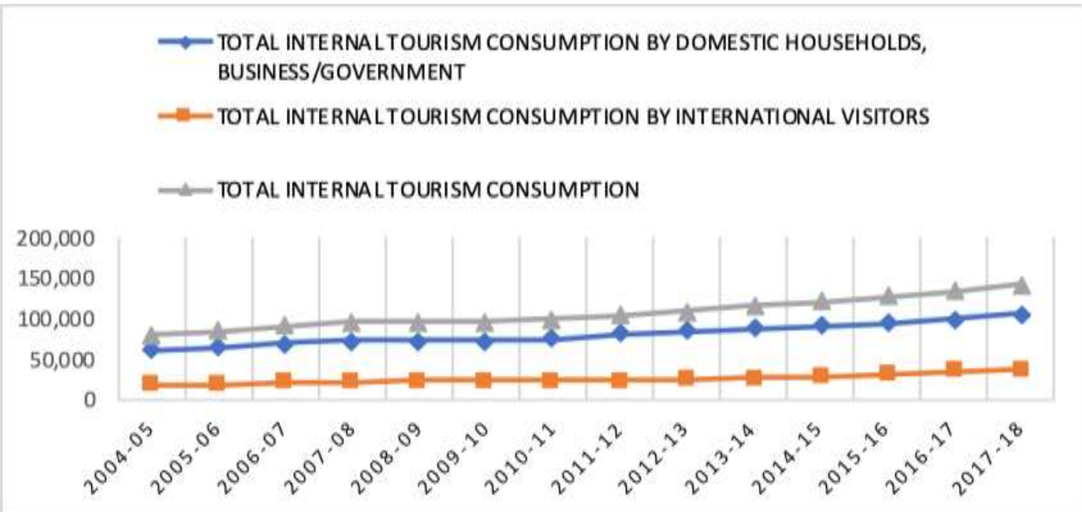


Figure A-4: Industrial Tourism Consumption ($m)

Note: Australian Bureau of Statistics (ABS) defines internal tourism consumption as “all tourism consumption of visitors, both resident and non-resident, within Australia”.

TOURISM CONSUMPTION AND EMPLOYMENT

The tourism sectors/products that make up the highest contribution to tourism consumption (both domestic and international tourism consumption) are restaurant meals (over $21 billion), long distance passenger transportation, shopping gifts and souvenirs, followed by food, alcohol and other beverages (Figure A-5).

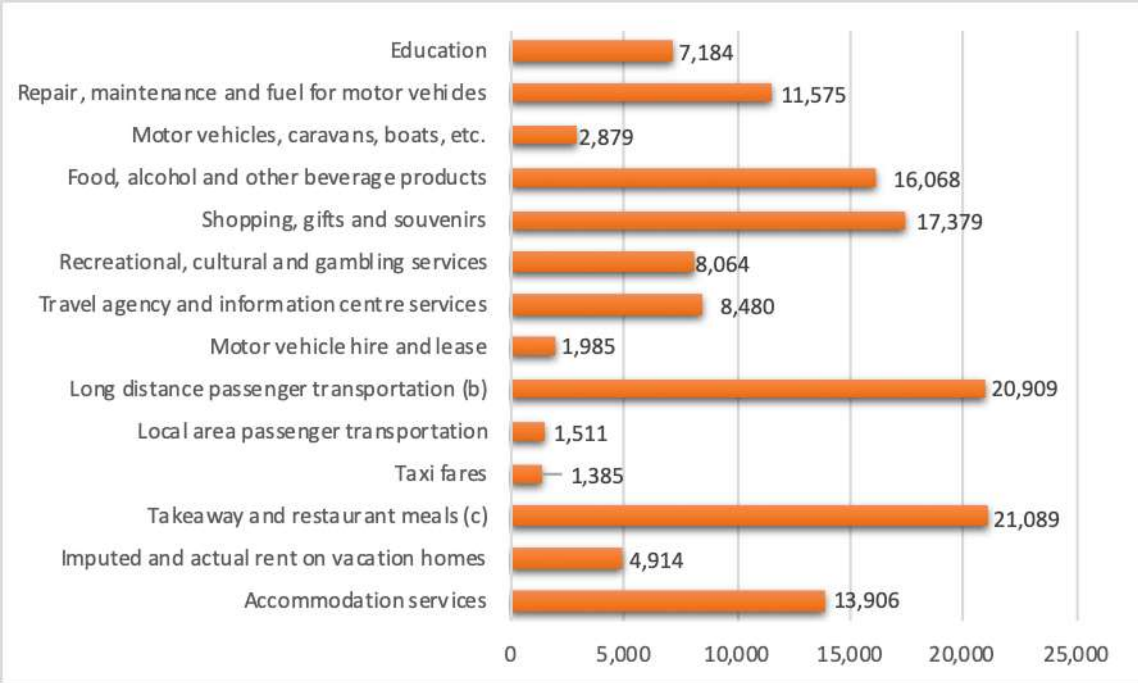


Figure A-5: Tourism Consumption by Product ($m)

Figure A-6 presents the amount of the direct tourism full-time and part time employment between 2004 and 2018. While the total number of employees in the tourism industry has increased and reached 646 000 in 2017-2018, the growth is higher for part-time employment (53% increase) compared to full time employment (a 20% increase from 2004-2018).

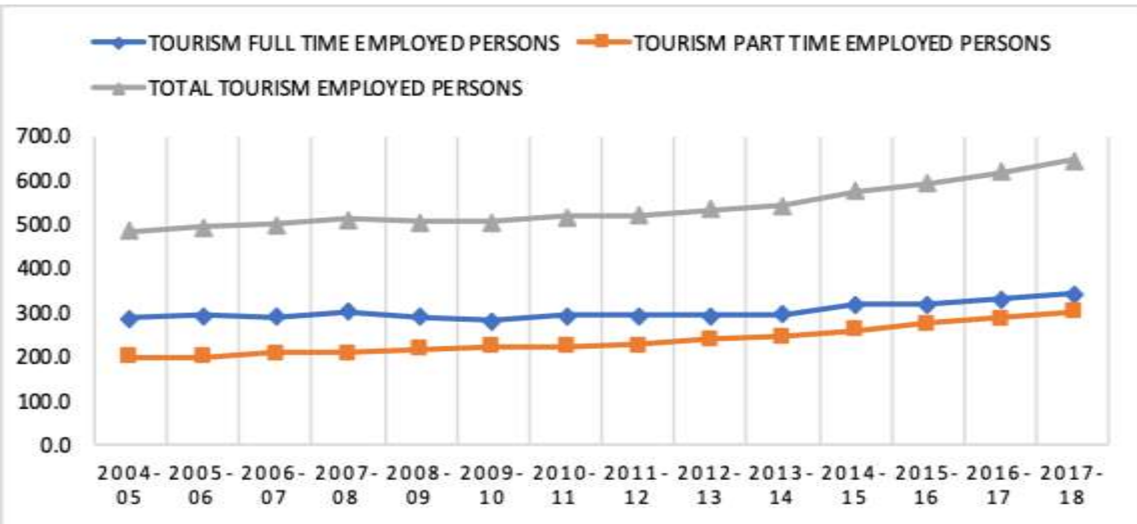


Figure A-6: Tourism Employment('000)

Source: Tourism Satellite Account (2017-18) by ABS

TOURISM TRIPS

Data on tourism trips from 2004-2018 shows a significant increase in day trips by domestic tourists. In 2004-2005 the total number of domestic day trips was 131.15 million, this has increased to over 200 million by 2017-2018. This shows a clear trend toward short stay domestic tourism.

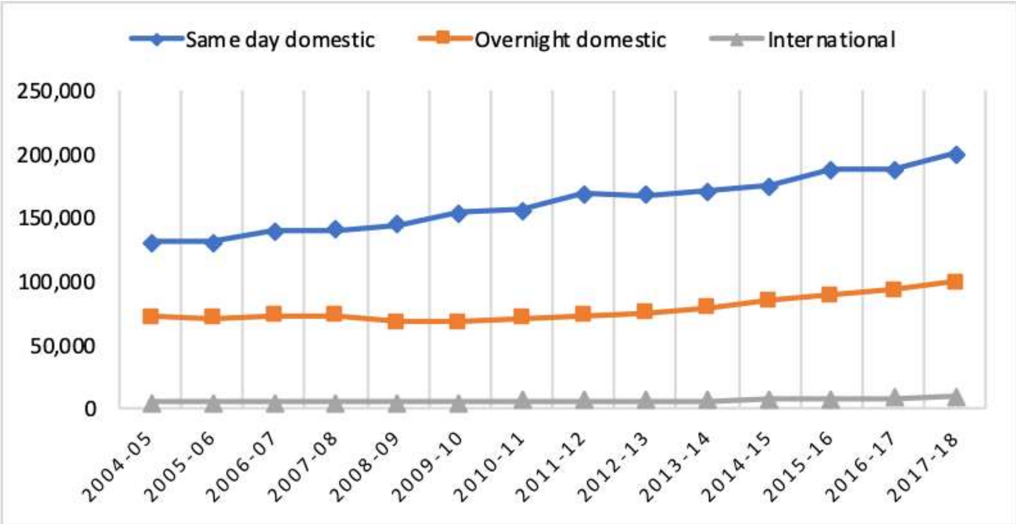


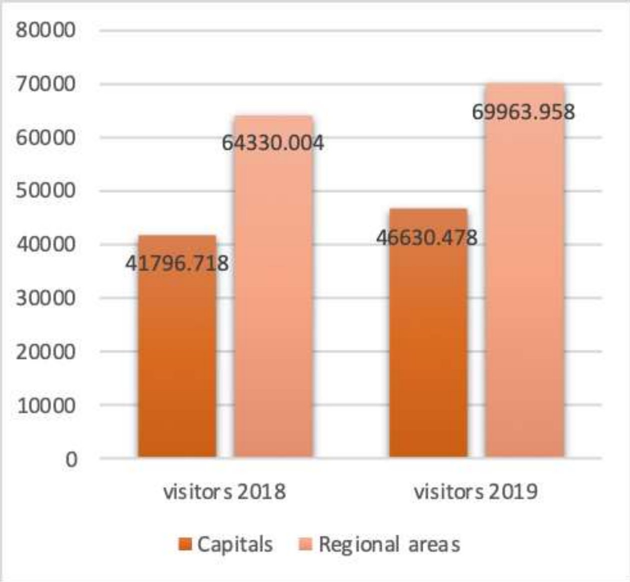
Figure A-7: Tourism Trips ('000)

INTERNATIONAL[3] AND DOMESTIC[4] VISITORS AND TOURISM EXPENDITURE

In this section we examine domestic and international visitor numbers and expenditure. We also compare tourism data in urban vs regional destinations. Data at the national level is shown in Figures A18-19 and Figures A30-31. The results show that in year ending March 2019, there were over 69 million domestic visitors to regional Australia, as compared to 46 million domestic visitors to urban/capital areas (Figure A-18). In contrast, when looking at international tourists, there were 7.9 million visitors to capital cities as compared to 2.9 million international tourist visitors to regional areas. Thus, the majority of tourism to regional areas is driven by domestic tourists (Figure A30). In addition, for every dollar spent by tourists, 40 to 43 cents in every dollar went to regional areas. Data on visitor numbers and expenditure was also broken down by State (see Appendix A). In most states the number of domestic visitors to regional areas was higher than to urban/cities, however, the amount of tourism expenditure in urban areas exceeds the spending in regional areas. One exception is Queensland where both the number of visitors and the expenditure in rural areas are significantly higher than the ones in urban locations.

3 The figures come from the Tourism Research Australia: International Visitors Survey (International Tourists)

4 The figures come from the Tourism Research Australia: National Visitors Survey (Domestic Tourists)



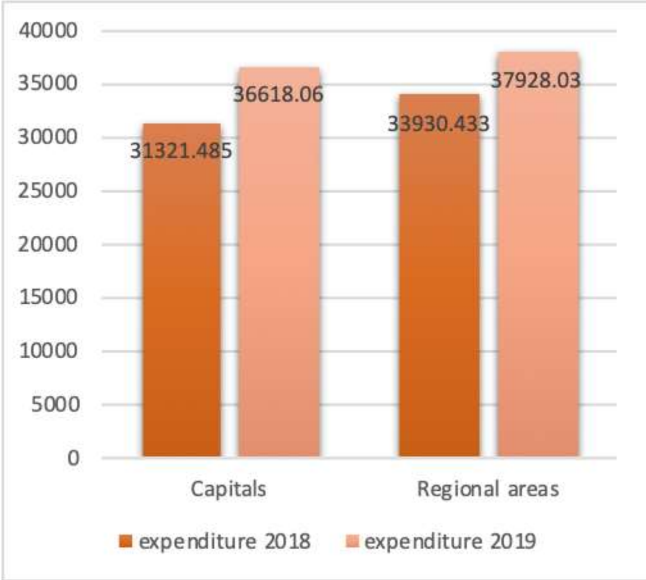


Figure A-8: Domestic Visitors in Australia ('000)

Figure A-9: Domestic Visitors Expenditure ($m)

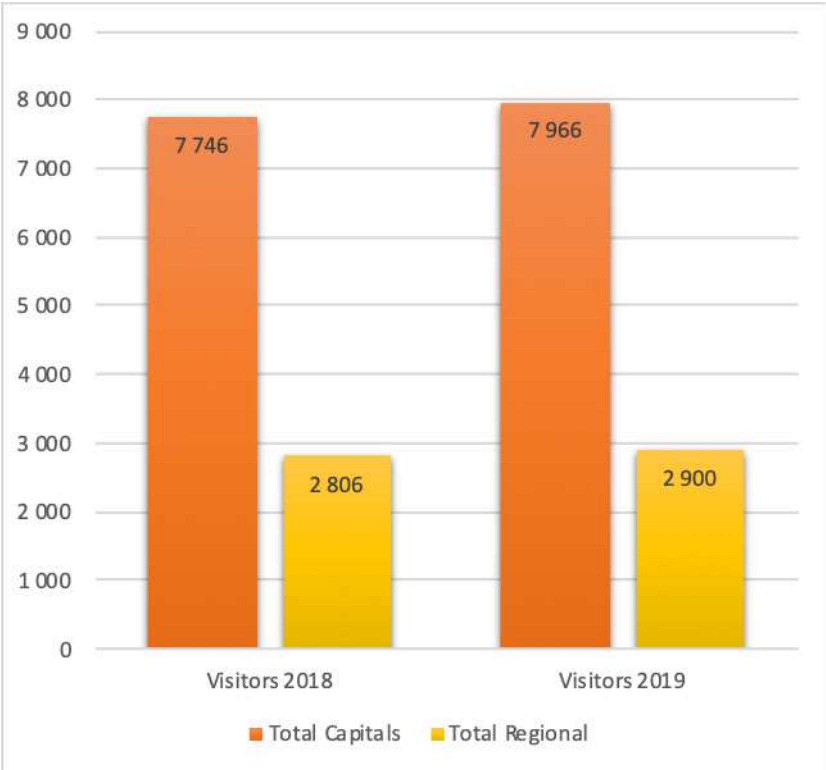


Figure A-10: International Visitors in Australia ('000)

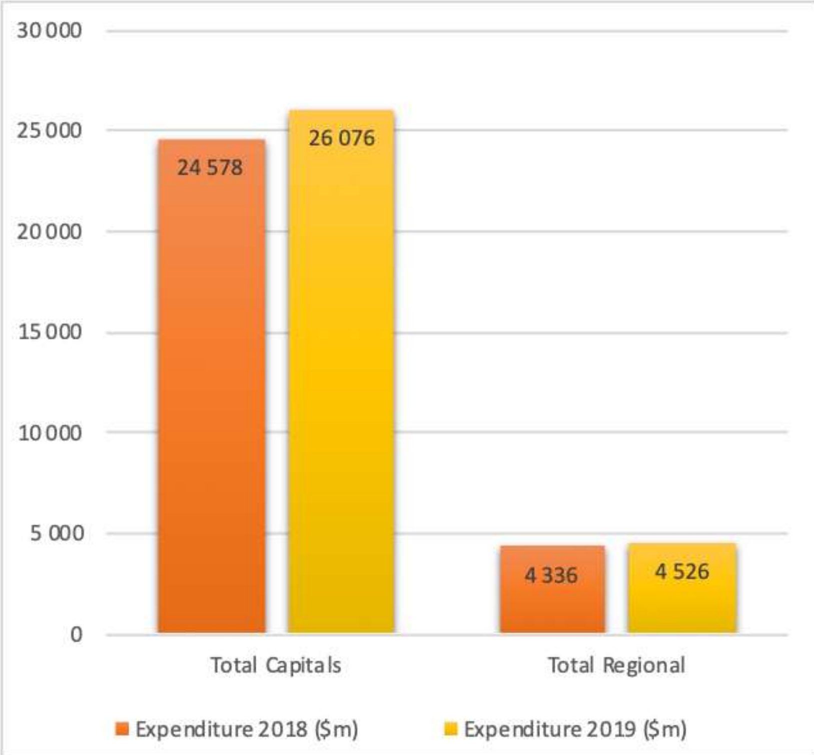


Figure A-11: International Visitors Expenditure in Australia ($m)

TOURISM INVESTMENT

The Australian Tourism Investment Monitor shows that investment in tourism reached $44 billion in 2017-2018, an increase of $6.2b from previous years. This represents over 200 projects in aviation, arts, recreation and accommodation. Around 25% of these projects were in regional areas with $10.5 billion of investments.

Table A-1 shows how the number and the value of the projects are distributed between regional and capital areas in NSW, VIC, QLD, TAS, and SA.

TABLE A-1: TOURISM INVESTMENT[5] IN 2017-2018

Tourism Investment in 2017-2018		Number of Projects	Project Value ($m)
NSW	Capital	49	14977
	Regional	6	520
VIC	Capital	37	3590
	Regional	8	7385
QLD	Capital	15	5566
	Regional	16	1806
TAS	Capital	10	825
	Regional	13	553
SA	Capital	13	1834
	Regional	4	137

Source: Australia Tourism Investment Monitor 2017-2018

TOURISM RELATED BUSINESSES

In 2017 there were an estimated 288,614 tourism related businesses in Australia. The overwhelming majority of these business are micro and small enterprises. Data shows that only 5% of all tourism businesses employed 20 or more staff. However, trends over the past 6 years suggest growth in medium and large tourism related businesses. There is also growth in new 'non-employing' tourism related businesses.

TABLE A-2: TOURISM RELATED BUSINESSES

YEAR	EMPLOYING BUSINESSES				NON-EMPLOYING
	Micro (1-4 employees)	**Small** (5-19 employees)	**Medium** (20-199 employees)	**Large** (200+ employees)	
June 2012	90,396	52,255	13,371	677	126,273
June 2013	86,788	51,888	13,465	679	117,913
June 2014	88,465	53,057	13,601	692	117,976
June 2015	89,275	53,172	13,858	727	116,606
June 2016	90,851	53,590	13,872	768	119,992
June 2017	90,894	54,448	14,261	785	128,226

Source: Tourism Research Australia

A more detailed look at the tourism businesses at the state level is presented below. Tables A-3 to A-7 show the information about tourism businesses by employment size in NSW, VIC, QLD, TAS, and SA. The tables also present the numbers for these businesses in various parts of the state. One observation is the dominance of micro and small businesses in the regions.

TABLE A-3: TOURISM BUSINESSES BY EMPLOYMENT SIZE IN NEW SOUTH WALES TOURISM REGIONS, JUNE 2017

TOURISM REGION	EMPLOYING BUSINESSES				TOTAL EMPLOYING	NON-EMPLOYING	TOTAL
	Micro (1-4 employees)	**Small** (5-19 employees)	**Medium** (20-199 employees)	**Large** (200+ employees)			
Sydney	21,365	9,597	2,535	126	33,623	30,747	64,370
Blue Mountains	361	229	37	0	627	538	1,165
Capital Country	652	393	82	0	1,127	860	1,987
Central Coast	1,030	630	140	6	1,806	1,156	2,962
Central NSW	1,042	655	111	6	1,814	1,115	2,929
Hunter	1,942	1,365	357	0	3,664	2,297	5,961
New England North West	705	434	98	0	1,237	757	1,994
North Coast NSW	2,272	1,587	338	6	4,203	2,750	6,953
Outback NSW	172	131	25	0	328	178	506
Riverina	530	371	86	3	990	524	1,514
Snowy Mountains	175	135	26	0	336	225	561
South Coast	1,693	1,099	242	0	3,034	1,796	4,830
The Murray	417	292	78	3	790	494	1,284
Unknown regions in NSW	300	205	153	141	799	349	1,148
Total NSW	**32,656**	**17,123**	**4,308**	**291**	**54,378**	**43,786**	**98,164**

SOURCE: Tourism Research Australia

TABLE A-4: TOURISM BUSINESSES BY EMPLOYMENT SIZE IN VICTORIA TOURISM REGIONS, JUNE 2017

TOURISM REGION	EMPLOYING BUSINESSES				TOTAL EMPLOYING	NON-EMPLOYING	TOTAL
	Micro (1-4 employees)	**Small** (5-19 employees)	**Medium** (20-199 employees)	**Large** (200+ employees)			
Melbourne	17,214	8,648	2,353	74	28,289	25,458	53,747
Ballarat	408	273	74	0	755	476	1,231
Bendigo Loddon	521	335	99	0	955	627	1,582
Central Highlands	114	57	6	0	177	104	281
Central Murray	300	185	31	0	516	295	811
Geelong and the Bellarine	837	519	140	3	1,499	1,072	2,571
Gippsland	727	418	76	3	1,224	737	1,961
Goulburn	385	237	50	0	672	429	1,101
Great Ocean Road	603	450	107	0	1,160	674	1,834
High Country	426	318	44	0	788	541	1,329
Lakes	223	148	20	0	391	280	671
Macedon	264	129	21	0	414	350	764
Mallee	365	220	43	0	628	344	972
Melbourne East	938	446	107	0	1,491	1,334	2,825
Murray East	107	71	21	0	199	127	326
Peninsula	962	528	152	0	1,642	1,315	2,957
Phillip Island	165	91	17	0	273	149	422
Spa Country	100	43	11	0	154	114	268
Upper Yarra	62	35	6	0	103	82	185
Western Grampians	170	125	18	0	313	184	497
Wimmera	91	36	3	0	130	97	227
Unknown regions in VIC	142	110	80	110	442	192	634
Total VIC	**25,124**	**13,422**	**3,479**	**190**	**42,215**	**34,981**	**77,196**

SOURCE: *Tourism Research Australia*

TABLE A-5: TOURISM BUSINESSES BY EMPLOYMENT SIZE IN QUEENSLAND TOURISM REGIONS, JUNE 2017

TOURISM REGION	EMPLOYING BUSINESSES				TOTAL EMPLOYING	NON-EMPLOYING	TOTAL
	Micro (1-4 employees)	**Small** (5-19 employees)	**Medium** (20-199 employees)	**Large** (200+ employees)			
Brisbane	7,286	4,950	1,284	24	13,544	11,601	25,145
Bundaberg	335	233	34	3	605	296	901
Capricorn	338	311	86	0	735	506	1,241
Southern Queensland Country	919	699	152	6	1,776	1,172	2,948
Fraser Coast	303	195	29	0	527	303	830
Gold Coast	2,515	1,516	472	15	4,518	4,129	8,647
Gladstone	139	146	31	0	316	174	490
Mackay	304	292	72	0	668	402	1,070
Townsville	588	523	154	3	1,268	782	2,050
Outback Queensland	285	251	39	0	575	356	931
Sunshine Coast	1,759	1,200	248	9	3,216	2,349	5,565
Tropical North Queensland	1,177	817	232	9	2,235	1,453	3,688
Whitsundays	188	127	41	0	356	221	577
Unknown regions in QLD	85	89	50	59	283	132	415
TOTAL QUEENSLAND	**16,221**	**11,349**	**2,924**	**128**	**30,622**	**23,876**	**54,498**

TABLE A-6: TOURISM BUSINESSES BY EMPLOYMENT SIZE IN TASMANIA TOURISM REGIONS, JUNE 2017

TOURISM REGION	EMPLOYING BUSINESSES				TOTAL EMPLOYING	NON-EMPLOYING	TOTAL
	Micro (1-4 employees)	**Small** (5-19 employees)	**Medium** (20-199 employees)	**Large** (200+ employees)			
Hobart and the South	828	651	160	9	1,648	1,206	2,854
East Coast	81	50	7	0	138	74	212
Launceston and the North	494	359	86	3	942	576	1,518
North West	353	302	41	0	696	341	1,037
West Coast	28	24	3	0	55	18	73
Unknown regions in Tasmania	4	4	20	5	33	0	33
TOTAL TASMANIA*	**1,788**	**1,390**	**317**	**17**	**3,512**	**2,215**	**5,727**

SOURCE: Tourism Research Australia

TABLE A-7: TOURISM BUSINESSES BY EMPLOYMENT SIZE IN SOUTH AUSTRALIA TOURISM REGIONS, JUNE 2017

TOURISM REGION	EMPLOYING BUSINESSES				TOTAL EMPLOYING	NON-EMPLOYING	TOTAL
	Micro (1-4 employees)	**Small** (5-19 employees)	**Medium** (20-199 employees)	**Large** (200+ employees)			
Adelaide	3,548	2,501	695	21	6,765	5,465	12,230
Adelaide Hills	245	148	35	0	428	321	749
Barossa	92	89	19	0	200	162	362
Clare Valley	61	37	6	0	104	77	181
Eyre Peninsula	209	143	32	0	384	206	590
Fleurieu Peninsula	239	194	30	0	463	384	847
Limestone Coast	293	194	31	0	518	248	766
Murray River, Lakes and Coorong	117	75	11	0	203	139	342
Riverland	115	83	18	0	216	131	347
Yorke Peninsula	189	90	7	0	286	163	449
Flinders Ranges and Outback	178	134	23	0	335	180	515
Kangaroo Island	30	24	3	0	57	46	103
Unknown regions in SA	21	11	17	19	68	38	106
TOTAL SOUTH AUSTRALIA*	**5,337**	**3,723**	**927**	**40**	**10,027**	**7,560**	**17,587**

SOURCE: Tourism Research Australia

CONCLUSIONS AND RECOMMENDATIONS

Section 2 has collated and presented an overview of economic data in relation to tourism activity in Australia, including States and regions. The tourism industry continues to be a strong contributor to Australia's economy; total direct tourism GDP in 2017-2018 was almost double what it was in 2004-05. The major sectors of the tourism industry in terms of GVA contribution include transport services, accommodations and foodservices.

