Tourism modelling for the Space Coast

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Abstract

A tourism model will be designed to execute results that will be incorporated into a descriptive study. Modelling for tourism must start with a strong foundation of strategic planning and understanding of the specific areas of tourism life cycles, which will result in an increase of local revenues, tax income, employment, and conservation of local ecosystems. This is a descriptive research design with the objective to develop a tourism flow model that takes information from tourism data-sets, business surveys, and state and local projects and builds a picture of current and future tourism flows in Brevard County (the Space Coast), Florida. This tourism model will serve as a tool for gauging tourism on the Space Coast. The question that must be addressed is that the model must answer the problems of how strategic planning initiatives will fill the void between anticipated workplace downsizing and the subsequent reduction of tourist activity, with the retirement of the National Aeronautics and Space Administration’s (NASA) shuttle fleet. It has been forecasted that more than a quarter of a million workers may suffer job losses in hospitality, manufacturing, business services, and aerospace along the Space Coast. This tourism flow model would be an analysis tool for Space Coast tourism stakeholders to understand the impact of tourism growth and the development of sustainable and unsustainable industries for the area. Next, the model will attempt to identify areas from both private and public investments necessary for high impact revenue results for the Space Coast, while preserving the historic local environment and culture. Lastly, the model will be used to facilitate decision-making and planning for government planning boards, and the various tourism committees and councils as to where to invest and adopt proactive polices for resource allocation in the county. The conclusion of the study will be a practical tourism flow model, which can be used to provide for rigorous
discussion regarding the end of the shuttle program and the beginning of new industries for the area.

Keywords: tourism, strategic planning, tourism life cycles, ecosystems, sustainable and unsustainable industries, Brevard county, Space coast, NASA, tourism flow model.

1 Introduction

The rational for this study was to examine the Brevard County Space Coast tourism industry. Findings indicate that the current strategy employed by the local government agencies are failing to take into account the changing times that are pressing against the county with economic hardships and the possible fallouts from the end of the shuttle program. Several hardships to overcome will come in the form of: local layoffs and unemployment; the country’s population shrinking, which means fewer customers for local businesses; a decrease in charitable giving; lower tax rolls leading to cuts in public services; the possible closing of the National Aeronautics and Space Administration (NASA); the failure to attract a large segment of the tourism population visiting central Florida’s major attractions such as Disney World and Universal Studios; and the lack of an all-encompassing plan which would bring together a number of small businesses that individually make up the tourism attractions in Brevard County. Currently, there are areas of interest to be built upon which include dining, shopping, area attractions along the beachside and coastlines, and historic sites located in Cocoa, Cocoa Beach, Melbourne, Melbourne Beach, and Titusville.

2 Tourism

Tourism activity has experienced worldwide growth in recent decades with results in employment, increase of local revenues, tax income, and impacts on local ecosystems. The tourist industry involves close interactions between tourist flows, local authorities, and natural resources. Tourism is an economic reality and plays an important role in the governance structure of many countries. This has contributed to the importance of sustainable and unsustainable development – environmentally, socially, and economically [1]. Tourists have different propensities to visit certain places and travel patterns are influenced by where they reside. The determinant of tourism can be by purpose, destination, and by season – tourists have higher propensity to visit some areas during the spring/summer or during the autumn/winter periods [2].

In the United States, the responsibility for tourism development is shared by public officials at federal, state, and local levels, along with domestic and foreign commercial agents and tourists; all have impacts on the tourism performance of a region. Public officials play a crucial role in shaping and performance of tourism. According to Dinica [1], public officials oversee a large number of policy domains that influence how tourism develops, such as spatial planning, infrastructural development, fiscal policies, transport policies, labour policies, and water management. Public officials also hold the main responsibility for
projected tourism growth for sustainable and unsustainable development with policies that influence conservation, such as nature and environmental protection, cultural heritage, waste management, and energy efficiency [1, 3]. Governance for tourism requires relevant policy making decisions associated with strategic plans.