In regard to tourism in regional Australia, there were over 69 million domestic visitors to regional Australia (as compared to 46 million domestic visitors to urban/capital areas) for year ending March 2019. In addition, of the 8.5 million international tourists to Australia there were 2.9 million international visitors to Australia's regions. For every dollar spent by tourists, 40 to 43 cents in the dollar went to regional areas.

In regard to tourism employment, the total number of employees in the tourism industry has increased however the growth in part-time employment (53% increase from 2004-2018) is significantly higher that full time employment (a 20% increase from 2004-2018). A clear characteristic of the tourism industry is the overwhelming majority of micro and small enterprises which makeup up 95% of all businesses. In 2017 there were an estimated 288,614 tourism related businesses in Australia, out of which only 5% were employing 20 or more staff. However, the number of medium and larger organisations has grown in recent years and will continue to increase in the future.

The number of investments in tourism projects has increased as data from the Australia Tourism Investment Monitor shows investment in tourism reached $44 billion in 2017-2018, an increase of $6.2b from previous years. This represents over 200 projects in aviation, arts, recreation and accommodation. However, the majority of investment is focussed in cities with only 25% of new projects taking place in regional (total investment of $10.5 billion)

Considering that 40-43% of all tourism expenditure takes place in regional areas, there is opportunity for a greater share of tourism investment in regional destinations to support tourism growth and employment in regions. Investments in tourism in regional Australia should be targeted toward growing supply and demand.

From the demand side, while domestic tourism numbers in regional destinations remain strong, there needs to be a strategic focus on attracting a greater share of international tourists to Australia to visit regional destinations. There needs to be greater focus on international visitor numbers and international visitor spending in regional tourism destinations

From the supply side, the investment and strategies should be targeted at helping the micro and non-employing businesses to grow to small or medium size. This is particularly the case for tourism businesses in regional destinations where there is a high percentage of non-employing, micro and small enterprises. There are opportunities to support the growth of small business as well as creating incentives to attract investments from larger organisations. Evidence shows that only 25% of new tourism projects are undertaken in regional areas.

Regional tourism destinations and tourism businesses need a strategic focus and support in attracting international tourists. Technology can be driving force for growing tourism demand and supporting enterprise growth in regions. Empirical research gives evidence that investments in technologies can facilitate regional destinations in promoting themselves to domestic and international market segments as well as accessing new markets. Technologies such as Virtual Reality and Augmented Reality can have a positive effect on growing tourism demand for destinations through creating awareness, interest and tourist desire to visit.

The following section of the report will present 4 distinct case studies:

Case study 1: Innovation in Wine Tourism: Evidence from South Australia

Case study 2: Impact of technology on regional tourism development in Queensland (QLD)

Case study 3: Impact of technology / innovations on regional tourism development in Tasmania – The Tourism Tracer Project

Case study 4: The use of technology in developing Aboriginal Tourism

The purpose of the case studies is to present evidence on how technologies can be implemented to:

- support tourism development and growth in regional Australia?
- support regional destinations and tourism enterprises to access international tourist markets.
- contribute to tourism entrepreneurship, business performance and employment growth in regional Australia.

SECTION 3: CASE STUDY ANALYSIS OF TECHNOLOGY AND TOURISM DEVELOPMENT

The following section of the report presents findings from four case studies conducted during May-October 2019. The case studies examined include:

- Case Study 1: Innovation in wine tourism: Evidence from South Australia
- Case study 2: Impact of technology on regional tourism development in Queensland (QLD)
- Case study 3: Impact of technology / innovations on regional tourism development in Tasmania: The Tourism Tracer project.
- Case study 4: The use of technology in developing Aboriginal Tourism

Case studies were developed from primary and secondary data. Primary data was obtained through qualitative in-depth interviews with key stakeholders. The case studies examined various regions across Australia where tourism is an important driver of economic activity. The case studies present important empirical insights into how technology is used to develop support tourism development and demand in regional destinations.

CASE STUDY 1: INNOVATION IN WINE TOURISM: EVIDENCE FROM SOUTH AUSTRALIA

INTRODUCTION

The purpose of this case study is to showcase a collaborative initiative that uses new technology in one of South Australia's (SA) eleven regions – Riverland – to drive Food and Wine tourism demand and upsurge tourism industry and employment growth in the area. The case study relies on secondary data provided mainly through industry reports from local and state government bodies and on primary data collected through interviews with stakeholders involved in the development and implementation of the project: Riverland on the Verge (Riverland VR).

In particular, the case study focuses on the impacts of the use of Virtual Reality technology on supporting the growth and expansion of existing tourism enterprises and creating opportunities for Wine and Food tourism entrepreneurs to expend tourism capabilities in the regional destination. The case study is situated in the context of the South Australian tourism economy and its strategic plans for future development. Therefore, the first three sections of the case study provide an overview of the SA's tourism industry and the influential value of the regional tourism economy on its growth. This is followed by a presentation of the results of the interview conducted with Mrs. Victoria Lewis, Project Manager of the Riverland VR project. A discussion about the impact of the use of the technology to promote the Riverland wine region on driving demand for the destination and the Riverland wine will be discussed.

OVERVIEW OF THE TOURISM INDUSTRY IN SOUTH AUSTRALIA

In recent years SA has experienced a significant growth in visitor economy (i.e. any money spent by visitors in SA), outpacing the overall South Australian economy by more than double from 2013 to 2018 (SATC, 2019). The South Australian tourism sector's growth has outperformed manufacturing, agriculture, and healthcare, financial and insurance services over the last decade.

The visitor expenditure grew from $5.1 billion in 2013 to $6.8 billion in 2018. Considering this successful outcome, the projection for December 2020 is an ambitious $8.0 billion contribution to the SA economy. In the same period employment in the tourism sector has rapidly increased, with jobs increasing by 2,000 in regional and 3,000 in metropolitan South Australia. The sector employs in total 61,300 South Australians (including those indirectly employed in June 2018) and the plan is to grow direct employment in the sector by 10,000 jobs by 2020 (South Australian Tourism Plan 2020), and 16,000 news jobs by 2030. The main industries contributing to SA's tourism employment are cafes, restaurants and takeaway food services (10,900 jobs) as well as retail trade (8,100 jobs). The visitor economy goes beyond spending money only on tourism experiences. It includes also transport, shopping, dining out, and contributes to other industries, such as beverages, agriculture and retail. The visitor economy contributes to creating jobs in tourism and other industries.

TABLE B-1: SA'S VALUE OF TOURISM AS PER JUNE 2019

Value of Tourism	
Tourism Expenditure	$7.6 B
International seats into Adelaide each week	13.6 K
International Visitors	467 K
Domestic seats into Adelaide each week	84.5 K
Interstate visitors	2.8 M
Intrastate trips	4.6 M
Domestic day trips	15.3 M
Hotel rooms across 269 properties	13.6 K
Tourism Business across the state	18 K
Directly employed (to grow direct employment by 16 000 jobs by 2030)	38.9 K

Source: SATC South Australia the Value of Tourism year ending June 2019

As per the 'State of the Industry 2017-2018' report the success of tourism growth in SA and other Australian States, cannot be attributed to one factor. Several factors have been influential to the growth of the industry, for example increased prosperity of global consumers, changing economic conditions and visitor preferences. Domestic travelling has become more attractive in the last five years, due to falling exchange rates, low inflation, more budget travel options, price competitiveness with overseas travel destinations. These favourable economic conditions have provided a strong boost for regional tourism, as most of the domestic overnight spend occurs outside the capital cities. South Australia attracted a record high 7.4 million domestic overnight trips (up 12 per cent), a record 26.7 million domestic nights (up 11 per cent) and a record 15.3 million day-trips to and within South Australia (up 13 per cent). Total domestic expenditure in SA rose to $6.5 billion, up 15 percent and above the national growth rate of 14 percent (SATC 2019).

Chinese visitors overtake all other nations, including UK for visits, nights and expenditure in SA international market. Chinese visitation reached a record high 66,500, up 19 per cent for the year end June 2019. Also, Hong Kong has shown excellent results with visits up 54 per cent, nights up 4 per cent and expenditure up 8 per cent. International visitors are extremely important to the development of tourism in SA. As per the 'State of the Industry, 2018' report, 'The emergence of newer Asian markets and the growing impact of the international student cohort on the visitor economy means they will continue to capture an increasing share of spend. Forecasts show that visitor numbers will increase by another 3 million visitors in the next five years, with two-thirds coming from Asian markets.' This projected increase is attributed to the growth of Asian markets by 150% by 2023 with an emerging youth market that has different travel expectations than their more traditional older counterpart.

The new 2030 targets have been set to an ambitious $12.3billion of visitor economy and to generate an additional 16,000 jobs (SATC, 2019). Attainment in growing SA's tourism economy has been attributed to the following initiatives over the last five years:

- Marketing investments in domestic and international markets
- Increase of inbound flights to Adelaide
- Development of new experiences in SA
- Vibrant leisure and business events industry
- Collaborative approach between the tourism industry and the government

SA REGIONAL TOURISM INDUSTRY

The rapid development of the Australia-wide tourism industry relies on the growth of Australia's regional economy. Although only 23% of South Australians live in regional areas, these areas are expected to account for over 44% of the State's total visitor spend by 2020. In-line with the SATC's SA Regional Visitor Strategy (2018) there are opportunities to grow SA's regional visitor economy by $1 billion and create 1000 new jobs. At the same time the implementation of the strategy will initiate growth of regional visitor expenditure from $2.6 billion to $3.55 billion. There are many challenges attributed to regional tourism, such as regional dispersal problems and lower international spend in regional areas. It is therefore, paramount to increase investment in the Australia's regions (incl. regional SA) to improve visitor experiences and promote the world class attractions to appeal to visitors from the capital cities. A big portion of these investments will require government support. The Government's Regional Tourism Infrastructure Investment Attraction Strategy 'recognises these issues and strives to create an environment that attracts foreign direct investment into iconic regional tourism areas' (SATC, 2018).

To boost tourism demand and development in regional South Australia, SA's Regional Visitor Strategy defines key priority action areas:

Industry Capability: Areas of support most needed throughout regional South Australia include digital marketing skills, event management expertise, working with distribution intermediaries, business management skills, customer service and understanding the emerging Chinese visitor market.

Collaboration: Working closely with other Australian States, neighbouring South Australian regions (including Adelaide), and all partners within a region.

Cost of Business: Addressing barriers to developing tourism businesses (such as cost and reliability of telecommunication networks) is a major concern for all regions. Simplifying regulations will enable businesses to diversify or expand and encourage new entrants.

Visitor Infrastructure: Improvements to key regional roads and the supply of reliable telecommunications across all areas. Regions have also identified coastal and marine infrastructure, signage, aviation infrastructure and trails as other priorities.

Region by Region Focus: It recognises that each region has specific opportunities and challenges, with the final section outlining South Australia's eleven individual regional response priorities.

Consumer research shows that South Australia leads the nation for "good food and wine" as well as "credible wineries and wine regions: (SATC 2019)". SA regions offer appealing and accessible visitor experiences, fresh local produce, wildlife, coastal, unique festivals and events, and art and culture including Aboriginal experiences. One of the regional marketing priorities is to embrace *digital innovations* to showcase these experiences to domestic and international travellers. Also bringing people to experience the destination 'first hand' is one of the Familiarisation priorities prescribed by the SA Regional Visitor Strategy.

RIVERLAND ON THE VERGE

A recent example of the implementation of these priority action areas is the Riverland region.

The Australian Government awarded Riverland Wine with a $250,000 grant through the International Wine Tourism Competitive Grants Programme, as part of the $50m Export and Regional Wine Support Package, to promote the region to overseas markets and encourage tourism visitation to the wine region. Wine regions across all Australia will benefit from a $7.4m investment boost from this programme. Riverland Wine will collaborate with the region's food and tourism stakeholders to deliver a VR tour of the region. The target audience are visitors of promotional events throughout Australia and internationally (wine trade fairs, tourist events and locations), who can experience the tour of the food, wine and tourism attractions in Riverland. Work on the development of the VR tour started in February 2019. The project commenced in May 2018.

The Region is currently experiencing growth and to further boost the economy by up to $15m over the next three years, Riverland Wine will invest $545,000 into the project. This budget includes Riverland Wine's own contributions and funds from the project partners, such as PIRSA, The University of Adelaide and 57 Films. As to Riverland growth, the Riverland Tourism Plan 2020 (Destination Riverland 2018) identifies 10 key measures of success. These include:

- Growth in tourism expenditure at a growth rate of 7.5% pa to $216m by 2020 (7% from 2016-2017)
- Growth of overnight visitors to the region at a growth rate of 6.5% pa by 2020 (12% from 2016-2017)
- Growth of visitor nights at a growth rate of 8.5% to 1.9m by 2020 (11% from 2016-2017)

Also, increase in demand for new holiday tourism development, increase of number of tourism businesses /industries participating in regional promotions are visible and measurable signs of tourism growth in the region. According to the Tourism Plan 2020 (Destination Riverland 2018), Destination Riverland will focus its resources on five priority action areas to achieve growth in the region:

1) Driving demand (66% of resources invested in marketing activities with an experiential focus around wine, food, nature and wildlife),
2) Creating a collaborative culture,
3) Supporting Riverland businesses (e.g. for accommodation inventory to be online bookable),
4) Increase recognition of the value of tourism
5) Using events to drive visitation.

Destination Riverland and SATC will collaborate on the 'Riverland on the Verge' project and provide their advice on the region's best assets to promote to overseas wine tourists. Riverland wants to establish the region as the 'go to 'destination for Chinese and US wine tourists. The project is a virtual reality experience focusing on the scenery unique to the region and highlighting the connection between the region and wine. The viewer will be able to virtually visit different locations that feature all the best of Riverland: food, wine, the river, natural landscapes, clean and green places to stay.

The University of Adelaide will conduct market research to understand what drives people from China and the US to visit Riverland and buy the wine. Wine sensory researchers from the School of Agriculture, Food and Wine are collaborators on the project to highlight the appeal of the Riverland wine regions. The findings will be used to select sites and scenes for the VR tour, filmed by 57 Films. The goal is to identify gaps in the current tourist offering in the region and work with local businesses to address them (Winetitles Media, 2018). This initiative is believed to help grow wine exports and establish Riverland's great reputation as a wine region to international audience.

The Riverland on the Verge project is in line with the Riverland Wine Strategic Plan (2014-2019) which key objectives is to 'encourage and initiate partnerships that raise the profile of Riverland wine, food and tourism products, programs, promotions, activities and services (Destination Riverland, 2018).

INTERVIEW WITH MRS VICTORIA LEWIS – PROJECT MANAGER – RIVERLAND VR PROJECT

Mrs. Lewis reported that that the locations where the VR videos will be broadcast include international wine fairs, the National Wine Centre in Adelaide and wineries in the Riverland. These videos can be used in any domestic or international location as their focus is on images and music to break down language barriers and strengthen the communication.

The challenges discussed with Mrs. Lewis were around the availability of suitable locations where the videos could be shot. The region does not have many luxury accommodations, or food & wine venues. The approach Riverland has taken in this regard is to use the current locations as a way to attract High Value Travellers (HVTs) to come visit the region. The belief is that by showing that the region is attracting more HVT, more stakeholders would be interested in developing premium infrastructure, rather than the other way around. Mrs. Lewis confirmed that Riverland is specifically targeting HVT, and that the infrastructure Riverland would like to invest in have to suit the need of HVTs. For example, no camping or caravanning areas will be developed. Instead, the experiences that Riverland wants to create are about glamping, helicopter rides, premium food & wine, etc.

In terms of technology, Mrs. Lewis stated that internet access doesn't seem to represent a problem for tourists. Surely, some areas might not have the same level of connectivity of capital cities, but the possibility to be detached from the daily routine of social media access still represents part of the beauty of visiting an area like Riverland. This is consistent with previous empirical studies on tourist desire for dysconnectivity, such as Dickinson et al. (2016, p. 193) who argued that at some point, some visitors will desire to abandon digital connectivity for other experiences.

According to a SATC 2018 report, tourist visitation in the Riverland is mostly driven by intrastate overnight visitors (54%), followed by day trippers (23%), interstate visitors (19%), and international visitors (4%). The sector grew by 42% from $124m in 2007 to $175m in 2018. The forecast suggests a grow of 54% ($271m) to 2030, which means an 81% increase in expenditure, and 230,000 more visitors spending double on their visits (from $350 to $700). Mrs. Lewis emphasised that the purpose of the Riverland on the Verge project extends beyond showcasing the region, to grow tourism demand attracting new visitors to the region.

Moving forward, Mrs. Lewis mentioned that, while they will be working on the release of the videos they have created, they are also working on a second set of videos, which will be released in 2020. These videos represent the first tool of its kind the region has developed. Future extensions of the project still need to be negotiated with different stakeholders.

DISCUSSION & CONCLUSIONS

This case study confirms the importance of the food, wine and tourism sector for the economic growth and development of regional areas, which are projected to account for a 44% of South Australia's total visitor spend by 2020.

We believe this project provides another excellent example of innovation in the wine and tourism sectors. A VR tour of a wine region can help break language barriers, thanks to the power of images over words. It also provides a great source of information for potential domestic and international visitors, who could look at the place before deciding whether they want to visit it. This will, in turn, align expectations to reality, which is a critical aspect every business should take care of. Lastly, a VR tour can assist in pitches to in-bound tourism agents, airline partners and media and can be used for any sorts of visual marketing purposes.

The Riverland VR project aligns with the objectives of the South Australia Regional Tourism Industry Strategy. The project has already demonstrated its ability to improve industry capabilities, because it provides a tool for public and private stakeholders to communicate about the region to prospective tourist markets. In addition, the project is smartly designed, as it overcomes the need of a reliable internet connection to access its content. This does not mean that a better internet service is not indispensable for the area, but, until the service is generated, the region can still use the videos for promotion. However, more work needs to be done to increase the level of collaboration with other Regions and/or States, in order to develop useful synergies between them. Also, the ability of the project to generate new jobs or lead to the generation of new infrastructures still needs to be demonstrated. Riverland took a demand-driven approach in this instance: first showing there is a demand for new visitors, then develop the right infrastructures, rather than the other way around. This could pose a potential challenge to ensure returning visitors to the region. Riverland may not be able to deliver on the promise of being a high-end destination suitable to the needs of HVTs. Such an approach might be detrimental to longevity of the impact of the VR project on growing demand for the destination and may cause an initial increase in visitation only.

It is important to note that Riverland VR is not the only project of its kind developed in South Australia, there are others including the Seppeltsfield Wine VR tour. Although this project has a much smaller scale than the Riverland VR one, the company launched a virtual 360-degree tour of the estate using HD VR photography. One can access the tour from the following link: https://www.seppeltsfield.com.au/index.php/experience/the-estate/take-a-virtual-tour.

In conclusion, the Riverland on the Verge VR project presents an interesting example of how a particular type of technology, i.e. Virtual Reality, can be implemented. VR technology has the potential to support regional destinations to

1. Use emotive images and scenery to promote awareness of the destination interest,
2. Create interest and desire for tourists to visit
3. Drive tourism demand and growth through reaching new market segments
4. Attract tourism investment and collaborations

The next case study will present a different type of technology, cryptocurrency point of sale systems, and how these are implemented to support tourism growth in regional areas of Queensland.

CASE STUDY 2: IMPACT OF TECHNOLOGY ON REGIONAL TOURISM DEVELOPMENT IN QUEENSLAND (QLD)

INTRODUCTION

The following case study examines the application of blockchain and cryptocurrency point of sale systems to drive tourism development in regional areas of Queensland. It provides evidence on how technology can drive tourism demand and support destinations and enterprises to access new tourism markets. The case study focuses on Agnes Waters & Town of 1770 in Queensland, named as Australia's 'first cryptocurrency friendly tourist towns' (Travelbybit, 2019).

This research uses secondary and primary data to discusses the outcomes of the implementation of the cryptocurrency project on tourism visitation and tourism businesses in regional Queensland. Primary data was sourced from two in-depth phone interviews conducted with Dr Aaron Tham from the University of the Sunshine Coast, an expert in new technologies and tourism development and with Ms. Lee Wood, Tourism Business Operator in Agnes Water Town 1770. Ms. Wood provided a business owner perspective on what is needed to support the growth and expansion of tourism in the region. The case study first presents an overview of Queensland's tourism industry as the key driver of the State's economy and employment growth. It then focusses on new technology investments in tourism and discusses the challenges and opportunities in growing sustainable tourist destinations. Finally, it highlights the importance of the State's collaborative approach to tourism growth.

THE EVOLVING TOURISM ECONOMY IN QUEENSLAND AND THE IMPACT ON EMPLOYMENT GROWTH

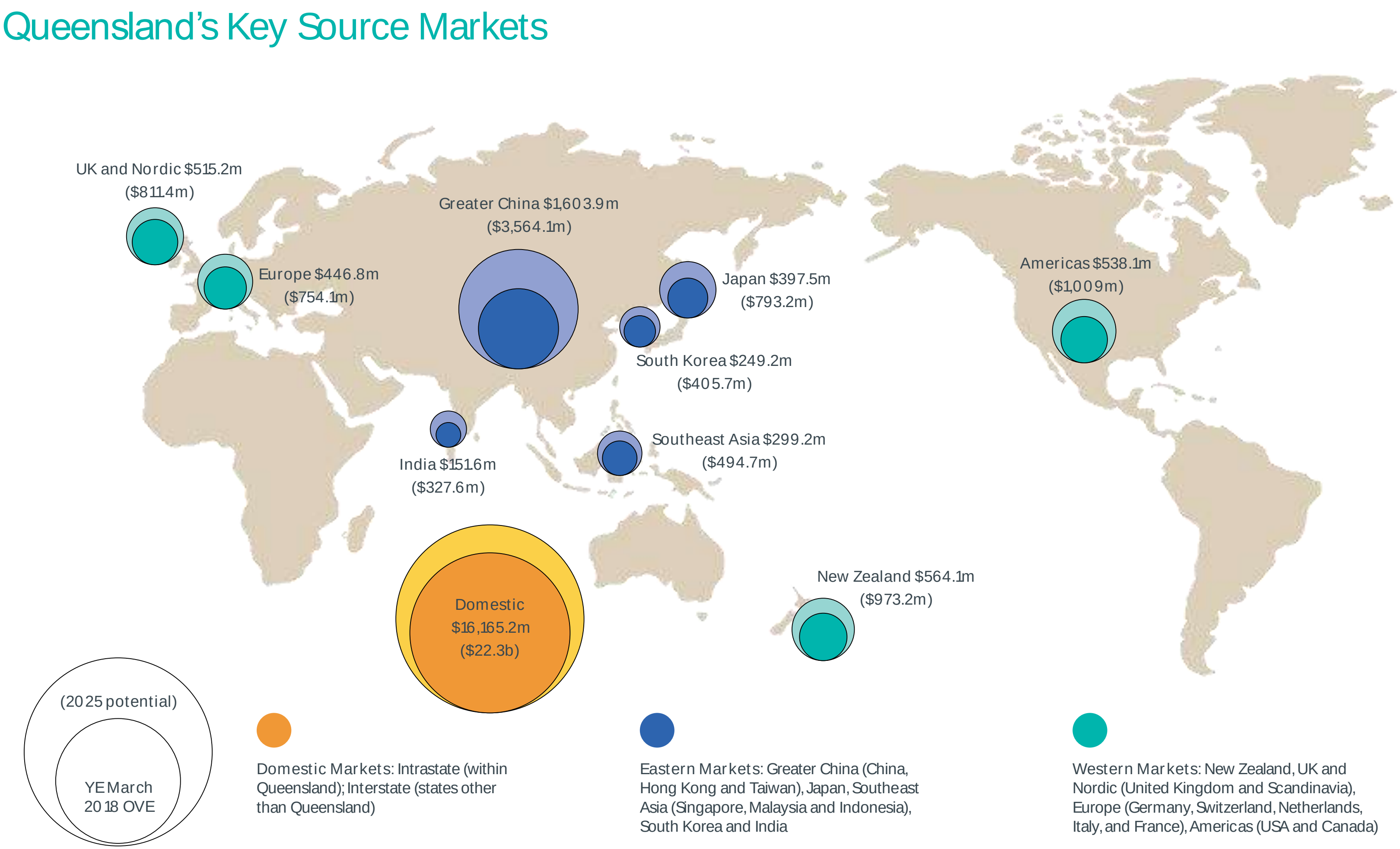
Tourism in Queensland contributes 7.5% of Gross State Product (GSP) to the State (TEQ 2018a). The industry employs 220,000 Queenslanders and generates $25 billion for the State. Overnight visitors' expenditure and visitation from both domestic and international markets have reached record-high levels in 2018 (TEQ 2018c). Tourism and Events Queensland (TEQ) has set out in its 'Marketing Strategy 2025' an ambitious target of $33.1 billion and additional 85,000 jobs by 2025 (TEQ, 2018a).

Achieving these objectives requires addressing the State's key challenges, such as increased competition from other domestic and international destinations and changing consumer expectations that may impact on the appeal of Queensland to the High Value Travellers (HVTs). HVTs spend more than the average traveller on leisure trips, therefore, Queensland's competitive offering needs to be aligned to the needs of this segment. Queensland is also at major risk of uncontrollable events, such as natural disasters, that may affect visitor numbers and tourist perceptions.

Much of the growth in overnight visitor expenditure (OVE) is predicted to come from overseas markets, representing by 2025 approximately $11 billion, 33 % of total OVE (up 8% from 2018). Outbound tourism from the Asia-Pacific region, together with visitation growth from Western markets, such as the USA, Germany, New Zealand, and Canada will drive this growth (see Figure B-1). China had the highest expenditure at just over $1.2 billion, followed by New Zealand at $564.1 million (TEQ 2018c).

Domestic OVE reached $65.1 billion in Australia during the year ending March 2018, of which a record $16.2 billion was spent in Queensland (TEQ 2018c). In the same period, in the eleven Queensland regions, the best OVE performance was noted in Brisbane ($8.2 billion) and Gold Coast ($4.4 billion) tourism regions, followed by Tropical North Queensland ($2.8 billion) and Sunshine Coast ($3.6 billion). These were contributed to by both domestic and international visitors.

Figure B-1: Queensland's HVTs priority Markets



Source: TEQ, 2018c

The TEQ Strategic Plan 2019-2023 (TEQ 2018b), outlines clear strategic priorities to ensure further tourism and employment growth in the State:

1. Converting HVTs from priority markets, so they consider Queensland for their next holiday
2. Growing aviation access and capacity to generate sustainable demand
3. Optimising partnerships with industry and government stakeholders to support delivery and implementation of innovation in the State in the form of funding programs
4. Attract and secure major events to grow the Queensland economy and support jobs
5. Deliver marketing programs fuelled by data and technology capability
6. Connect consumers with meaningful and exceptional experiences and align the Queensland Experience Program with the needs and behaviour of HVTs.
7. Focus on building a high performing organisation with a commitment to the continuous improvement of operational capabilities, the efficiency of business operations and governance.

TEQ's 2025 vision (TEQ 2018a) is to 'Inspire the world to experience the best address on earth', which can be broken down to the following:

- inspire visitors through integrated marketing and events of the Queensland brand,
- appeal to the world in priority domestic and international source markets,
- showcase Queensland's hero experiences and events,
- be the best through quality and innovation.

TEQ defines Hero Experiences as those that 'have the best potential to drive visitation and expenditure from target markets' and set Queensland apart from the competitors' (TEQ 2018c, p. 31). These have been identified through consumer research and categorised into five pillars (see Table B-2).

TABLE B-2: HERO EXPERIENCES

5 Pillars of Experiences	Suite of Hero experiences
1. Reef, Islands and Beaches	Great Barrier Reef Islands Beaches Diving, Snorkelling, Sailing
2. Natural Encounters	Natural Landscapes Wildlife experience Marine Life Experience
3. Adventure and Discovery	Adventure Experiences Dinosaurs and Fossicking Theme Parks Journeys
4. Lifestyle culture and People	Food and Beverage Indigenous Experiences Local Characters City Experiences Outback and Country Life
5. Events	Participation Events Food and Beverage Events Music Events Festivals Arts and Culture Events Spectator Sports

The variety and quality of these experiences have contributed to Queensland's reputation as an abundant tourism destination.

Tourism is a key economic driver in Queensland's regions as it supports employment and community growth. As per the 'Advancing Tourism Strategy 2016-2020 Growing Queensland Jobs' plan (Department of Tourism, Major Events, Small Business and the Commonwealth Games 2016), it is vital that the tourism industry has a qualified and skilled workforce that could adequately meet the growing demands of the visitors coming to the State for high-quality experiences. The plan includes programs and investments in support of students and young people in building careers in tourism (e.g. $120 million

VET Investment Plan). It highlights the need of identifying gaps in skills of the existing tourism workforce and the importance of continued development of skilled Aboriginal and Torres Strait Islander people with tourism career pathways, as well as the investment in Indigenous tourism businesses. For sustained tourism growth, capabilities of regional businesses need to be built (e.g. through the introduction of the Queensland Government's two year $100 million back to work regional employment package), such as digital capabilities and connectivity of businesses. There is a suite of initiatives proposed by the State Government to encourage small, regional tourism businesses and young entrepreneurs to be aware of and inspired by new technologies and increase their digital competences, such as:

- Digital Grants for Small Businesses
- Advance Community Champions
- Advance Queensland program Hot DesQ

As per the TEQ Annual Report 17/18, changes in technology and consumer preferences will further affect Queensland's tourism industry. Maintaining the focus on technology and innovation will enable opportunities to deliver on jobs and advance offerings in the destinations (TEQ 2018c).

TECHNOLOGY INVESTMENT IN THE TOURISM SECTOR

The Queensland Government prioritises innovation through research and development, proof of concept and commercialisation of ideas to support a diverse economy and generate high-quality jobs. In line with the *Trade Investment Strategy*, 'Innovation and creativity are fundamental to the continued competitiveness and profitability of Queensland's tourism industry' (The State of Queensland 2016).

Digital technologies are growing at a rapid rate affecting the traditional ways of doing business. In 2019, 56% of the world's population are active internet users (Statista 2019). The internet provides opportunities for global trade but brings also challenges for businesses as markets become more competitive and complex. Online product and service, social media, augmented and virtual reality, machine learning and robotics, and digital financial technologies disrupt traditional business models.

GROWING TOURISM DEMAND THROUGH INNOVATION

Queensland aims to be in step with technology advancements to enhance their hero experiences, drive visitation to these destinations and grow their reputation among domestic and international travellers. Some recent examples are, scUber the world's first rideshare submarine on the Great Barrier Reef, a partnership with Uber and the Citizens of the Great Barrier Reef (Uber Newsroom 2019). This initiative is aimed at HVTs and promotes a collaborative approach to the protection and conservation of the reef (Citizens of the Great Barrier Reef n.d.). It showcases innovatively the wonders of Queensland's nature.

Tourism Australia promotes reef experiences with the use of VR technology. 18 different VR film sequences were developed in collaboration with Finch, Vrse and Clemenger BBDO, to bring Australia's aquatic and coastal offering to life, including snorkelling in the Great Barrier Reef. Although the results of the campaign for Queensland tourism have not been reported, it helped 'drive a 9 per cent increase in visitation and 64 % rise in engagement on Australia.com, with length on-site exceeding eight minutes'

(Tourism Australia 2018). These metrics translate to 104 per cent growth in leads to the Australian tourism industry.

Another notable innovation in the tourism industry is the use of I-Beacons across Queensland (TEQ 2015). Tourism and Events Queensland has launched Australia's largest tourism network of beacons across the State to encourage tourists to explore Queensland as part of the tourism dispersion efforts but also to collect valuable customer data on physical locations, activities, time and personal interests. Across Queensland's 13 tourism destinations, such as airports, visitor information centres, national parks, and other popular tourism attractions, about 150 beacons have been installed. The beacons will automatically deliver users of the 'This is Queensland app' with information about the top things to see and do in any area (TEQ 2015). The beacons will also be used at major events, to alert attendees on information about the events and destinations. The app is also aimed at encouraging visitors to share their experiences with family and friends via social media (#this is Queensland).

AGNES WATER CRYPTO CURRENCY PROJECT

In 2018, as part of the Advance Queensland Initiative, the State Government awarded 70 different companies, whose goal was to inspire innovation and create new ideas to grow. The project is headed by the Queensland start-up TravelbyBit, an online travel agent that sells tourism experiences using crypto currency. It brings together a network of over 400 crypto-friendly merchants across Queensland and major Australian cities, as well as some tourist destinations, including an entire crypto-town by the Great Barrier Reef, Agnes Water and Town 1770. TravelbyBit provides tourists, who want to use crypto currency with the opportunity to pay for their purchases with Bitcoin and other crypto currencies (Ethereum, Litecoin, Dash, etc.), with a growing number of local businesses accepting crypto payments (Travelbybit 2019). Travel by Bit received $100,000 in federal grant money to develop the system. The project had the highest rate of adoption in Queensland and Travel by Bit is targeting especially Bundaberg to make it easier for tourists to book their holidays and tourist experiences. Bundaberg Rum Distillery and Museum, which is visited by several thousand tourists each year, and the Bundaberg Airport are the early adopters of this point of sale system. The State government invested in the start-up to 'help them scale-up their operation and ultimately create new jobs in the QLD regions' (Marinoff 2018). Travel by bit (2019) claims to deliver on the following objectives:

- Facilitating crypto currency adoption
- Proposing new travel destinations to Global Blockchain Events around the world
- Serving as a 'go-to' reference for dedicated to the cryptocurrency community and blockchain enthusiasts
- Standardizing cryptocurrency as a way of payment for services and goods and avoiding the middle man (e.g. banks)

PERSPECTIVES OF THE INTERVIEWEES ON THE AGNES CRYPTO-TOWN PROJECT; DR AARON THAM AND MS LEE WOOD

Dr Aaron Tham came across the launch of the crypto currency tourism project when Brisbane airport became the first airport to globally accept cryptocurrencies. Securing an internal grant to allow him to investigate the consumers' perspective on this innovation, Dr Tham interviewed crypto-merchants from Cairns in the North of Queensland right back to the Gold Coast. He conducted interviews with a variety of businesses, restaurants, shops, tourist operators to understand their insights on crypto currencies. A main incentive to accept cryptocurrency was that it was cheaper than accepting credit cards.

In relation to Agnes Water & Town 1770, the crypto currency project was more of a unique case. "Initially, there was a short-term spike in terms of tourist arrivals that they could actually attribute to this outcome but since then, in the last 12 months, there's been this dwindling effect of tourist numbers". According to Dr Tham, this is because cryptocurrency visitors are a micro-niche segment, "These people have earned a little bit of a fortune around their investments and are now looking for bases to spend it." Therefore, cryptocurrency as an innovative project to drive tourism demand to a regional destination, such as Agnes Water, has not been very successful.

Dr Tham points out that Agnes Water is a resort destination, it does not have an airport or a seaport. The nearest airport is in Bundaberg, which is about a one-and-a-half-hour drive along sugar cane plantations. So, for the tourists it is a very different, remote experience. "It's more a quiet, relaxation tourist place, rather than a commercial hub, like Brisbane. A critical mass of people is required around the different types of tourism experiences to drive crypto-tourism". In Brisbane, there are about 100 merchants that accept crypto currencies as a method of payment. According to Dr Tham, if there is a viable capacity for crypto-visitors to spend crypto currencies throughout the whole consumer journey they are more likely to visit the destination.

Dr Tham has collected data on crypto-transactions in the Brisbane airport since the launch of the project two and a half years ago. To date, only 360 transactions were made with different types of crypto currencies, with the average transaction of $25, which is not a large-scale volume. However, Dr Tham sees a brighter future for the use of crypto currency and block chain technology in the corporate market rather than in the consumer market. "My view is that it is probably going to take off in the wider corporate landscape where there is a bigger demand and a bigger pool of the pie. If you accept crypto currencies you can open a window for large corporate organizations such as Google, who now eventually will investigate how to spend crypto. In the consumer market, many factors influence consumers' decisions to spend, such as exchange rates, political stability, and terrorism, etc. But the corporate market is more robust." Dr Tham does not think that Agnes Water will have three times its number of tourists because of crypto, and actually the novelty effect is wearing off, with fewer visitors coming to Agnes since the crypto-launch, 'Because the destination in itself is not necessarily one that is catering to mass tourism', like Macao or Tokyo, explains Dr Tham. For example, Japan is building a block chain-based consumer network designed to handle a million transactions per second during the Tokyo 2020 Olympics (Hundeyin, 2019). The next industry that can benefit from block chain technology is the gambling industry, to stop illegal activities related to money laundering, because crypto transactions can be all tracked and managed in the block chain.

The interview with Ms. Lee Wood, Office Manager of 1770 Larc! Tours, a business that operates 25 years in Agnes Water 1770 region, confirms that the number of people using crypto currencies in Agnes Water and its surroundings is not significant. She explained that the decision to accept crypto currencies in Agnes was made collectively as a town. They believed it is good leverage for worldwide advertising, so the world will know that they accept crypto currencies. 'The company, TravelbyBit developed something that I refer to as the Eftpos crypto currency machine', explains Ms. Lee. 'We have an app on our laptops and phones, people come in with their crypto currencies, to start there were only five, now we have eight. It is easy for us to accept the crypto currencies, we can see it going straight to our bank accounts. People get to spend their crypto currencies, what they couldn't do before. For us it was zero risk factor, so we had nothing to lose by trying it out.'

However, it does not turn out to be a frequently used payment option. Ms. Lee attributes the low usage to the size of the destination and a lack of tourists with crypto currencies, 'Whilst we have a big tourism presence here, most people that are coming don't have crypto currencies. I do get a lot of interest from people that have thought about crypto currencies, but they don't know how it works. So, they ask me how the process works. I think the reason is why we do not have a lot of transactions is probably because we don't have those people coming to town that have crypto'. However, Ms. Lee thinks the marketing side of promoting the destination as a world's first crypto-town of Australia was phenomenal for increasing the town's awareness and growing its reputation as a forward-thinking destination among tourists.

Although Ms. Lee does not have the data to support her view, she doubts the crypto-project increased significantly visitation and interest for their tours, 'We do extensive marketing worldwide, so I don't think crypto currency has increased demand for our particular tour. I just think it increases interest from that point of view of people, going "wow, you are accepting crypto currency!". I get more people asking me about how this works.' She also noted that it's a more future-oriented project, like the early days of credit cards now replacing cash payments. It is also too early to say that this project has contributed to creating opportunities for tourism entrepreneurs in the region. The business made in total 25 crypto-transactions over a year and a bit. In driving tourism demand the 'traditional' means of marketing and sales have been more effective, such as social media posts, online bookings, websites, attending shows, email, and telephone conversations. Ms. Lee agrees that the State marketing strategy of Tourism and Events Queensland has lifted the tourism industry in the region, however, she is of the opinion that the approach is mistaken. 'Government rather than investing in marketing strategies first should be trying to solve the issues in the tourism destination, invest in infrastructure. They do it the other way around, first increase demand but then there are issues with delivering on the promise. I would like the local government to help fund the opening of access for vessels to the Great Barrier Reef. We cannot fund it locally, as we are a small destination with 2000 inhabitants and small business operators in Agnes Water. We don't have enough funds as a town to do it. The problem is that there are days when the current is bringing in a lot of sand and our vessels cannot go out to the reef. The water is too shallow. If tourists come here from different parts of the world and they cannot experience the reef, they are disappointed and surely won't come again', said Ms. Lee.

CONCLUSIONS

Although the introduction of a cryptocurrency point of sale system in the tourism context shows little change in the number of visitors or spend in the Brisbane Airport or other crypto-destinations, such as Agnes Water, the innovation introduces a new method of payment for tourism services and goods in regional Queensland. Travelbybit reported in July 2019 more than 4000 crypto transactions processed via the website travelbybit.com, opening Australia to digital currency tourism opportunities. Travelbybit is expanding its offerings also to merchants and tourism operators in other States, such as South Australia, NSW, and Victoria. For example, Talunga Estate, a South Australian boutique winery in Adelaide Hills accepts a range of crypto currencies for its winery experiences, such as wine tours, dining, wine purchases, function centre (travelbybit.com). It is the first cryptocurrency point of sale in the Australian wine industry.

The Australian Taxation Office (ATO) estimates that there are now between 500,000 to 1 million Australians who have invested in crypto-assets. Although they made initial gains now the value of bitcoin, traded on the global exchange market, has been falling (Khadem, 2019). This may lead people to think about ways of spending crypto, instead of cash or other savings. Travelbybit received government funds ($8 million) to pave the way for cryptocurrency tourism in the hope to create more jobs and support more businesses in regional Queensland. The project shows a collaborative approach between the government institutions and the industry in building a competitive digital capacity for Queensland in line with one of the six strategic areas defined by Tourism Australia (2011). However, little evidence exists that this project drives a significant number of tourists to the regional destination and therefore supports the growth and expansion of employment in the regions. Also, according to Dr Tham it is not a necessarily sustainable project to focus only on bitcoin, considering there is also a limited supply of this currency. Bitcoin production will cease after 11 million. At the moment there are 8.7 million bitcoins and therefore in another eight to nine years the currency will reach its limits. However, Dr. Tham sees a bright future for crypto and block chain technology for the investment and development of tourism where there is a critical mass of people to use crypto currency. 'With crypto-payments you avoid the middle man, which are the banks, so growing employment on the back of crypto will not happen. What is needed are the platform developers and service recover', explained Dr Tham.

Queensland operates in a highly competitive tourism market internationally and nationally. At the same time, the globally changing technology and visitors' expectations challenge the Queensland tourism industry to innovate. A huge appeal of Queensland is the nature-based tourism experiences, wildlife and landscapes, the reef and the picturesque beaches. Queensland is already investing in technology that would bring these experiences to life to promote Queensland nature-based tourism to visitors across borders, such as drone (Queensland Government 2019) and VR technology (e.g. Everest VR app). Drones provide opportunities for tourism in four main ways:

(1) improving tourism experiences,

(2) events regarding drones that help attract a new market,

(3) showcasing of a destination or product in the region and

(4) monitoring conservational initiatives or tourism experiences.

One example of a successful collaboration in the use of drones for tourism destination promotion is when Tourism and Events Queensland, in partnership with Sunshine Coast Destination Limited launched the million dollar #vacationmigration advertising campaign inspired by the Wandering Tattler bird. It is a more engaging form of promotion as it inspires tourists to visit the places they can experience first from home. Google confirmed in their 'Travel Takes on YouTube' study in 2014 that online consumption of travel videos is increasing, and they 'sell' more than any other content. Aerial views which are captured by drones are striking and often highlight an area, a remarkable site or a building in a dynamic way impossible to accomplish otherwise.

It is Important to note that besides investments into the promotion of the region, products and services require constant enhancement, so Queensland can live up to the promise and create sustainable tourism experiences for new and returning visitors. Such investment in infrastructure in regional destinations requires the strategic and financial support of the local and state governments.

Evidence from the Queensland case study demonstrates that experimentation with different technologies is needed to determine what works, and what does not. The adoption of cryptocurrency point of sale systems in Agnes Water and Town 1770 has not had an immediate effect on increasing tourism numbers; however, this has created media buzz and awareness and sparked interested among international tourist markets. International awareness was created at relatively low cost for the town and tourism businesses.

The next case study will focus on the Tourism Tracer Project in Tasmania. A technology based on collecting geotagged date for understanding tourist behaviors.

Understanding the mobility of visitors plays a crucial role for the administration and design of destinations, the marketing of attractions, and the planning of on-site visitor flows. In recent years, several studies have used visitors' GPS data at destinations ranging in size from whole countries (Raun et al. 2016) to single attractions (East et al. 2017), such as museums or zoos, to investigate visitors' space-time activities. Such approaches were used to identify localities of tourist crowding that could lead to safety and security issues, to determine sights that attract most visitors or to pinpoint the 'main path' that tourists stay on when exploring a destination (De Cantis et al. 2016; Chua et al. 2016; East et al. 2017; Raun et al. 2016). More information can be gathered when geotagged data is combined with survey data or other information sources, which can be used for customer segmentation (East et al. 2017) or a more detailed picture of resident's attitude towards tourism in intensively visited destinations (Ayscue et al. 2016). Researchers have also used GPS tracking technology to "predict the tourist's next location within a given attraction" (Zheng et al. 2017, p. 267).

CASE STUDY 3: IMPACT OF TECHNOLOGY / INNOVATIONS ON REGIONAL TOURISM DEVELOPMENT IN TASMANIA – THE TOURISM TRACER PROJECT

TOURISM GROWTH AND TECHNOLOGY IN TASMANIA

"Tourism is now Australia's second most valuable export industry and is a particularly important driver of economic and employment growth in regional communities" (Eccleston et al, 2017 p. 112). This is particularly true of Tasmania, Australia's southern-most state where tourist numbers have increased by 40 per cent over the past five years, "making a significant contribution to the island state's economic recovery along the way" (Eccleston et al. 2017 p.112). According to Lonely Planet, Tasmania is "busting out with fab festivals and sensational food and drink, riding a tourism-fuelled economic boom that's the envy of all Australia". Recent data from the Tasmania Visitor Survey, Year Ended June 2019 shows that Tasmania had 1.32 million visitors generating $2.5 billion of expenditure (up 4% from previous year). The majority of visitors came from interstate markets (1.12 million) (Tourism Tasmania 2019).

What is remarkable about these recent statistics and accounts is the radical turnaround they represent regarding Tasmania's image in the popular culture of Australia. It has taken a considerable amount of "rebranding" coupled with a turn of fate it would seem, to reverse ingrained darker, more tragic associations with the state (Ryan, 2016). This case study draws on secondary data as well as interviews with Catherine Zeneger and Maria Foundas [6] who worked and lived in Tasmania in media production over the last five years and who had a high degree of community and stakeholder engagement to inform their observations of change. There have been several factors driving tourism growth Tasmania, undoubtedly the launch of the MONA museum, i.e. the MONA effect has played an important role in Tasmania's image as a tourism destination.