Tourism has many different components and given the complexities of tourism, there is a need for principles that can be coordinated for sustainable and unsustainable development. To help forecast demand for tourism on the Space Coast, a model, with a focus on tourism life-cycle and data sets, may answer questions on policy for tourism friendly governance. According to May et al. [3], methods have been proposed to extract requirements from policies and regulations using formal models. Giorgini et al. [4] described a framework that enabled modelling of actors and goals and their relationships. Thus, a model is an accepted tool for providing public agencies with accessible information to make important tourism related decisions. Using tourism data sets, a model can provide an understanding of tourism life cycle and activity. Tourism life cycle represents succession of phases in a long period of time and life cycle modelling flows are concerned with economic production by the phases. Lastly, understanding the impact of tourism growth will facilitate informed decision-making on where to invest and where to adopt pro-active policy, planning, and resource allocation practices for the Space Coast. This will ensure that future growth in tourism results in optimum outcomes for sustainable and unsustainable development in the county [1, 5].

3 Models and modelling flows

Leedy and Ormrod [6] defined research as the systematic process of collecting and interpretation of information or data to resolve the problem that initiated the research. The general tools of research for models and modelling flows are computers and their software, techniques of measurement, statistics and language [6]. According to Arthur [6], technology is a science activity of known concepts and methods to given problems. Involved are design projects to fulfil a set of purposes – this means matching a purpose with a concept of structure that will meet it, and put together a combinations of components that will bring the structure to reality [7]. Al-Fedaghi [8] stated information processing models have evolved since 1949 and methods have been proposed to extract requirements from policies and regulations using formal models [3]. Giorgini et al. [4] described a framework that enabled modelling actors and goals and their relationships; thus, modelling can be designed as an instrument based on information factors deemed to be important for tourism decisions and an analytical framework to understand Space Coast tourism.

A model represents a real world situation and is employed to aid decision makers with preferred solutions to problems through the evaluation of alternatives [9]. Models can vary from basic language expressions to complex computer programs. The type of model and modelling flow required are a function of the quantity of variables, the number of alternatives, and the overall
complexity of operation [6, 9]. When modelling flows are applied in systematic ways, they are effective indicators for analyzing and reasoning, understanding and managing information, and creating new ideas. Modelling flows help to organize information by defining, comparing, sequencing, or finding causes and effects [6, 9]. Defining may be presented with a single bubble, cluster, affinity diagram, concept map, model map, or target map. Comparing may be presented with a decision grid, double bubble, or matrix. Sequencing may be presented with a cycle, flow chart, or flow bubble. Lastly, finding causes and effects may be presented with a fishbone, flowscape, or input-output [9].

4 Tourism models

Modelling is a tool utilized in the flow of decision making: decision makers have the ability to analyze the problems, identify the best techniques that can be used to resolve individual segments of the defined problem, and eventually select or develop a model flow that will properly employ the techniques for problem resolution [9]. Thus, the tourism flow model presents a tool for providing past, present and future estimates of tourism on the Space Coast. This model will contribute towards strategic planning initiatives for the purpose of filling the void between anticipated NASA’s workplace downsizing and the reduction of tourist activity [9].

A tourism model presents data collected from the tourism life-cycle and data sets. Tourists make decisions for travel by where do they want or need to go and how to get there? The answers to the question are heavily influenced by where the tourist comes from and what season they travel. The model presents flows that describe processes to define spatial layers, life-cycle and data set sources, and how to manage data of sample sizes involving traveller types, traveller origins, year and season, and transport modes [1, 2, 8].