THE MONA EFFECT: TOURISM AND THE CREATIVE ECONOMY

Tasmania "used to be the place you'd go to die in the radio world" Maria Foundas commented. Now she is amazed by the numbers of cruise ships that come through, now "more hipster than bogan, cool rather than redneck" as evidenced by the number of bars, cafes and restaurants. The signifier of the "Apple Isle" has changed into a market awareness of Tasmania as an abundant supply of other niche food and produce. Highly marketable industries like gin and cider furnish the leisure economy, rather than as symbols of agricultural production. Hi-end food and wine tours are booming alongside other "glamping" experiences[7].

Harbour town becomes hip … the recent arrival of the world-class MONA museum has the waters rippling, hip tourists flocking and Hobart rousing from its slumber … now is the time to discover what's going on down there before the rest of the world catches on (Lonely Planet.com, n.d.)

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[6] Catherine Zeneger is an ABC presenter and producer who lived in Hobart for three years (2014-2017). Maria Foundas is a breakfast radio announcer who was on 7HOFM for two years in Hobart (2016-2018).

[7] https://bluederbypodsride.com.au/the-accommodation

In addition to the appeal of its natural abundance, Tasmania's change of fortune appears to have been transformed on the back of the wild entrepreneurial generosity of one man, David Walsh who in 2011, converted his private fortune into an internationally acclaimed public contemporary interactive art gallery in Hobart MONA.[8] The turn from "bogan" to "hipster" is pronounced by the location of MONA in one of Tasmania's most disadvantaged municipalities (Booth 2017). Maria describes him as "an eccentric savant" passionate about the whole state and giving back to community, where all Tasmanians have free entry to encourage them to bring their visitors. Walsh and his creative team also created spin off festivals Dark MOFO and Mona Foma: both hugely popular in the art world, bringing cultural tourists from all over Australia, overseas and now stretching its program activation to Launceston. Maria noted that private investment meant an appealing lack of sponsorship logos when the Winter Festival Mona Foma took over Hobart [9]. There is no disputing that MONA is crucial to Hobart's 'cultural renaissance' and the State's economic upturn (ABC News 2013). MONA is ranked Tasmania's second biggest tourist destination (Ryan 2016)[10].

TECHNOLOGY AND INNOVATION

Tasmania is developing a reputation for "embracing science and technology" (Fitzgibbons, 2012 p.26) and it is often the testing ground for innovation in other areas. Tasmania has a focus on innovation and emerging industries, like viticulture and aquaculture (Rigney 2013). In 2017, Launceston was the first gigabit city in Australia, getting NBN speeds at ten times the national average (Yoo 2017). Advanced technologies, lifestyle, cultural attractions are all drawcards for mainlanders to move to Tasmania, with the ability to run business in a remote but affordable and attractive location. The subject of this report, the Tourism Tracer, is another example of innovation where real-time sensor data can accurately track tourist movements through the state, providing invaluable information for accurate decision making in this vital growth industry.

TOURISM TRACER - NEW INTELLIGENCE FOR THE TOURISM INDUSTRY, REGIONAL TOURISM AUTHORITIES AND OTHER GOVERNMENTAL INSTITUTIONS.

A team of researchers from the University of Tasmania, headed by project leaders Assoc. Prof Anne Hardy and Prof Richard Eccleston are at the forefront of the innovative use of technology for tourism market research to enhance the visitor experience in the State. The Tourism Tracer is the largest tourist tracking project in the world, spatially, numerically and temporally (Tourismtracer.com).

In the first stage of the project, almost 500 tourists were strategically recruited at the three major entry points to Tasmania: Hobart and Launceston Airports, and at the Spirit of Tasmania arrival point. The

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[8]The term, the 'MONA Effect', has been coined, as similar to the 'Bilbao Effect' of Frank Gehry's Guggenheim Museum that revitalised and transformed the city of Bilbao into a cultural Mecca (Ryan 2016).

tourists specifically targeted were interstate visitors and Chinese independent travelers who spent a minimum of a week in Tasmania. Tourists were surveyed to establish socio-demographic status, knowledge of Tasmania, and cultural background. Their movement was then tracked via the app loaded onto a mobile phone handset with GPS technology provided to each tourist. During the trip, a sample of tourists was surveyed regarding their use of social media and the reasons for any spontaneous decisions they made. On completing their journey, the app asked respondents questions regarding their travel behavior and experiences. In this way, the project tracked the precise movements of visitors traveling within Tasmania for periods of up to two weeks. Using the data, the researchers were able to identify specific regions, length of stay and infrastructure used by the visitors. The tracer project provided a wealth of information on preferred travel routes on the whole island but also revealed infrastructure and facilities that were underused by tourists. Therefore, the data is key for industry decision-makers on investments in areas of Tasmania where there is clear demand. For example, it highlighted the need for more regional accommodation and strategic marketing as visitors were going on long day trips returning to Tasmania's major cities, rather than staying overnight in the regional communities.

The project started under the name 'Sensing Tourist Travel In Tasmania' In 2016. It was funded by the partnership between the University of Tasmania, CSIRO and the Tasmanian Government ($500,000) through the Sense-T program (Sense-t 2019). The project development earned a Merit Award at the state and national iAward in the Public Sector and Government category. In 2017 it went global. Tourism Skäne in Sweden commissioned a tracking project using the tracer technology in the Sydostleden cycling network to track the behavior of cyclists, followed by a pilot project in Hokkaido, Japan.

Funds from the University of Tasmania, the Tasmanian Department of State Growth, the Tourism Industry Council of Tasmanian and the Federal Group ($410,000) allowed the progress of the project. The project team invested these funds into the creation of an app, with Hobart-based Ionata Digital group, available from the Google and App Stores and an online Dashboard for user-friendly, high-quality data visualisation. Further, 1000 tourists in Tasmania were tracked using the app.

In 2017, Anne Hardy presented the Tourism Tracer project at the United Nations 'World Tourism Organisation' conference in Botswana as a tool for sustainable tourism development. The University of Tasmania also started a collaboration with researchers from Israel, Prof Noam Shoval, of the Hebrew University of Jerusalem, who conducted similar tracking research in Israel to use the technology to increase the dispersal of tourists in regions.

The University of Tasmania decided to maintain the capacity to collect the data in the State and offer a commercial license of the technology. To develop scalable commercial solutions, in 2018, UTas issued its first commercial license for the Tracer technology to Tourism Research Technology (University of Tasmania 2019). By reaching a licensing agreement with Tourism Research Technology (TRT) the tracer technology will be further used for research to track tourists and deliver benefits to the local tourism industry. This partnership will allow UTas to continue the research using the technology and be able to service the local and global tourism industry, as there is demand for the product. The data will remain free for Tasmania.

In February 2019, at the Tourism Tracking Symposium in Hobart, Anne Hardy presented how the tracer technology can be used to inform tourism policy and inform tourists about affected areas from bushfires via push-notifications. It was a shout out for funding to the government to push the agenda of new applications of the tracker research findings:

"What can we do now, if we get funding, is we can actually collect data of how they are traveling now, and we can send them push notifications to encourage them to go to those regions that have most been affected by dropping visitation."

"What we hope to do in the future is use that data to encourage different styles of visitation so we can help reduce crowding and provide better experiences for tourists."

CONCLUSIONS

Understanding the mobility of visitors plays a crucial role for the administration and design of destinations, the marketing of attractions, and the planning of on-site visitor flows. This data can identify areas of tourist crowding that could lead to safety and security issues, to determine sights that attract most visitors or to just pinpoint the 'main path' that tourists stay on when exploring a destination (De Cantis et al. 2016; Chua et al. 2016; East et al. 2017; Raun et al. 2016). Even more information can be gathered when geotagged data is combined with survey data or other information sources, which can be used for customer segmentation (East et al. 2017) or a more detailed picture of resident's attitude towards tourism in intensively visited destinations (Ayscue et al. 2016).

The Tourism Tracer research program was developed to ensure that the findings from the research studies in Tasmania and beyond can be translated into effective strategies to capitalise on the visitor economy. Technology that captures real-time sensor data of where tourists travel is providing the industry, regional tourism authorities and government with new intelligence to:

- Improve marketing and infrastructure investment decisions;
- Identify emerging market trends;
- Inform strategies designed to increase the duration (and spending during) visits; and
- Improve the visitor experience to Tasmania by allowing the provision of timelier and more relevant tourist information.

Further applications of the Tourism Tracer data are in areas such as tourism policy development and including being utilised to prompt visitors to travel to bushfire impacted areas. The idea is also to use the app installed on tourists' mobile phones to drive regional dispersal in the state through push notifications.

As per the CEDA report 'Improving Service Sector Productivity' (2017) the tourist tracking data has unlimited potential to address tourism industry questions and drive innovation in the sector. The Tourism Tracer project 'is a clear example of how technology can be used to drive innovation in the service economy, which also highlights the importance of structured collaboration between industry, government, and the university sector' (p. 116).

CASE STUDY 4: THE USE OF TECHNOLOGY IN DEVELOPING ABORIGINAL TOURISM

WHAT IS ABORIGINAL AND TORRES STRAIT ISLANDER TOURISM?

Tourism Australia's definition of Aboriginal and Torres Strait Islander tourism is centred on experience-based examples, noting that it showcases the culture and relationships of Aboriginal and Torres Strait Islander people with Australia. It includes activities such as

- seeing Aboriginal art, craft or cultural displays
- visiting an Aboriginal gallery
- visiting an Aboriginal cultural centre
- attending an Aboriginal dance or theatre performance
- purchasing Aboriginal art/craft or souvenirs
- seeing an Aboriginal site or community
- going on a tour with an Aboriginal guide
- attending an Aboriginal festival
- staying in Aboriginal accommodation
- interacting with Aboriginal people in other ways (TRA 2014).

This definition does not include/require any Aboriginal and/or Torres Strait Islander economic benefits, making understanding its economic impacts difficult. Compounding this issue is that when a person reports undertaking any Aboriginal and Torres Strait Islander tourism, their entire trip cost is reported as Aboriginal and Torres Strait Islander tourism income. This leads to stakeholders being unclear as to how many tourists do any Aboriginal tourism and how much money the industry sees: under this system of measurement a tourist can have 'interaction with Aboriginal people' by walking past an Aboriginal person, after which their entire trip cost is reported as Aboriginal tourism income.

The industry has experienced growth in both international and Australian visitor numbers for ten consecutive years, as shown in the chart 'Aboriginal and Torres Strait Islander Tourism Experiences' below (TRA 2019).

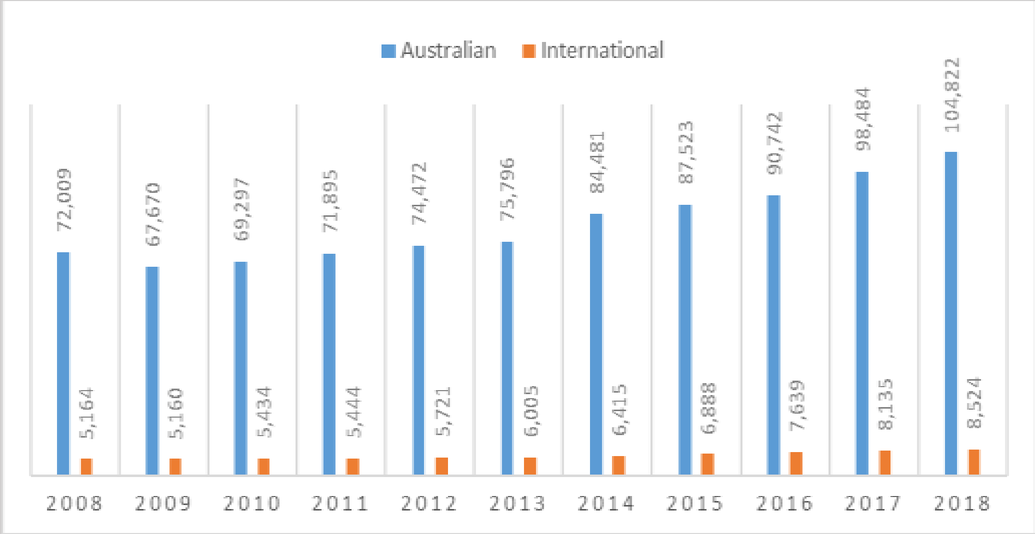

Figure B-3. Aboriginal and Torres Strait Islander Tourism Experiences

Source: Tourism Research Australia (2019)

In the interest of focusing on economic and job outcomes for Aboriginal and Torres Strait Islander people, this case study redefines Aboriginal and Torres Strait Islander tourism as tourism businesses involving Aboriginal and Torres Strait Islander people in ownership, as participants or as beneficiaries (Akbar 2016) and highlights how improved use of technology could support its development and improve its economic and job outcomes.

Aboriginal and Torres Strait Islander tourism takes place across Australia, usually within an operator's own Country. Its business models come in many shapes and forms:

- owned and operated by an Aboriginal and Torres Strait Islander person or their family (e.g., Northern Territory Indigenous Tours)
- owned by community groups and managed by Aboriginal and Torres Strait Islander people (e.g., Iga Warta)
- owned by Aboriginal and Torres Strait Islander people and managed by non- Aboriginal and Torres Strait Islander people (e.g., Nitmiluk Tours)
- owned by Aboriginal and Torres Strait Islander tourism and operated by a separate non-Aboriginal and Torres Strait Islander organisation (e.g., Wilpena Pound Resort)
- run by non- Aboriginal and Torres Strait Islander organisations and employing Aboriginal and Torres Strait Islander people to provide Aboriginal content for their broader product (e.g., Adelaide Aboriginal Cultural Walking Tours) (Akbar 2016).

In addition to the challenges of measuring Aboriginal and Torres Strait Islander tourism growth, challenges exist in accurately identifying technology investment and innovation in this sector, meaning that understanding the contribution to tourism development, business growth and employment of technology is difficult.

This report discusses five issues examining the interface of tourism and technology, developed using a review of academic and industry literature integrated with primary data collected during two interviews with respondents connected to the tourism industry.

INTERVIEW PARTICIPANTS

JASON EADES, CEO OF WELCOME TO COUNTRY

Welcome to Country is a developing website that will connect tourists with Aboriginal and Torres Strait Islander tourism cultural experiences: 'a marketplace for promotion and sale of Aboriginal tourism experiences. Eades thinks traditional notions of tourism do not fit the expectations of many contemporary tourism consumers. He notes that millennials want to 'not just look and see, but to experience' and that 'people are really looking to connect with the communities that they are travelling into'. The website is set to engage with technology and Aboriginal and Torres Strait Islander cultural product in new ways.

DR JANINE WILLIAMSON, TOURISM RESEARCHER AND DIGITAL NOMAD

Janine completed her PhD on Aboriginal and Torres Strait Islander tourism and international tourists. She has since researched many aspects of regional tourism and now travels remote areas of Australia while continuing her research work.

TECHNOLOGY AS A TOOL

Technology can enable tourists and Aboriginal and Torres Strait Islander tourism operators to connect and exchange what they both value. For this to happen, however, there needs to be reliable, up-to-date infrastructure that is in line with tourists' expectations. Eades identifies tech as a way to build trust with potential consumers, as it can be used to build relationships between potential consumers, marketplace platforms and operators: 'a trust point is around the experiences – that what they are buying is amazing and they won't find it elsewhere'.

REACHING POTENTIAL CONSUMERS

Data companies are compiling demographic and behavioural profiles and marketing them to businesses that hope to reach specific consumers – those most likely to buy. Aboriginal and Torres Strait Islander tourism businesses tend to be small businesses, and small businesses generally have a limited budget to spend on activities such as marketing or invest in tech solutions. However, increased access to technology may support the gathering of more accurate metrics, leading to improved understanding of tourism's economic impact and more effective future planning. For example, Williamson noted that 'international tourists from places with an Indigenous population, for example America and Canada, are more aware of what is Aboriginal culture and Aboriginal tourism and what it would involve', and this highlights an opportunity for operators to use tech to market their products to tourists from countries with Indigenous populations. Similarly, Williamson noted that 'when people travel, they seek a range of activities and have multiple things they want to achieve in their holiday', further highlighting that customers can be targeted based on their holiday activity preferences.

Reaching consumers while they are preparing to make, or making, a purchase decision is another marketing strategy that can be supported by better access to tech. Eades notes that 'data says that people are more likely to make a booking from a desktop', and Williamson adds that 'some market segments, such as people travelling alone, were just as likely to book Aboriginal tourism whether they found out about it before they left or while travelling if it met the needs of their holiday experience'. This emphasises the need for marketing that reaches potential customers both while they are planning and when they are on the road.

Finally, Eades notes that tech offers an opportunity to nudge tourists to try a new experience locally: 'There's a lot of people who would like to see and experience the world around them but don't often get the opportunity or might think that they need to travel to have that experience, when it comes to Aboriginal experiences there's lots of possibilities'. This demonstrates the need to re-think the traditional intersection of tourism, tech and marketing._Technology creates opportunities to improve timing of reach, enabling targeting of potential customers both at the time of decision making about their travels and/or when the traveller is in the vicinity of the tourism

COMMUNCATION

PROMOTION

Aboriginal and Torres Strait Islander tourism is currently promoted via social media, and both interviewees felt that this should be supported. Williamson noted that social media provides an opportunity to explain why it is worth travelling to a regional/remote area: 'the operators have an opportunity with using social media and showing what's there [in their location], you've got to tell tourists what's there when you're remote'. Eades noted that more effective exchange platforms may support increasing numbers of regional tourists: 'I think of driving tourism to regional areas that otherwise might miss out'.

Packaging a regional area as a destination is one way that regional tourism is currently supported. Williamson notes that 'operators within a region need to work together, Aboriginal and non-Aboriginal, because tourists have constraints, like time and budget'. Destination promotion using tech is one way to maximise returns from the small marketing budgets of many organisations. It can promote distinct product offerings more effectively and operators can increase autonomy about attributes that become associated with their brand.

POSITIONING

In the past the government has identified Aboriginal tourism as unique and a good selling point for Australian tourism; however, its marketing strategies have positioned Aboriginal and Torres Strait Islander tourism unhelpfully, focusing on homogenous product offerings or outdated understandings of Aboriginal and Torres Strait Islander culture. Access to technology gives tourism operators the opportunity to share more genuine representations of their businesses and cultures and position their products in the market. Eades echoed this point, noting that 'the product suffers from being corralled in to one single way of which it is described – an old culture and heritage – as opposed to shifting perspectives on how you can position and market', and considers tech a way to show a fresher and more real perspective on Aboriginal and Torres Strait Islander tourism. Williamson also notes that showing a more adventurous product can attract specific market segments, saying 'younger travelers were more likely to say 'if there's some element of adventure to this, I'll do it', and adding that in current promotion of Aboriginal and Torres Strait Islander tourism and regional tourism in general, 'there's a lot of same-same from one town to the next, tech is an opportunity to make a unique attraction and immerse the person in the experience, matching the tourism product to the way that the world is moving'. Aboriginal and Torres Strait Islander Operators can use technology to position Aboriginal and Torres Strait Islander tourism authentically and differentiate from each other.

PREPARATION

The key concerns for Australians planning to travel to remote areas, even before breathtaking landscapes and iconic landmarks, are safety and preparation (Akbar 2016). Many Australians are aware that the tech that supports positive travel experiences in urban areas is not always reliable in regional and remote areas. Williamson noted that the two-way communication functions supported by tech could help operators prepare tourists for what to expect and how to manage wellbeing. Eades added that tech can also support Aboriginal and Torres Strait Islander communities in communicating behavioural expectations to tourists, saying 'some communities are very clear about what are their expectations when they come', such as standards of dress, and that it is important to 'set that expectation right from the beginning'. One Aboriginal operator does this by posting advice on their official web page that describes their tours as 'intimate, interactive and in the moment' and pointing out that they require tourists' input and may challenge them in unexpected ways (NTIT 2012). Initiatives like this are designed to help Aboriginal and Torres Strait Islander tourism operators to attract fewer racist customers, ensuring a more positive experience for their tour groups and workers. Aboriginal and Torres Strait Islander Operators can use technology to manage consumer expectations and prepare them for experiencing regional Australia which will mean that tourists can be both more prepared for regional travel and also more understanding of what engaging in tourism in a regional area will entail.

EXPERIENCE SHARING

Social media enables everyday travelers to share their adventures using stunning images and characterised narratives. Ensuring access to tech for tourists and operators will therefore support the organic sharing of tourism experiences in stunning regional Australia. Eades notes that ease of sharing was a key consideration in the development of 'Welcome to Country', highlighting the importance of supporting operators in accessing and promoting their own and travellers' content relevant to their product offerings.

Aboriginal and Torres Strait Islander Operators should make sharing experiences using tech easy for every tourist as increasingly tourists are picking locations based on social media shareability and this may lead to organic social media promotion

PRODUCT DEVELOPMENT

DEVELOP PRODUCT THAT SUITS ABORIGINAL OPERATORS

Aboriginal and Torres Strait Islander tourism presents an opportunity for remote people to remain on Country and maintain their existing cultural practices (Jacobsen et al. 2003). Eades noted that he hoped that a tech marketplace hosting Aboriginal and Torres Strait Islander tourism exchanges could support these micro-businesses: 'I think there's something in that for Aboriginal communities who may not want to go down the path of building traditional (export ready) style product'. Tech may also help Aboriginal and Torres Strait Islander tourism operators to reach the customers they want to connect with, disrupting traditional concepts of tourism. If technological mechanisms to support authenticity measures are developed, these could also help to ensure that Aboriginal and Torres Strait Islander people benefit from Aboriginal and Torres Strait Islander tourism. Technology can support developing business models and products that fit with the location, resources and cultural responsibilities of boriginal and Torres Strait Islander tourism operators.

STRENGTHEN PRODUCT NARRATIVE

Tourism experience producers are beginning to use tech as a way to support the embedded narrative of a product – to immerse the consumer even further into the story being told, strengthening or deepening an experience by engaging more senses. Examples of this include street art in Darwin which comes to life via a smartphone app and augmented reality tech (Gibson 2019), and Nyarri Morgan's virtual reality work sharing his experiences of surviving the Maralinga atomic bomb (Mann 2019). Williamson noted that as a tourist herself, virtual reality had made her feel engaged in narrative: it can 'make a show interesting and engaging and it's a way to engage young people'. The adoption of technologies can support Aboriginal and Torres Strait Islander Operators in developing product that engages consumers in experiencing, understanding and engaging with the tourism product

DEVELOP PRODUCTS THAT COST LESS

One of the challenges of remote travel is cost, which is especially impacted by seasonal pricing and fluctuating fuel costs. Williamson notes that conversations with other travelers in remote areas revealed that 'for families, the cost of learning about Aboriginal culture with a guided tour can be very expensive' and she felt that 'tech can be an opportunity to produce a product that's budget friendly'. Aboriginal and Torres Strait Islander operators can use tech to develop product suiting a range of tourist budgets and needs

USER GENERATED CONTENT AND REVIEW CULTURE

'Review culture' has three parts: online reviews, fellow traveller reviews and operator referrals.

Williamson noted that fellow travelers talk and that referrals by operators instils a higher probability of participation. Eades added that the online review culture is a challenge to manage, however, as people often gave responses that were either meaning very good or bad. This, combined with issues of racism impacting online referrals, demonstrate the need for operators to continue engaging with reviews and managing consumer expectations. This suggests that Aboriginal and Torres Strait Islander Operators should use technologies to manage reviews and engage in cross-promotion, ensuring that their online profiles are well managed and to support continued engagement with customers.

BARRIERS TO TECHNOLOGY

TOURIST PERSPECTIVE

Reception and access remain consistent issues for regional travelers and operators. Williamson noted that multiple issues affect tourists: ‘tech compounds in a few different ways; obviously there’s issues with reception, people are using tech to find out where they want to go, but once you’re out of the main towns you can’t always rely on being able to use the internet and so apps that work offline by giving you the option to store information about places you’ve looked at, it’s a bit hit and miss at the moment’.

This creates further problems, as more technology relies on the internet for functions such as tourism infrastructure and access to cash. Williamson also noted this, saying ‘there is huge variance between what’s available in areas, such as cash machines, some places have no cash machines and then when the internet goes down people have no cash and can’t buy anything. In some remote place it goes out for days and days’. She added that much of this happens without being raised as an issue: ‘people who live there, they know all this stuff, government agencies know nothing about it and so they don’t share any information and then, for tourists, it’s a surprise. For many tourists, this would be a huge surprise, and then this impacts people’s perspectives and online reviews of an area. We must prepare the tourists before they get to that.’

OPERATOR PERSPECTIVE

Operators also experience challenges in access to tech and connectivity. Eades noted that this was something they tried to consider when designing their platform: ‘what do we need in place for when people are out bush and might not have internet access, what will this mean from an operator perspective managing experiences using our platform’.

Aboriginal and Torres Strait Islander tourism operators, like all people in regional areas, pay more for access to the internet (Curtin 2001). They can also experience distance from competing markets, meaning they lack exposure to what is possible and what developing tech they could make use of in their products. This leads to a lack of tech integration into their product and a lack of knowledge about what tourists are experiencing in other places. Williamson noted that this can affect their competitiveness, saying, ‘access to technology, exposure to what’s out there and learning about technology are barriers for remote operators, tourists are experiencing these things in other places in the world’.

Eades noted a lack of support for Aboriginal and Torres Strait Islander tourism operators at a national level, saying that there is 'no national industry support' for Aboriginal and Torres Strait Islander tourism operators, only some area/regional/state support – 'nowhere that you can go to get industry insights as an operator'. He hoped that 'analytics from [Welcome to Country] site could be exciting' and that they could share it with operators 'because the existing data isn't very helpful'. He further noted that Aboriginal and Torres Strait Islander tourism operators 'are using lots of platforms, but those platforms aren't investing in Aboriginal tourism', and hopes to make a difference in this space.

LIMITATIONS

This case study aimed to develop an understanding of the interface between tourism and technology and meaningful information within the guidelines specified by Regional Australia Institute. The timeframe did not allow for ethics approval to interview Aboriginal people, and therefore interviews with people connected to the Aboriginal and Torres Strait Islander tourism industry were sought instead. While every effort was made to include information relevant to Torres Strait Islander tourism, the nations and resulting contexts and cultures of Aboriginal and Torres Strait Islander tourism operators are diverse, and therefore the information in this report may not be generalizable.

CONCLUSION

In conclusion, this case study discussed issues of tourism and technology, using a review literature integrated with primary data collected during interviews on the Aboriginal and Torres Strait Islander tourism industry to develop recommendations for supporting industry growth, self-determination and economic returns. The case study demonstrates that Aboriginal and Torres Strait Islander tourism operators need access to reliable and innovative technology in line with international industry expectations, support to develop products maximising the use of technology but that this must be done in a way that enables Aboriginal and Torres Strait Islander tourism to develop a distinctive category identity and that individual tourism offerings can establish unique brand identities to drive how they reach, attract and service the Australian and international tourism market.

SECTION 4: QUANTITATIVE STUDY OF TOURISM OPERATORS IN REGIONAL AUSTRALIA

OVERVIEW

This section presents the results of a quantitative study on technology and innovation in tourism enterprises in regional Australia. Data was collected through telephone interviews with 200 tourism business operators in VIC and NSW to examine: 1) Business use of technologies and different types; 2) Perceived impacts of technologies; 3) Barriers and challenges to technology access and adoption.

Data from this study will inform;

- How technology can be used to drive tourism development and growth in regional Australia
- How technology can be used to support regional destinations and tourism enterprises to access international tourist markets
- How technology investment and innovation contribute to tourism entrepreneurship, business performance and employment growth in regional Australia

SAMPLE AND METHOD

A broad definition of tourism enterprises was adopted which included:

- Accommodation businesses (BnB and motels)
- Restaurants and cafes
- Tour operators
- Pubs and hotels
- Tourism attractions

Regional businesses were classified as those outside the capital cities. Telephone surveys were conducted in October 2019 with randomly selected tourism businesses operating in regional destinations. A questionnaire was developed with measurement scales adapted from the literature. The questionnaire collected information on:

- Demographics and business characteristics (size, number of employees etc.)
- Business use of technologies
- Support services for technology adoption
- Challenges to adopting technologies
- Engagement with community and access to resources
- Business performance and expected growth

The average completion time for the survey was 20 minutes.

RESULTS AND DISCUSSION

The majority of business surveyed from regional Australia in our study were independently owned businesses, with 60% identify as family owned businesses. The majority can be classified as micro and small enterprises with none from the sample employing more than 10 full time staff. The majority of tourism businesses from our sample were not involved in Aboriginal tourism, however, 11 businesses are currently involved in Aboriginal tourism and a further 5 businesses intend to in the future.

Figure C-1: Chain or franchise

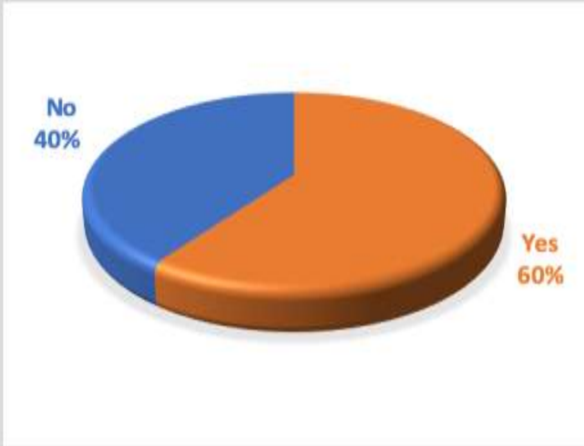

Figure C-2: Family owned businesses

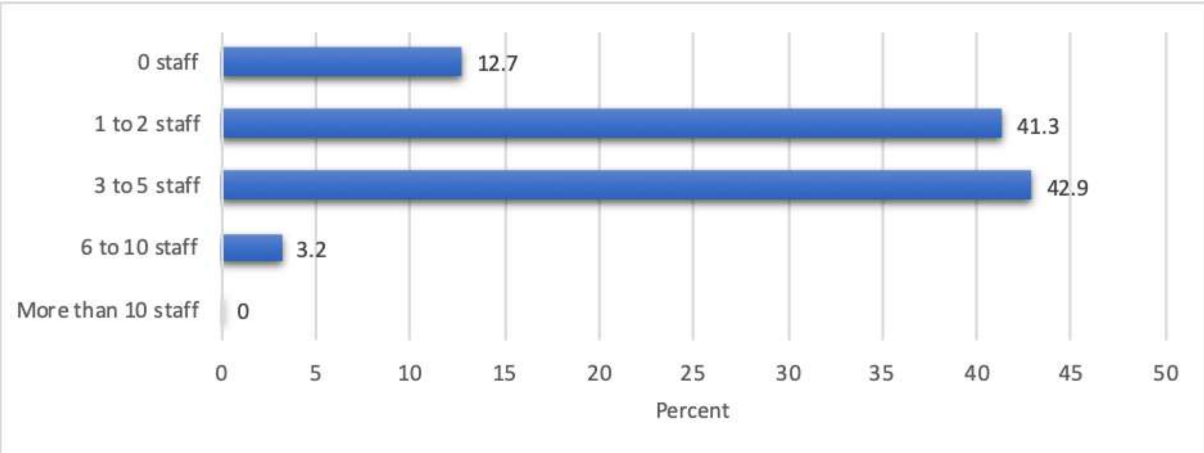

Figure C-3: Full time staff

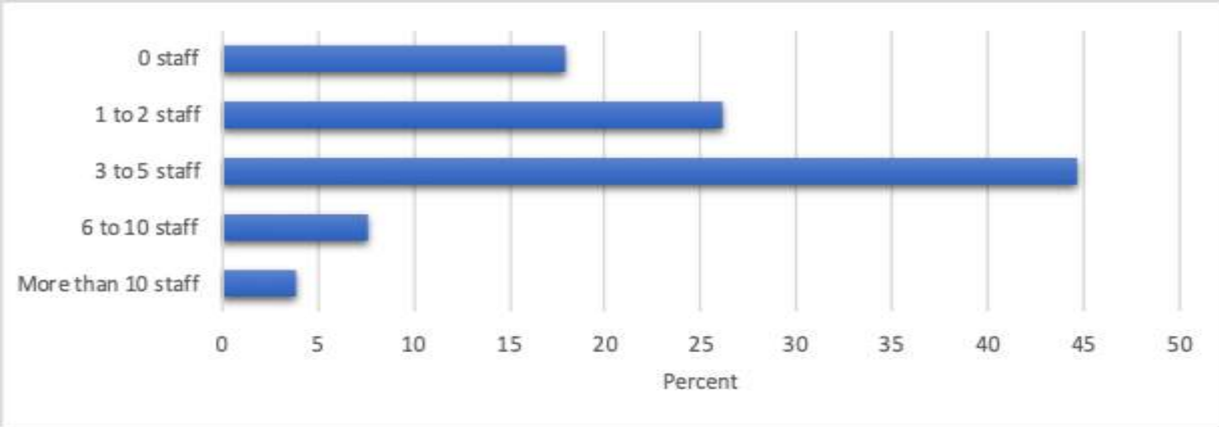

Figure C-4: Part-time casual staff

In regard to the business operators, 56% of respondents were female. Respondents were also evenly spread across different age groups, with 48% being 46 years and over. Over 53% of respondents had completed a certificate/diploma or higher tertiary qualifications.

Business operators were asked if they have completed any formal training/qualifications in 'entrepreneurship', as well as any formal training in/qualifications in tourism and hospitality. The survey results found that 29% of tourism business operators had formal training/ qualifications in tourism and hospitality, and that 8% had formal training or qualifications in entrepreneurship.

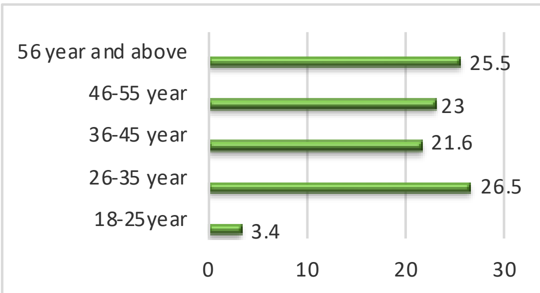

Figure C-5: Respondents' age

Figure C-6: Respondents' gender

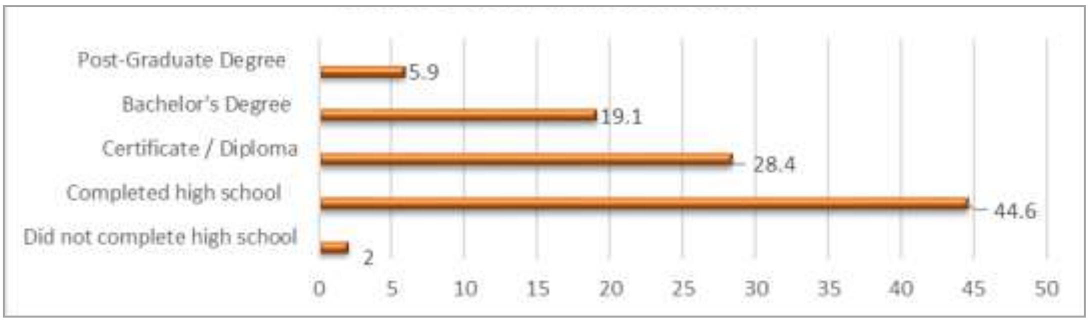

Figure C-6: Respondents' education

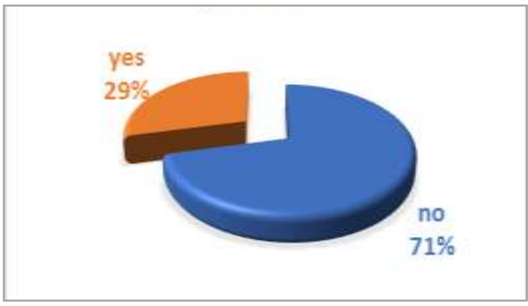

Figure C-7: Tourism/hospitality qualification   Figure C-8: Entrepreneurship Qualification

Tourism businesses in regional Australia self-reported as being innovative. Most respondents try to take the initiative in every situation (e.g. against competitors, in projects and when working with others) (Mean: 5.338). Businesses operators also reported that they actively introduce improvements and innovations in the business (M=5.25), and also seek out new ways of doing things (M=5.127).

Figure C-9: Respondents' opinions about their business

Business operators also reported that their businesses had achieved higher average rates of success over the past two years. When asked to respond on a scale of 1-5 1(1 = Not at all Successful, 5= Highly Successful), business operators reported being successful in achieving sales and revenue growth (M=3.998) and profitability (M=3.772). The main challenge is in attracting and retaining full time staff (M=3.129) and part-time staff (M=2.988).

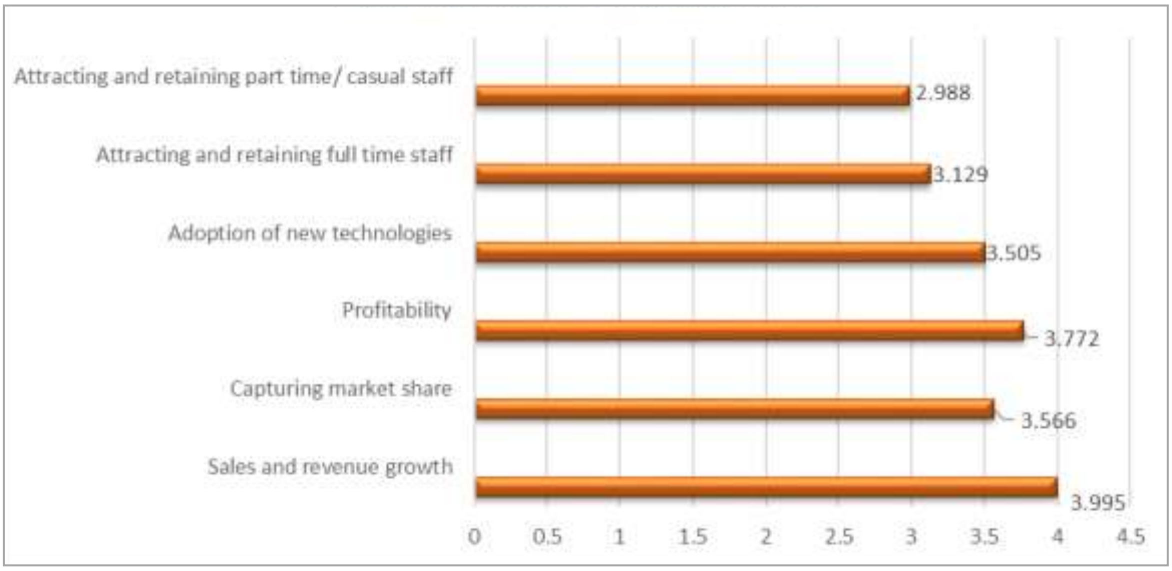

Figure C-10: Business performance to date

Tourism business operators were asked to respond to series of statements with regard to the availability of business support services in their region. (or around a 1 hour drive from their location. Responses were made on a scale of 1-7 where, 1= Strongly Disagree, 7 = Strongly Agree.

Table C-1: Support Services

Statement	Mean	SD
Funding to support new technology investment (e.g. venture capital and investment funds) is readily available in or near our region	3.061	0.144
There are many local institutions that provide or supply access to new technology in or near our region.	3.530	0.143
Institutions that support the adoption of new technology innovation are plentiful in or near our region/	3.227	0.136
Government policies are designed to support tourism industry development in our region.	4.000	0.138
Government programs are implemented to support tourism industry development in our region.	3.765	0.133
Governments play an important role in facilitating networks that enable access to technology and innovation in our region	3.134	0.137
There are strong social networks among the businesses and employees in our region	4.563	0.132
There is a high level of trust among businesses in our regions	4.751	0.126
Other businesses in our region play an important role in enabling access to technology and innovation	3.671	0.140

Overall, business operators reported high-level of trust and strong social networks mean of 4.751 and 4.563, respectively). While, funding to support new technology investment (Mean=3.061) had the lowest mean score.

Business operators were asked to report the strength of their relationships with stakeholders including: 1) Local businesses and suppliers; 2) Local Government/ councils; 3) Tourism association groups; 4) State and Federal tourism commissions. Respondents' relationship with local businesses and suppliers ranked as the strongest relationship (mean = 5.08). Their relationship with universities and state and federal tourism commissions ranked as the weakest (2.69) highlighting the need to expand and strengthen collaborations between business owners and Universities. Universities can have an important role in tourism development, as evidenced by the case studies presented on Queensland and Tasmania.

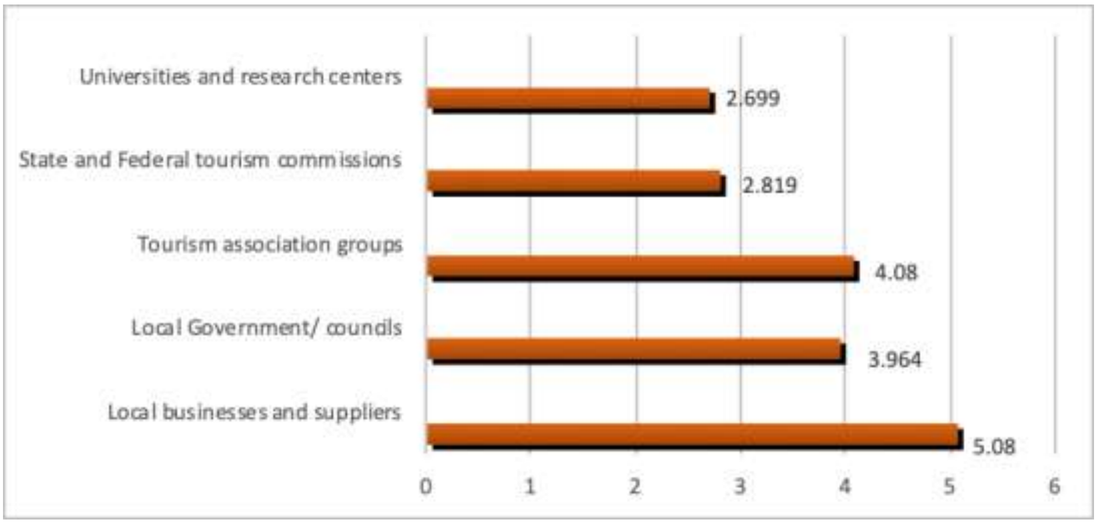

Figure C-11: Relationship with Stakeholders

Business operators were asked to rate a list of technologies on a 1-10 scale (1 = Not beneficial at all to 10= extremely beneficial, 0 = Not applicable).

Table C-1: Digital Technologies

Valid	Mean	SD	Valid	Missing/ NA
Digital Apps	5.244	0.198	180	28
Technologies for marketing and promotion	6.213	0.188	201	7
Online booking / reservation/ point of sale technologies	6.343	0.205	204	4
Block chain	1.576	0.196	163	45
Wi-Fi / 4G/ mobile hotspot	6.432	0.190	199	9
Social media platforms such as LinkedIn /Facebook/Twitter	6.937	0.176	191	17
Cloud based accounting software	5.065	0.257	183	25

Results from Table C-12 highlight that social media platforms ranked as the most beneficial digital technologies (Mean: 6.937). While, blockchain ranked as the least beneficial technology with a mean of 1.576. Other technologies that were considered beneficial include Wi-Fi/ 4G/ mobile hotspot, Online booking/ reservations/ point of sale systems and Technologies for marketing and promotion. User-generated content on various social media channels provides another important data source for tourism organizations and service providers to gather information about their customers. A content analysis of user-generated content also provides valuable insights into visitors' expectations about places and attractions and their satisfaction with a destination (Kaosiri et al. 2019) as well as a means for visitor segmentation (Hernández et al. 2018) and for capturing movement and travel pattern through check-in data (Vu et al. 2018).

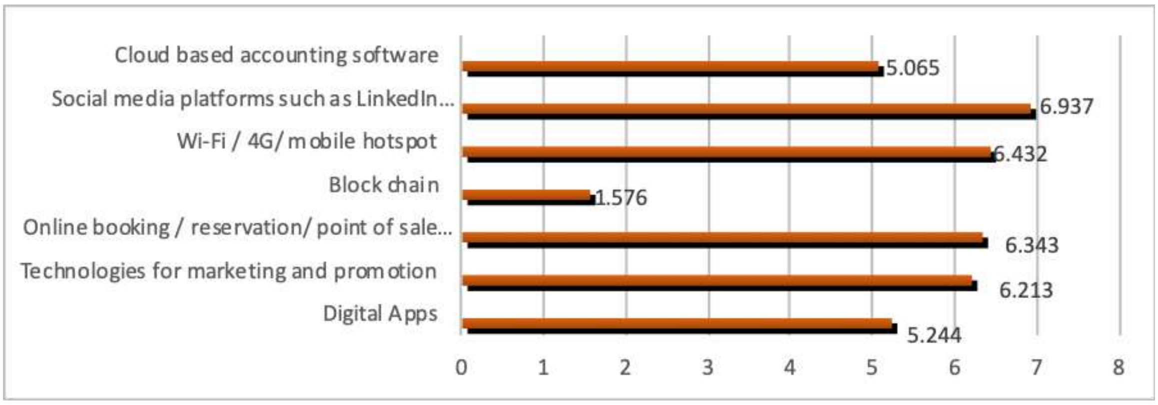

Figure C-12: Digital Technologies

Respondents from the quantitative survey identified the major benefits of using technologies by responding statements on a series of statements (1= Strongly Disagree, 7 = Strongly Agree) is that it In addition, regional tourism businesses identified the benefits of technologies in making transactions simpler for customers (Mean: 5.924), and can enable business operators to be informed about the tourism industry (in the region) (Mean: 5.239). Technologies can assist tourism business owners to Identify new opportunities for business growth (M=5.0), be more effective with our marketing (M=5.062), as well as be more efficient in business operations (M=5.015) (Figure C-13).

Figure C-13: Benefits of using technologies

Regarding the barriers that regional tourism business owners experience in adopting new technologies, major barriers identified were gaining access to new technologies (M=4.1), the financial costs of new technologies (M= 4.082) and also a lack of Government support (4.082). This highlights the need for a collaborative approach to support tourism business operators in regional communities to gain access to new technologies, share the costs and gain Government support.

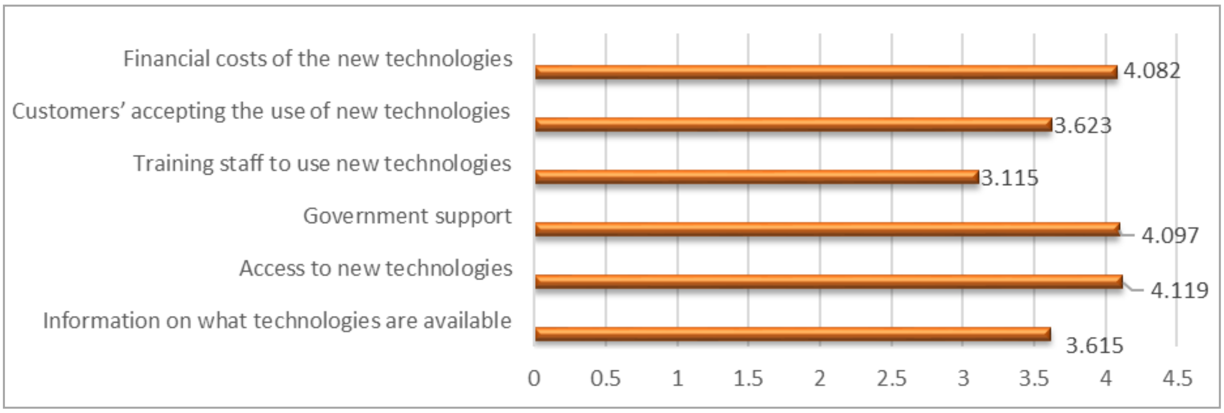

Figure C-14: Barriers to adopting new technologies

SUMMARY AND INTERPRETATION

Data collected through telephone surveys with over 200 tourism business operators in regional Victoria and NSW was analysed to examine 1) Business use of technologies and different types; 2) Perceived impacts of technologies; 3) Barriers and challenges to technology access and adoption. Analysis of the data found that 60% of respondents were family owned enterprises. The majority of businesses are categorised as micro and small businesses with only 3% employing 6 or more full time staff, and 11.4% employing 6 or more part-time/casual staff. Although more than half of the business operators sample had completed post secondary qualifications (certificate/diploma/degrees), only 8% had completed formal training and qualifications in entrepreneurship.

In regard to their perceived success of their businesses over the past two years, it is positive to see that businesses are performing well in terms of sales and revenue growth, and profitability. In addition, the data suggests tourism businesses are innovative and proactive. They actively introduce new improvements and innovations and seek out news of doing things. However despite this success, a major challenge facing business operators is attracting and retaining staff.

Business operators also reported the strength of of relationships with key stakeholders including local businesses and suppliers, local Govt, tourism association groups, and State and Federal tourism commissions, universities and research centres. Businesses reported the strongest relationships with other local businesses and suppliers, however, the evidence shows weak relationships between business operators and Universities. There is evidence of the importance of social networks and trust among business operators with other businesses.

In regard to technology use and their benefits. Business operators rated social media platforms such as LinkedIn/Facebook/ Twitter to be among the most beneficial technology. The availability of wireless connectivity such as WiFi/4G/Mobile hotspot also ranked high in terms of benefit. Other important technologies include online reservation and point of sales systems, as well digital marketing innovations. Blockchain technologies were perceived to be the leats beneficial. Innovations and technologies can support businesses through making transactions simpler for customers, keeping business operators informed about the tourism industry (and region), supporting business marketing efforts and improving efficiency in business operations. However, access to technologies and a lack of support services to identify and implement technologies is a key challenge for tourism operators. Other barriers to the implementation of technologies include the financial costs, as well as also a lack of Government support. Thus, results from the telephone interviews highlight need for a collaborative approach to support tourism business operators in regional communities to gain access to new technologies, share the costs and gain Government support.

CONCLUSIONS AND RECOMMENDATIONS

This project has looked at the factors driving business and employment growth in regional tourism, and examined the impacts of innovation and technology in:

- Supporting the capabilities and performance of regional tourism enterprises
- Creating opportunities for increasing tourism demand in regional destinations
- Creating opportunities for increasing the level of employment in the tourism industry by expanding tourism capabilities in regional destinations.

The scope of work for this project involved Desk research to collate, analyse and interpret economic data on tourism impacts and growth in Australia, with focus on regional areas. The project comprised:

1) A scoping study on recent advances in technologies and innovation being implemented across the tourism industry.
2) A review of the academic literature on the impacts of technology and innovation on tourism development- including the impacts of technology on driving tourism demand and supporting tourism enterprise performance.
3) Case study analysis of four tourism destinations impacted through technology. Case studies are developed through primary (qualitative interviews) and secondary data.
4) Conducting a quantitative study on technology and innovation in tourism enterprises in regional Australia. This involved a telephone survey of 200 regional tourism business operators to examine: 1) Business use of technologies and different types; 2) Perceived impacts of technologies; 3) Barriers and challenges to technology access and adoption.

The objective of the study was to gain empirical evidence to address the following research questions

RQ1- How can technology be used to drive tourism development and growth in regional Australia?

RQ2- How can technology be used support regional destinations and tourism enterprises to access international tourist markets.

RQ3- How does technology investment and innovation contribute to tourism entrepreneurship, business performance and employment growth in regional Australia.

RQ4-What other factors influence tourism innovation, entrepreneurship and business growth in regional Australia?

RQ5- What strategies are suggested by the evidence that Governments and destination managers may implement to support tourism growth and employment in regional destinations?

These are addressed below:

RQ1: HOW CAN TECHNOLOGY BE USED TO DRIVE TOURISM DEVELOPMENT AND GROWTH IN REGIONAL AUSTRALIA?

Technology can drive tourism development and growth in regional Australia through two main mechanisms:

<u>Technology as a driver of tourism demand</u> to regional destinations and enabling reach and access to international markets segments. Promoting the regional destination's image and brand as a must visit destination.

- For tourism destinations in regional Australia, there is opportunity for technology to be used as a mechanism for monitoring tourism demand and behaviors through the use of big data, Google trends and search engine query data.
- Technologies are transforming the tourism experience and tourist purchase behaviors. This particularly the case for mobile technologies *where* visitors search for attractions, accommodations and services online, using mobile devices, travel apps and social media platforms.
- Tourism destinations and enterprises need to utilize mobile technologies to access and engage with tourists.
- Technology creates opportunities to increase reach of potential visitors and improve timing of reach which may enable targeting of potential customers both at the time of decision making about their travels and/or when the traveler is in the vicinity
- Technology can also support tourism destinations through an opportunity to promote distinct product offerings more effectively and operators can increase autonomy about attributes that become associated with their brand=
- VR and AR technologies can be used to promote destinations and create awareness and desire to visit.

<u>Technology as a driver of entrepreneurship and business growth</u> through enabling new business models and improving business efficiencies.

- Technologies are driving innovations in marketing, customer relationship management, e-commerce and distribution.
- Technologies are transforming how service providers market to consumers.
- Tourism service providers make extensive use of online platforms, such as Facebook, Twitter, and Instagram to promote their products online.
- Technology is creating opportunities for new enterprises, such as sharing economy platforms.

RQ2: HOW CAN TECHNOLOGY BE USED SUPPORT REGIONAL DESTINATIONS AND TOURISM ENTERPRISES TO ACCESS INTERNATIONAL TOURIST MARKETS?

Technologies can allow regional tourism destinations and regional tourism enterprises to reach and access international tourism markets. Examples presented in this report include the use of VR technologies, geotagged data, social media, user-generated content and digital marketing.

The *Riverland on the Verge* project uses VR technology as a tool for digital marketing to create awareness and interest in the destination, as well as creating opportunities for investment. The case study presents evidence of how VR technology can support regional destinations to

- Use emotive images and scenery to promote awareness of the destination interest,
- Creating interest and desire for tourists to visit.
- Targeting HVT (high value 78ravellers) segments
- Drive tourism demand and growth through reaching new market segments
- Attract tourism investment and collaborations

Tourism Australia is using VR technology to promotes reef experiences technology. 18 different VR film sequences were developed in order to bring Australia's aquatic and coastal offering to life, including snorkelling in the Great Barrier Reef.

The Tourism Tracer project in Tasmania uses technology that captures real-time sensor data of where tourists travel. It provides the industry, regional tourism authorities and government with new intelligence to:

- Improve marketing and infrastructure investment decisions;
- Identify emerging market trends;
- Inform strategies designed to increase the duration (and spending during) visits; and
- Improve the visitor experience to Tasmania by allowing the provision of timelier and more relevant tourist information.

Understanding the mobility of visitors plays a crucial role for the administration and design of destinations, the marketing of attractions, and the planning of on-site visitor flows. Tourism and Events Queensland has launched Australia's largest tourism network of beacons across the State to encourage tourists to explore Queensland as part of the tourism dispersion efforts but also to collect valuable customer data on physical locations, activities, time and personal interests. Across Queensland's 13 tourism destinations, such as airports, visitor information centres, national parks, and other popular tourism attractions, about 150 beacons have been installed. The beacons will automatically deliver users of the 'This is Queensland app' with information about the top things to see and do in any area (TEQ, 2015). The beacons will also be used at major events, to alert attendees on information about the events and destinations. The app is also aimed at encouraging visitors to share their experiences with family and friends via social media (#this is queensland).

Telephone interviews conducted with 200 tourism business operators in regional NSW and VIC identified *social media platforms* as the most beneficial digital technology. Other technologies that were considered beneficial include *Wi-Fi/ 4G/ mobile hotspot*, *online booking/ reservations/ point of* sale *systems*. *User-generated content* on various social media channels provides an important data source for tourism organizations to gather information about their customers. A content analysis of user-generated content also provides valuable insights into visitors' expectations about places and attractions and their satisfaction with a destination (Kaosiri et al. 2019) as well as a means for visitor segmentation (Hernández et al. 2018) and for capturing movement and travel pattern through check-in data (Vu et al. 2018).

Technologies related to digital marketing, social medi platforms and user-generated content are highlighted in this study as being fo benefit to tourism destinations and tourism enterprises. However, marketing through social media and the growth of user-generated content platforms need to be managed carefully and strategically to avoid negative content that can damge a destination's image and a company's brand.

RQ3: HOW DOES TECHNOLOGY INVESTMENT AND INNOVATION CONTRIBUTE TO TOURISM ENTREPRENEURSHIP, BUSINESS PERFORMANCE AND EMPLOYMENT GROWTH IN REGIONAL AUSTRALIA?

This report has presented evidence of how investment in technology, whether through VR technology, geotagged data and beacons, blockchain, cryptocurrency point of sale systems, mobile apps etc can drive tourism demand. Digital technologies are growing at a rapid rate affecting the traditional ways of doing business.

Investments in technology are needed to drive innovation in Australia's tourism industry. These include innovations in product and services, marketing and communications, business operations and efficiencies.

The case studies presented show evidence of how technologies are driving change in the tourism industry and enabling regional tourism destinations and tourism enterprises to become more competitive.

Aboriginal tourism is strategic priority for Australian tourism, investments in technology for Aboriginal tourism are needed to:

- support developing business models and products that fit with their location, resources and cultural responsibilities promote distinct product offerings more effectively and operators
- support developing product that engages consumers in multiple ways in experiencing, understanding and engaging with the tourism product
- provide opportunity for Aboriginal and Torres Strait Islander Operators to position Aboriginal and Torres Strait Islander tourism authentically

- manage visitor expectations and prepare them for experiencing regional Australia which will mean that tourists can be both more prepared for regional travel and also more understanding of what engaging in tourism in a regional area will entail

Aboriginal and Torres Strait Islander Operators should make sharing experiences using tech easy for every tourist as increasingly tourists are picking locations based on social media shareability and this may lead to organic social media promotion. Technology infrastructure and access must support travel in regional areas to ensure that regions are capable and ready to support all local tourism ventures.

RQ4: WHAT OTHER FACTORS INFLUENCE TOURISM INNOVATION, ENTREPRENEURSHIP AND BUSINESS GROWTH IN REGIONAL AUSTRALIA?

Governments play a significant role in assisting regional communities to identify, plan, communicate and address technology needs. While the remoteness of many regional areas may heighten and amplify the need for such a government initiative it is no less likely the case for many businesses as our survey suggests. Tourism enterprises in regional Australia face several barriers to adopting new technologies. Results from the quantitative survey identified:

- gaining access to new technologies
- the financial costs of new technologies (M= 4.082)
- lack of Government support (4.082).

This highlights the need to for a collaborative approach to support tourism business operators in regional communities to gain access to new technologies, share the costs and access expertise through Government initiatives.

Investments in technologies to increase tourism demand are noted in this report. In particular, business operators surveyed in this study identified the value of wireless connectivity including WiFi/4G/Mobile hotspot. These rated among the most beneficial technologies for tourism enterprises.

Growth in tourism demand needs to match with investments in infrastructure and tourism attractions. The clear majority of tourism enterprises in regional tourism destinations are micro and small enterprises. These businesses face challenges to innovation including constraints in human and social capital, limited access to resources and skilled labour. Initiatives are required to support new enterprise development and business growth, however, as well as incentives to attract business investment by medium and large tourism enterprises into the regions. There is a need to create stronger private and public collaboration that involves universities and other education providers to create a localised vision of tourism potential that can be accelerated through technology adoption.

RQ5: WHAT STRATEGIES ARE SUGGESTED BY THE EVIDENCE THAT GOVERNMENTS AND DESTINATION MANAGERS MAY IMPLEMENT TO SUPPORT TOURISM GROWTH AND EMPLOYMENT IN REGIONAL DESTINATIONS?

Year ending March 2019, there were over 69 million domestic visitors to regional Australia, as compared to 46 million domestic visitors to urban/capital areas. For every dollar spent by tourists, 40 to 43 cents in every dollar went to regional areas. When looking at international tourists, there were 7.9 million visitors to capital cities as compared to 2.9 million international tourist visitors to regional areas. Thus, the majority of tourism to regional areas is driven by domestic tourism. Recommendations for destination managers and Government are as follows:

- Evidence presented in this report suggests the need for more targeted investment by the governments to support tourism growth and employment in regional destinations. Specifically, the investment and strategies should be targeted at the international tourists as our economic analysis shows a large gap between the number of domestic vs international tourists, as well as their spending – we see fewer international visitors and international spending in regional tourism destinations.
- Since the majority of the businesses in regional tourism destinations are micro or non-employing, investment and strategies should be targeted at helping the micro and non-employing businesses to grow to a small or medium size.
- The study has identified a large investment gap exists, both in terms of number of projects and the amount, between regional areas and capitals. Evidence shows that only 25% of new tourism projects are undertaken in regional areas. As a result, this inequality in the investment might be exacerbating the already existing gap between regional and capital visitor numbers.
- Investments should also be directed toward high yield sectors of the tourism industry including foodservice and accommodations.
- Given the small size of the regional tourism businesses, barriers to reach international tourists are higher in regional areas compared to capitals. Investment into certain types of technology is the potential way to lower these barriers for the regional tourism businesses.
- Investment is needed in technologies that enable tourism destinations and businesses to reach and access international markets and HVT. These include digital marketing, VR, online distribution and bookings technologies, social media and user-generated content.
- More work is needed in understanding the value of blockchain technology in tourism. Although the introduction of a cryptocurrency point of sale system in the tourism context shows little change in the number of visitors or spend in the Brisbane Airport or other crypto-destinations, such as Agnes Water, the innovation introduces a new method of payment for tourism services and goods in regional Queensland.
- In regard to supporting tourism enterprises in regional destinations, evidence from the quantitative survey shows that business operator established strong levels of trust and social networks with other local business and suppliers. However, major barriers to adopting new technologies include gaining access to new technologies, the financial costs of new technologies, and also a lack of Government support. This highlights the need to for a collaborative approach

to support tourism business operators in regional communities to gain access to new technologies, share the costs and gain Government support.

- Investment in technologies can support business efficiencies and performance. As reported in the quantitative survey, respondents identified the major benefits of using technologies are that it makes transactions simpler for customers, technology can enable business operators to be informed about the tourism industry in their region, technologies can assist tourism business owners to identify new opportunities for business growth and be more effective with their marketing.
- The education profile of tourism business operators also raises some interesting challenges for the tourism sector. With only around 25% completing University degrees in the sector, the vast majority of management and owners of tourism businesses are either vocationally trained or high school qualified. This may suggest a low predisposition and awareness across the sector toward technological advances and capacities to adopt and make good efficient use of technology. Again, this suggests the need for government programs to help fill this void.
- Only 8% of tourism business operators from our sample had reported completing qualifications in 'entrepreneurship'. This presents clear opportunities for investment into upskilling the sector through online course and education programs aimed to support entrepreneurial capabilities, building human capital.
- Although business operators in regional Australia have strong social networks with local businesses and suppliers, their relationship with universities and state and federal tourism commissions ranked as the weakest. This highlights the need to expand and strengthen collaborations between regional business owners and Universities as they can have an important role in tourism development, as evidenced by the case studies presented on Queensland and Tasmania. Universities should be invited into collaborative public/private collaborations with respect to tourism development to explore both technology and demand potential and absorb some risk in setting up new initiatives within the regions.
- The case studies on South Australia, Queensland and Tasmania each highlight that it is the regional and state level agency that monitor and drive the targets for tourism and yet it is the private sector actors who (largely) need to deliver and support the sector's growth. This particularly highlights the need for private/public collaboration in thinking about the adoption and proliferation of technology, its usage and fitness for purpose. In this collaboration then the plans and strategies for the regional sector's growth should look specifically at the technology needs, capacities and capabilities reflected by the region with a program view of upgrading the technology use to achieve greater attraction and better efficiencies and productivity in regional service delivery. Travelbybit.com may be an example of the private sector experimenting in response to government agency targets.

In regard to supporting Abriginal tourism in regional Australia, findings from this suggest that:

- Governance bodies work with Aboriginal and Torres Strait Islander tourism operators/regions to identify their technology barriers to ensure an internationally competitive Indigenous tourism industry.

- Governance bodies work with Aboriginal and Torres Strait Islander tourism operators/regions to identify innovative, novel and industry trending opportunities for technology investment in tourism development, business growth and employment and how to measure resulting impacts in more meaningful ways.
- Governance bodies work with Aboriginal and Torres Strait Islander tourism operators/regions in incorporating technology to develop a distinctive marketable category identity and also clusters/individual tourism offerings to establish unique brand identities driven by Aboriginal and Torres Strait Islander cultural custodians and maximise benefits of technology investment through improved customer reach and engagement.

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APPENDIX A

Section 2: Economic analysis graphs and tables

Figure D-1: Domestic Visitors Expenditure in NSW($m)

Figure D-2: Domestic Visitors in NSW ('000)

Figure D-3: Domestic Visitors in VIC ('000)

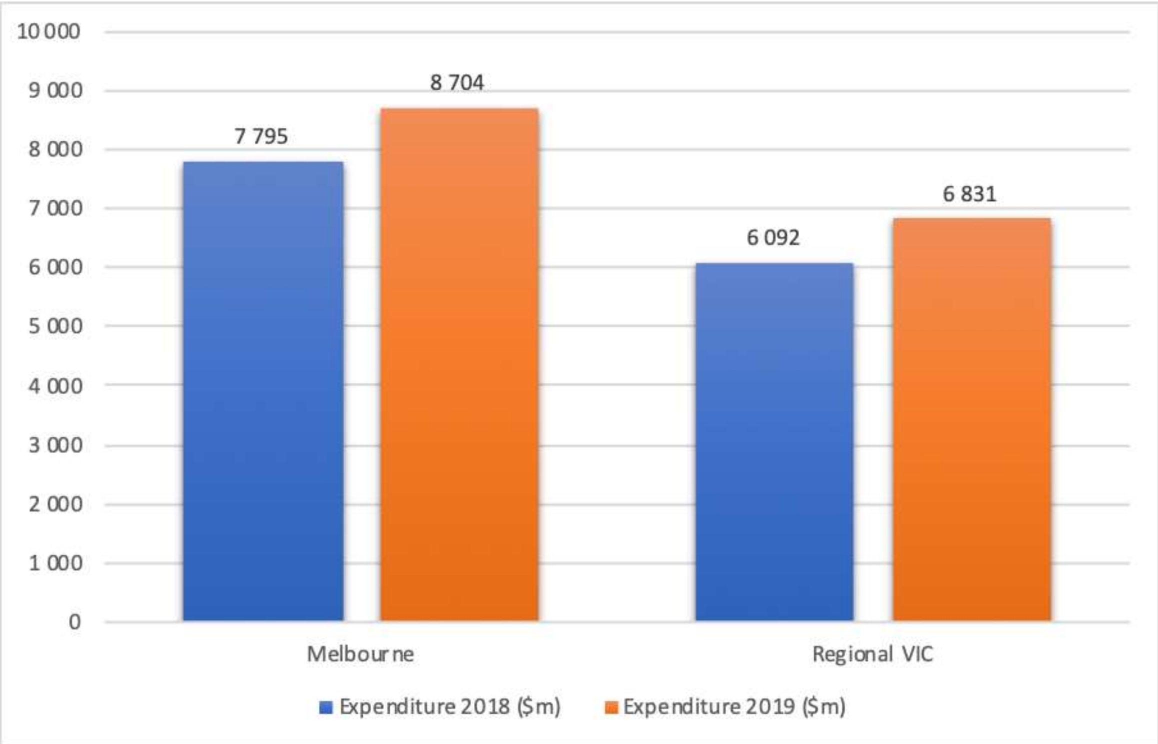

Figure D-4: Domestic Visitors Expenditure in VIC ($m)

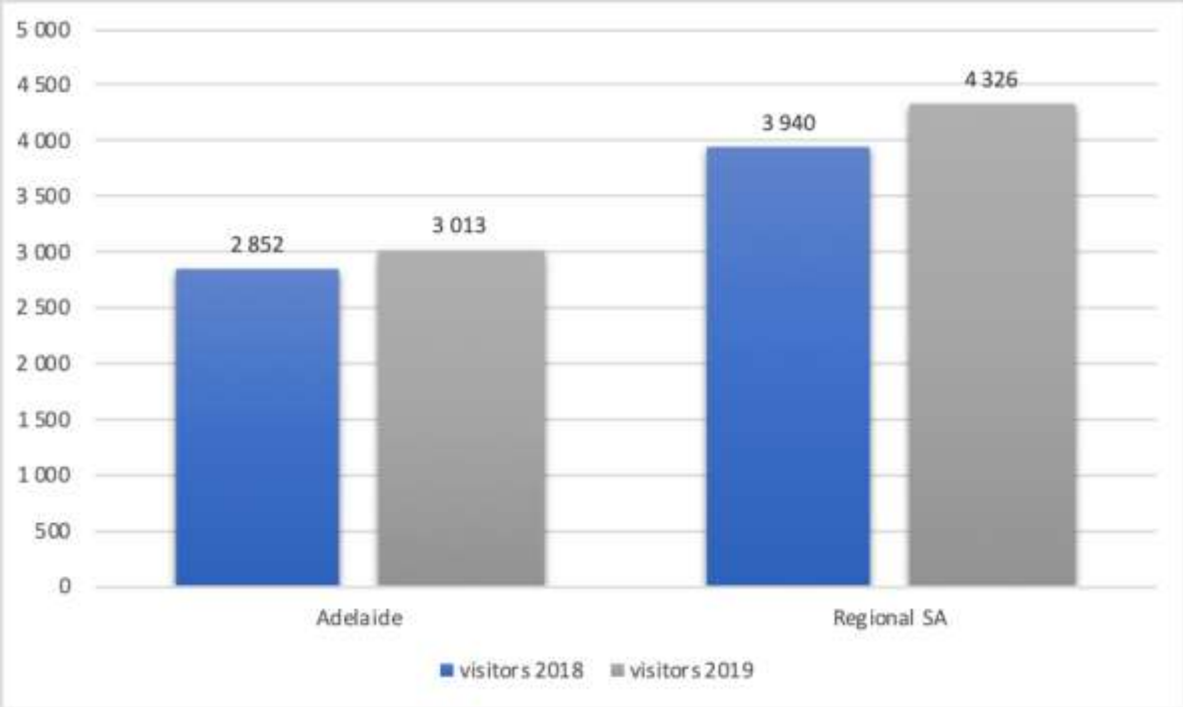

Figure D-5: Domestic Visitors in SA ('000)

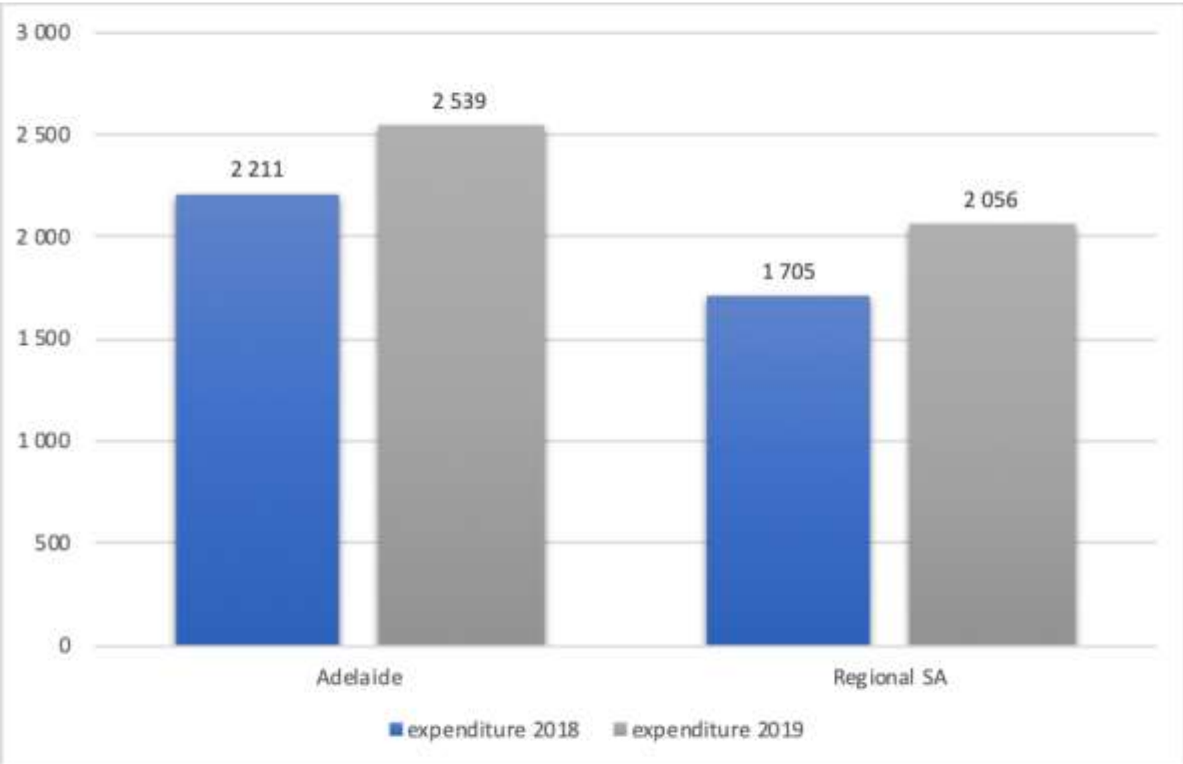

Figure D-6: Domestic Visitors Expenditure in SA ($m)

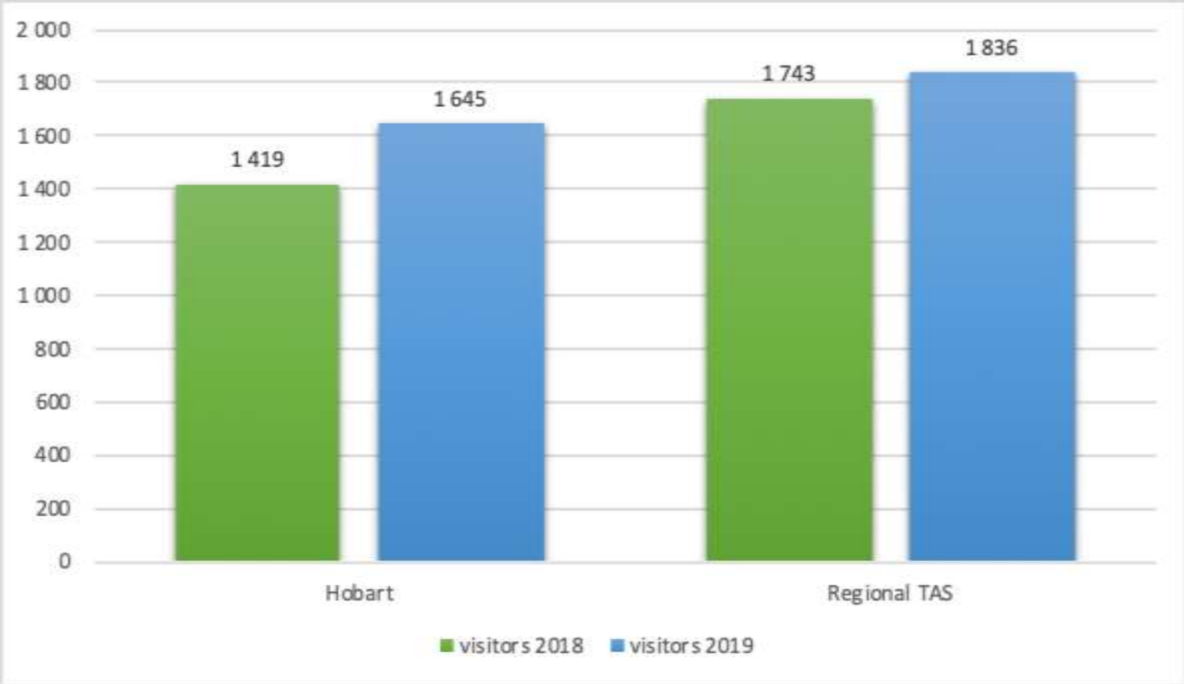

Figure D-7: Domestic Visitors in TAS ('000)

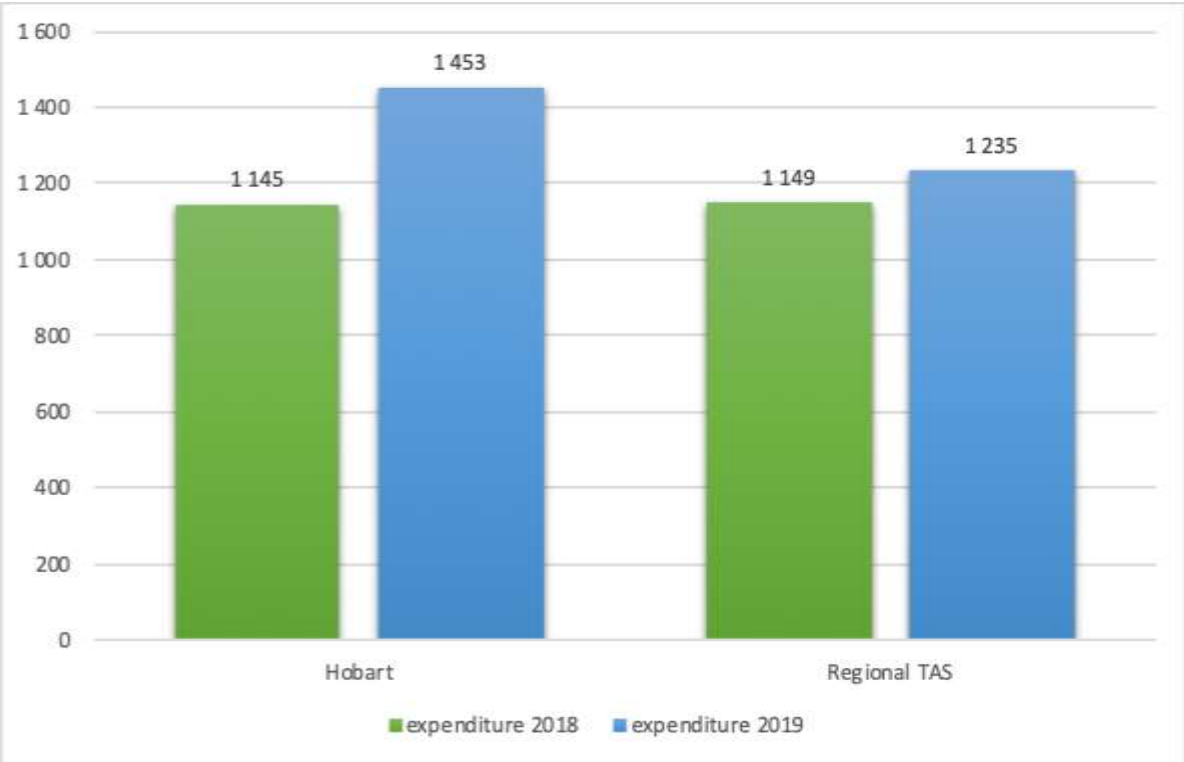

Figure D-8: Domestic Visitors Expenditure in TAS ($m)

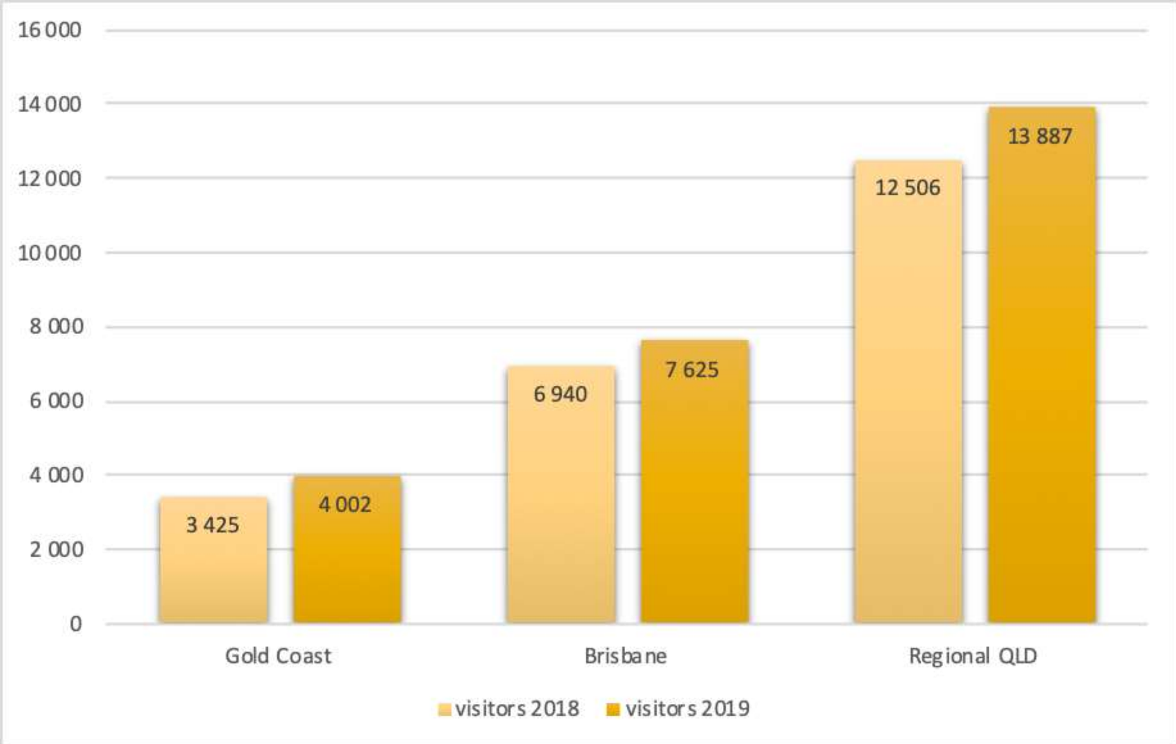

Figure D-9: Domestic Visitors in QLD ('000)

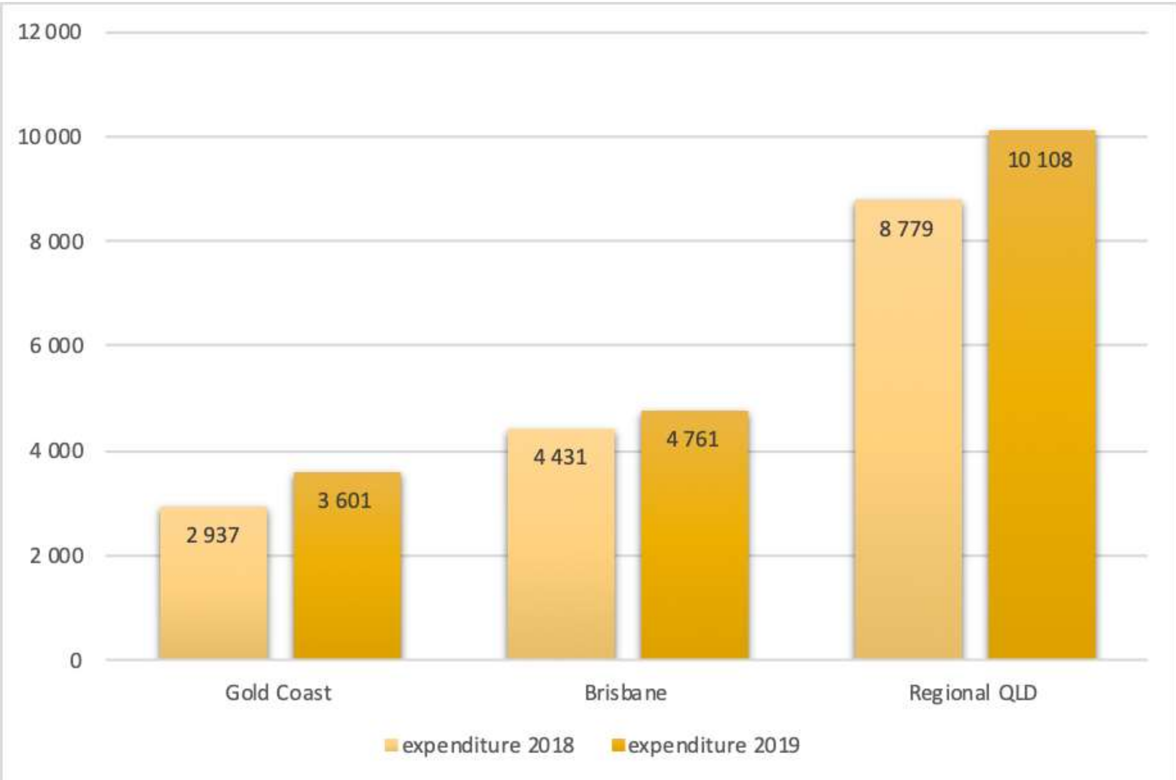

Figure D-10: Domestic Visitors Expenditure in QLD ($m)

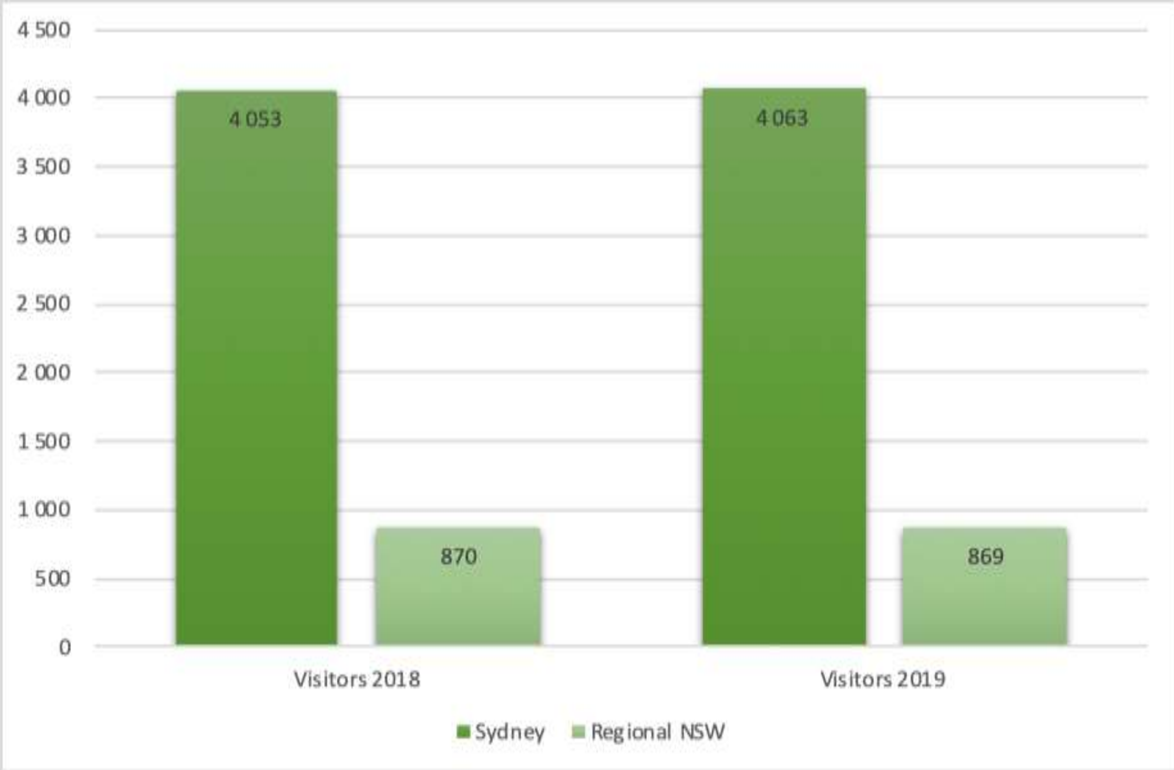

Figure D-11: International Visitors in NSW ('000)

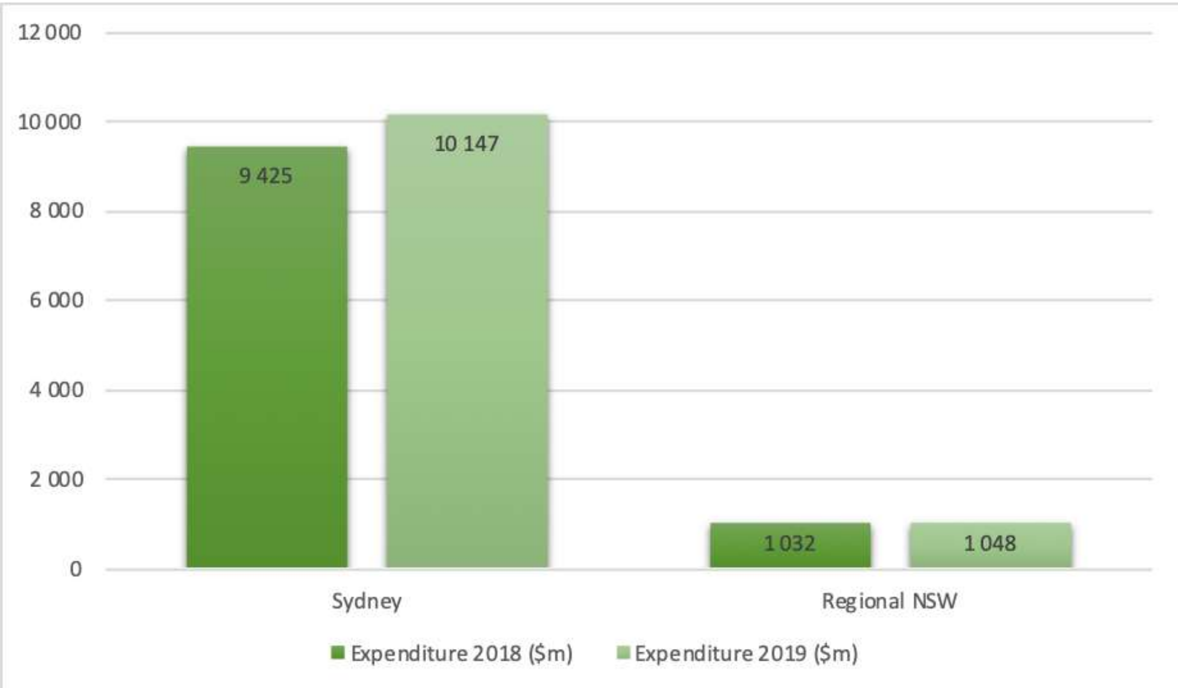

Figure D-12: International Visitors Expenditure in NSW ($m)

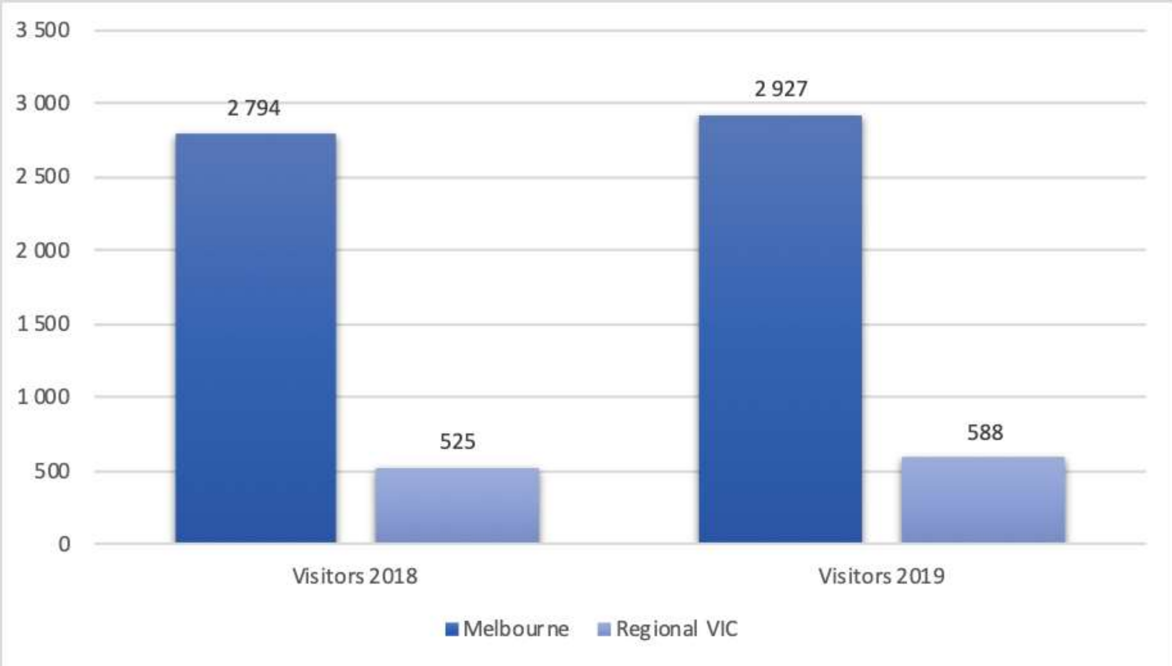

Figure D-13: International Visitors in VIC ('000)

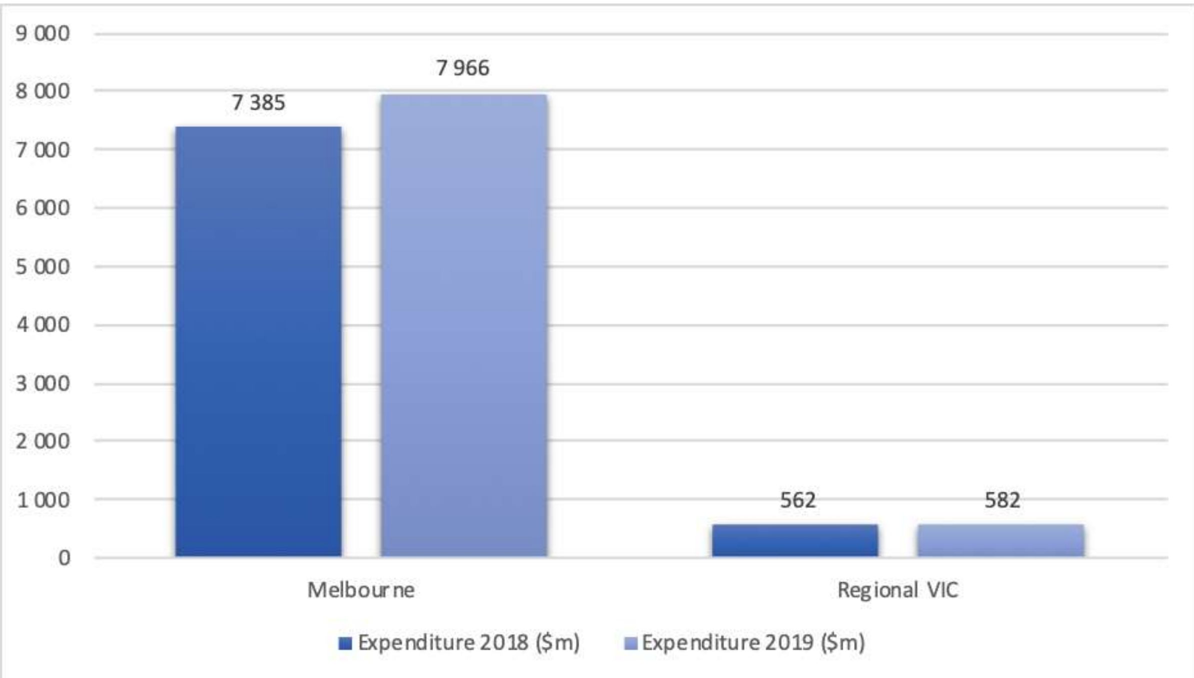

Figure D-14: International Visitors Expenditure in VIC ($m)

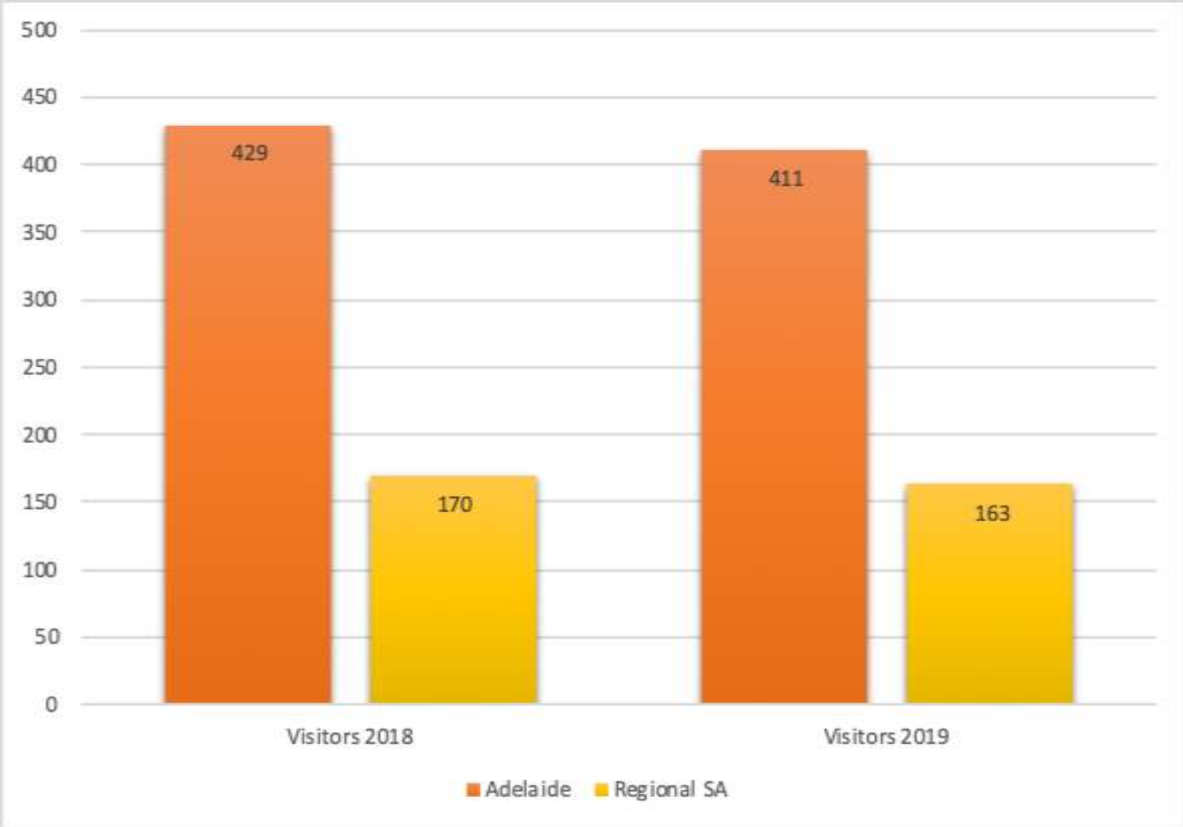

Figure D-15: International Visitors in SA ('000)

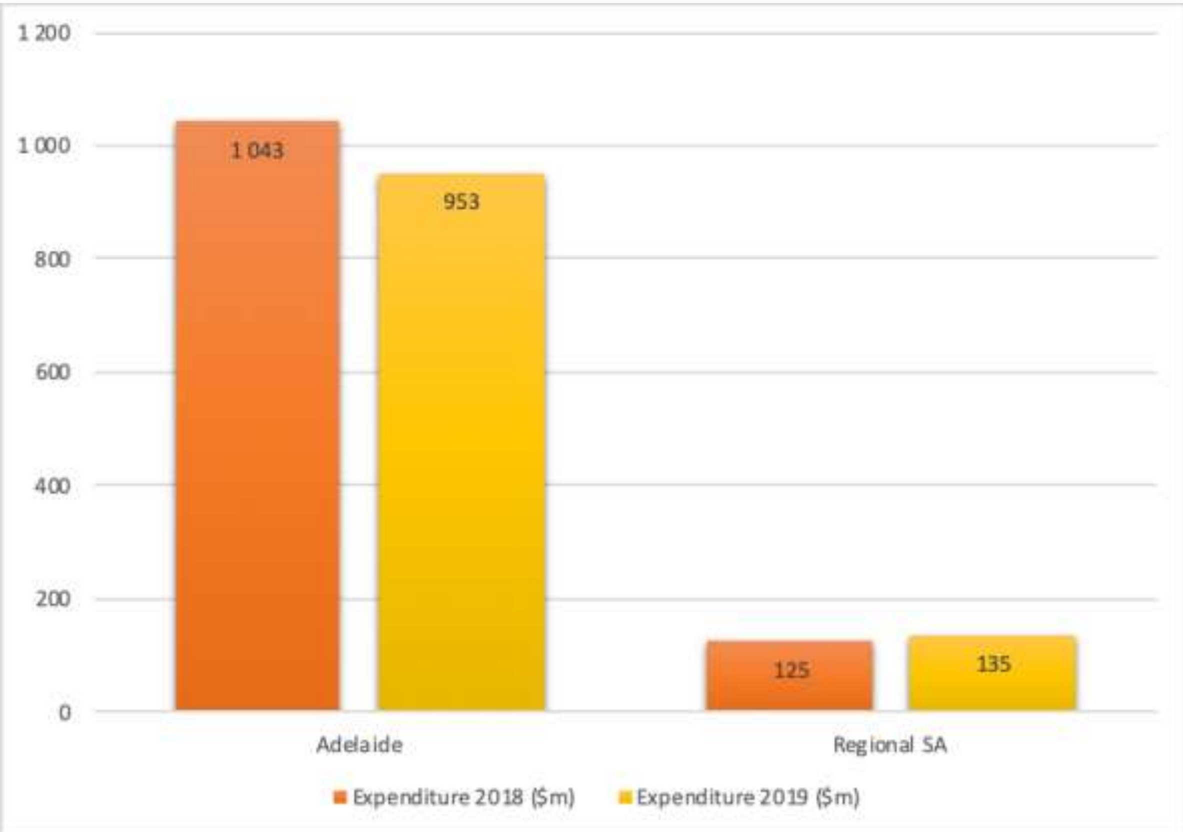

Figure D-16: International Visitors Expenditure in SA ($m)

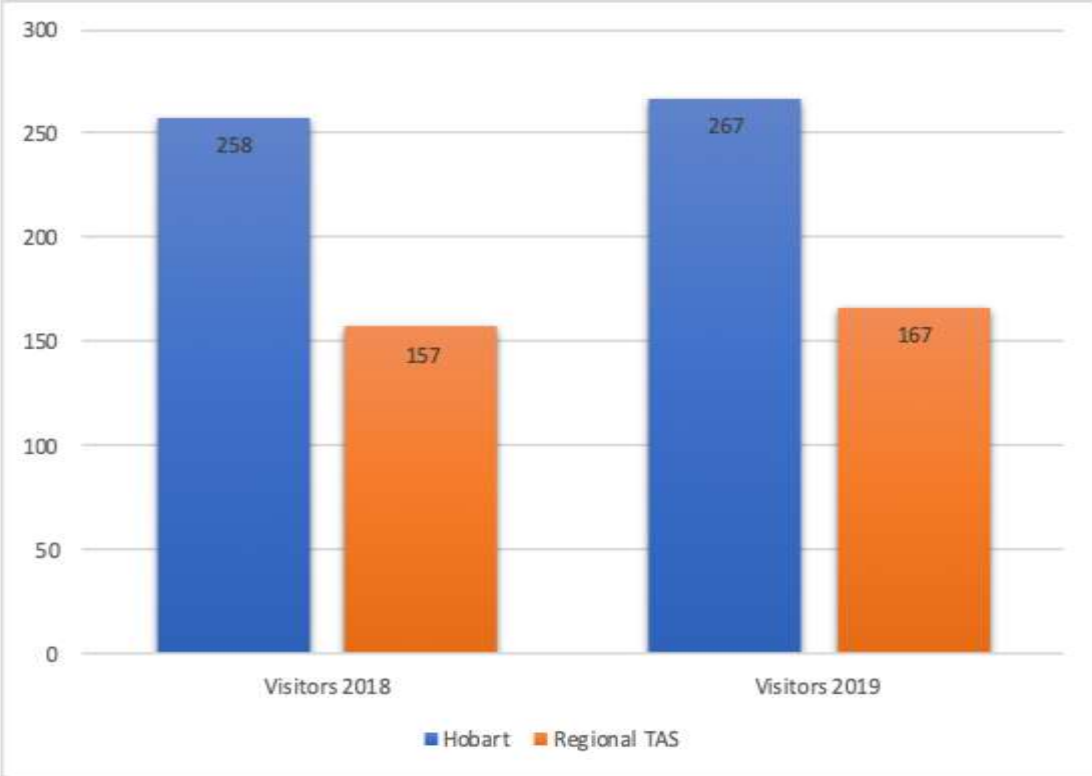

Figure D-17: International Visitors in TAS ('000)

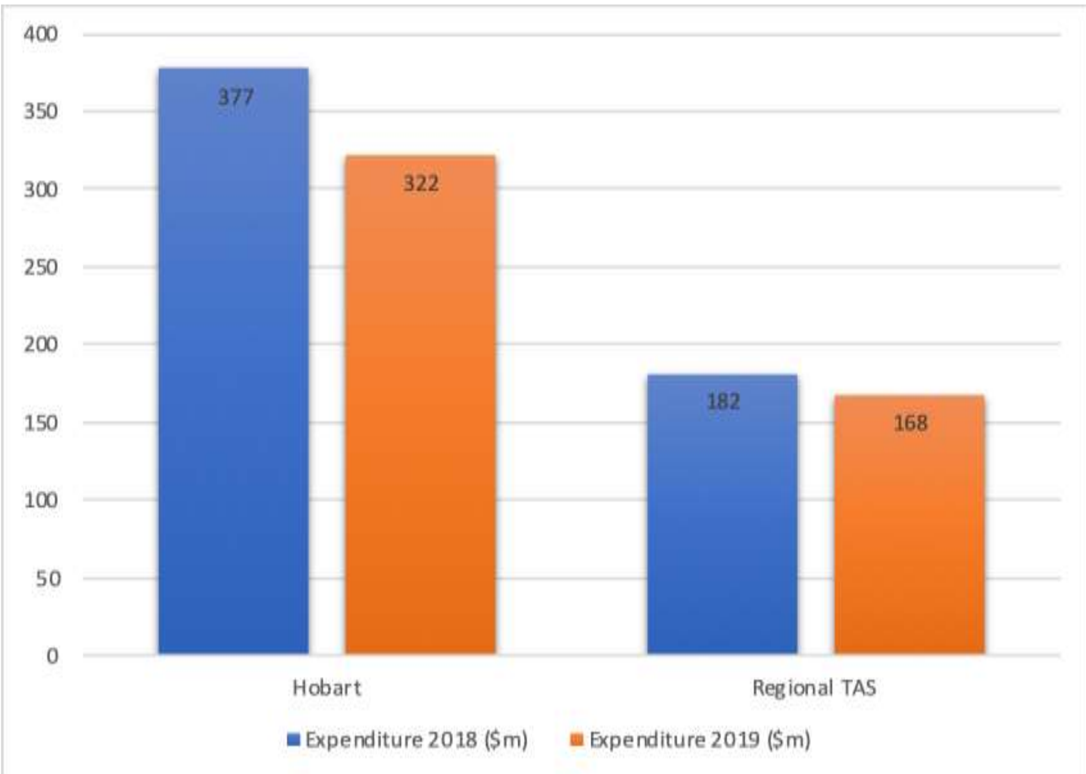

Figure D-18: International Visitors Expenditure in TAS ($m)

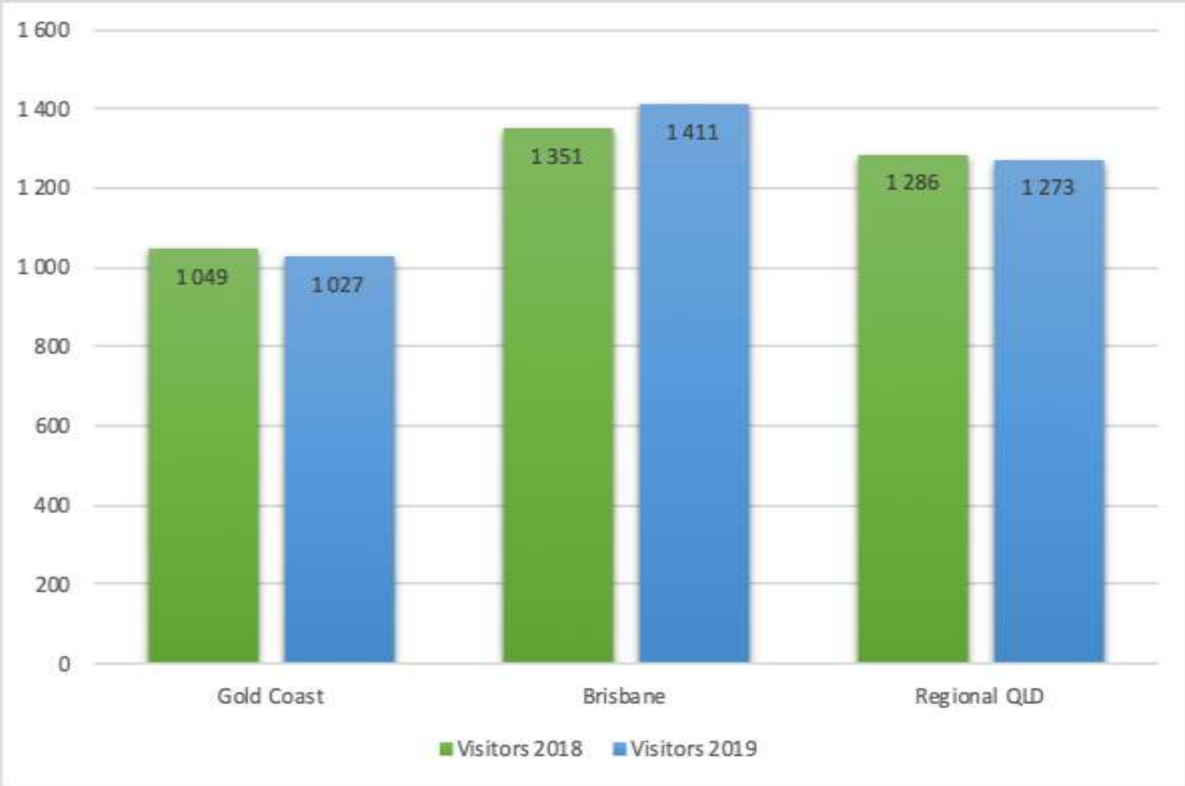

Figure D-19: International Visitors in QLD ('000)

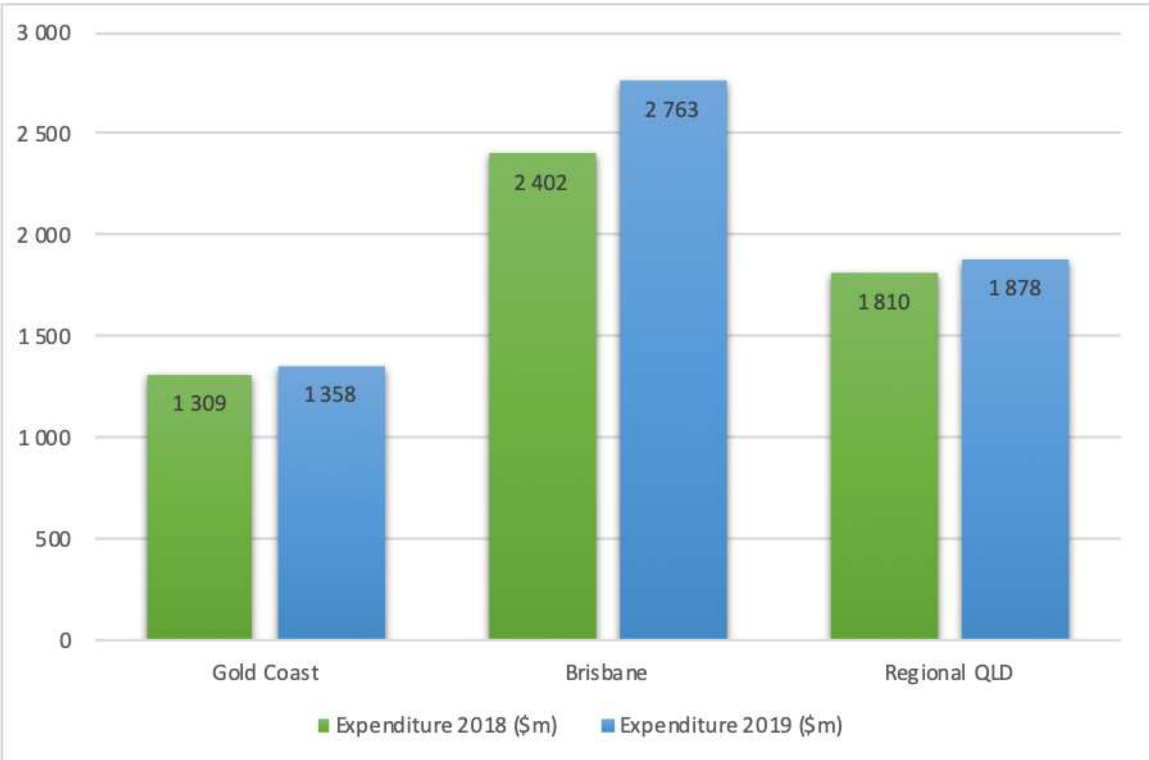

Figure D-20: International Visitors Expenditure in QLD ($m)

APPENDIX B

Questionnaire

1. What is your role in the business?

o Owner

o Director

o Manager

o Owner operator

o CEO

o Other (please specify) ____

2. What is the main activity of your business, e.g. motel, tour operator, restaurant etc. __________________

3. What is the postcode of this business's address ____________

4. In what year did this business begin its operation?_________

5. How long have you been in the current business?

- Less than 1 year
- 1 – 2 years
- 3- 5 years
- 6-10 years
- More than 10 years

6. Is this business part of a chain or franchise?

❒ Yes
❒ No

7. Is this business a family owned business?

❒ Yes
❒ No

8. How many full time staff does the business employ?________________

9. How many part-time/ casual staff does the business employ? ___________

10. The following questions ask about the support services that are accessible to your business in your region (or around a 1 hour drive from your location). Please respond on a scale of 1-7 where, 1= Strongly Disagree, 7 = Strongly Agree.

	1 = Strongly Disagree, 7 = Strongly Agree						
Funding to support new technology investment (e.g. venture capital and investment funds) is readily available in or near our region.	1	2	3	4	5	6	7
There are many local institutions that provide or supply access to new technology in or near our region.	1	2	3	4	5	6	7
Institutions that support the adoption of new technology innovation are plentiful in or near our region/	1	2	3	4	5	6	7
Government policies are designed to support tourism industry development in our region.	1	2	3	4	5	6	7
Government programs are implemented to support tourism industry development in our region.	1	2	3	4	5	6	7
Governments play an important role in facilitating networks that enable access to technology and innovation in our region	1	2	3	4	5	6	7
There are strong social networks among the businesses and employees in our region	1	2	3	4	5	6	7
There is a high level of trust among businesses in our regions	1	2	3	4	5	6	7
Other businesses in our region play an important role in enabling access to technology and innovation.	1	2	3	4	5	6	7

11. The following section asks about your social networks and your relationships with key stakeholders. On a scale of 1-7, were 1 = very weak relationships, to 7 = very strong relationships, how strong are your relationships with the following groups:

	1 = very weak relationships, 7 = very strong relationships,						
Local businesses and suppliers	1	2	3	4	5	6	7
Local Government/ councils	1	2	3	4	5	6	7
Tourism association groups	1	2	3	4	5	6	7
State and Federal tourism commissions	1	2	3	4	5	6	7
Universities and research centres	1	2	3	4	5	6	7

12. The following question asks about the current digital technologies that you use (for example, social media, online booking systems etc) and how beneficial they are to your business:

Technology	**Yes/ No**	**(If Yes) Beneficial (1 = Not beneficial at all to 10= extremely beneficial))**
Digital Apps		1 -10
Technologies for marketing and promotion		
Online booking / reservation/ point of sale technologies. =		
Block chain		
Wifi / 4G/ mobile hotspot		
Social media platforms such as LinkedIn /Facebook/Twitter		
Cloud based accounting software		

Can you think of any other technologies that have been beneficial to your business?

____

13. Please respond to the following statements regarding the benefits of using technologies in your business: on a scale of 1-7 where 1= Strongly Disagree, 7 = Strongly Agree.

Using technologies enables our business to…..	**1 = Strongly Disagree, 7 = Strongly Agree**						
Access new customer markets	1	2	3	4	5	6	7
Be more efficient in our operations	1	2	3	4	5	6	7
Develop new products, services and experiences	1	2	3	4	5	6	7
Be more effective with our marketing	1	2	3	4	5	6	7
Be informed about the tourism industry in our region	1	2	3	4	5	6	7
Attract and recruit new staff	1	2	3	4	5	6	7
Improve our competitive advantage	1	2	3	4	5	6	7
Make transactions simpler for our customers	1	2	3	4	5	6	7
Minimize costs and errors							
Identify new opportunities for business growth	1	2	3	4	5	6	7
Other…	1	2	3	4	5	6	7

14. The following question asks about the barriers that affect your business in adopting new technology. On a scale of 1- 7, where 1 = Not a Barrier, 7 = Major Barrier, please rate.

	1= Not a Barrier, 7= Major Barrier						
Information on what technologies are available	1	2	3	4	5	6	7
Access to new technologies	1	2	3	4	5	6	7
Government support	1	2	3	4	5	6	7
Training staff to use new technologies	1	2	3	4	5	6	7
Customers' accepting the use of new technologies	1	2	3	4	5	6	7
Financial costs of the new technologies	1	2	3	4	5	6	7

Can you think of any other factors that may be barriers that affect the business in adopting new technologies ___________________________?

15. Please respond to the following statements about your business on a scale of 1-7 where, 1= Strongly Disagree, 7 = Strongly Agree.

1 = Strongly Disagree, 7 = Strongly Agree							
The term 'risk taker' is considered a positive attribute for people in our business	1	2	3	4	5	6	7
People in our business are encouraged to take calculated risks with new ideas	1	2	3	4	5	6	7
Our business emphasizes both exploration and experimentation for opportunities.	1	2	3	4	5	6	7
We actively introduce improvements and innovations in our business	1	2	3	4	5	6	7
Our business is creative in its methods of operation	1	2	3	4	5	6	7
Our business seeks out new ways to do things	1	2	3	4	5	6	7
We always try to take the initiative in every situation (e.g. against competitors, in projects and when working with others)	1	2	3	4	5	6	7
We excel at identifying opportunities.	1	2	3	4	5	6	7
We initiate actions to which other organizations respond.	1	2	3	4	5	6	7

16. On a scale of 1 to 5, where 1 = Not at all Successful, 5= Highly Successful, please rate how successful this business been over the past 2 years with regard to:

	1 = Not at all Successful, 5= Highly Successful,				
Sales and revenue growth	1	2	3	4	5
Capturing market share	1	2	3	4	5
Profitability	1	2	3	4	5
Adoption of new technologies	1	2	3	4	5
Attracting and retaining full time staff	1	2	3	4	5
Attracting and retaining part time/ casual staff	1	2	3	4	5

17. Please estimate how you expect this business to perform in the next 2 years

	1 = Decrease significantly, 5= Increase significantly **3= Remain the same**				
Sales and revenues	1	2	**3**	4	5
Market share	1	2	**3**	4	5
Profitability	1	2	**3**	4	5
Adoption of new technologies	1	2	**3**	4	5
Number of full-time staff	1	2	**3**	4	5
Number of part time/ casual staff	1	2	**3**	4	5

18. Gender:

- o Male
- o Female
- o Other

19. What is the highest level of education you have completed?

o Did not complete high school

o Completed high school

o Certificate / Diploma

o Bachelor's Degree

- o Post-Graduate Degree
- o Others (please specify) ____

20. Have you ever completed any qualifications / formal training in entrepreneurship?

- o No
- o Yes

21. Have you ever completed any qualifications / formal training in tourism / hospitality?

- o No
- o Yes

22. How many years have you worked in the tourism / hospitality industry throughout your career?

____

23. What is your age:

- 18- 25
- 26-35
- 36-45
- 46-55
- 56 and above

24.A final question, is your business involved in Aboriginal tourism

- o No
- o Yes