The origin-destination analysis is segmented by mode of transport – what mode of transport tourist use for travel destinations. The modelling completes the network flow analysis by converting travel demand to estimates of transport usage. In addition to travel decision of where to go and how to get there, the model addresses what to do when the tourist reach their destination [1, 2, 8]. The activity parameters include visits, visitor nights, expenditure, accommodation type, transport type, activities undertaken, age group, and travel style. Lastly, the tourist flow perspective is one most important decision because it is the catalyst for many subsequent (downstream) tourism activities [1, 2, 8]. Tourism models presented by Alvares and Lourenco [5], Fox [5], Hill and Jones [5], and by Cooper [5], explained the tourism planning and development process. Thus, the use of a model is seen as a tool for analysis of tourism activities. To present an understanding of modelling requirements as they pertain to the field of tourism, there is a need to identify typical problem applications that may occur in the modelling flow. Tourism flow applications fall into the following categories: conceptual flow design, planning, and development; evaluation of the modelling flow configuration with determination of specific tourism resource requirements; and modelling flow assessment with determination of tourism support effectiveness for the Space Coast [9].
Tourism modelling begins with conceptual design, planning, and development for evaluating and comparing alternative concepts, mission scenarios, utilization profiles, performance factors, and support policies [5, 9]. Modelling flow requirements are being defined, specific marketing applications are being evaluated, technical designs are being established, and functional allocations are being accomplished. Flow designers have to rely on tourism life-cycle and data sets for analytical techniques such as simulations, dynamic marketing, forecasting, and networking to structure the modelling flow. Depth of design and life-cycle data sets analyses continue as progress from conceptual design to development is accomplished [5, 9]. As the modelling flow progresses, there is a requirement to evaluate configurations. A comprehensive analysis is accomplished for determining specific tourism resource requirements in personnel, facilities, and technical and supportability data [5, 9]. A formal design review is necessary to evaluate various alternative methods for supporting the Space Coast model. Modelling flow requirements may include the utilization of tourism life-cycles and data sets to develop recording, processing, storing, and the reporting of technical and supportability analysis data. In this stage, the modelling flow may become complex in both design and operation [5, 9].

5 Effectiveness of tourism modelling

To ensure tourism satisfaction, it is essential that the modelling flow be evaluated in terms of overall effectiveness and efficiency of operation. It is appropriate to determine the effectiveness with modelling requirements that include utilization of computerized programs for the purpose of data collection, analysis, process, storage, and reporting [5, 9]. These requirements should be compatible with the supportability analysis data processing requirements and the continuous acquisition from the tourism life-cycle and data sets. During the ongoing assessment process, if areas of deficiency are noted, recommendations for improvement can be initiated with proposed changes. Proposed changes should be evaluated in terms of impact on cost, reliability and maintainability characteristics [5, 9]. After identifying different categories of tourism problems it is important that proper tools be selected for anticipation of modelling flow selections. Many interactions will occur between reliability, maintainability, performance, efficiency, effectiveness, and supportability: a variation in any one will affect the others to varying degrees [7, 9]. However, the model selected must represent the conditions in a realistic manner and allow for an overall productive analysis. Different alternatives are available for evaluation. The model selected must be capable of providing an assessment of each alternative with the objective of reducing risk [7, 9]. It also must be comprehensive in structure, but with design flexible such that varying depths of analysis can be accomplished. In addition, the model must allow for easy incorporation of changes without destroying its overall characteristics [7, 9]. In accomplishing a tourism analysis effort, it is necessary that the analyst be able to evaluate the model as an entity, evaluate various segments of the flow on an individual basis along with the optimize element design, and project the results of the segment.
analysis in the context of the modelling flow system as a whole [7, 9]. In other words, the model should be designed to enable evaluation in its entirety, while allowing for the evaluation of individual segments of the flow and appropriate tourism planning can occur [7, 9].

6 Background on Space Coast

A greater emphasis can be placed on Brevard County Space Coast attractions such as: the Astronaut Memorial Planetarium and Observatory, Brevard Zoo, Brevard Symphony Orchestra, Cocoa Village Art and Craft Show, Canaveral National Seashore and Merritt Island National Wildlife Refuge, Cocoa Beach Pier, Florida Institute of Technology Botanical Gardens, Historical Downtown Melbourne, Manatee Sanctuary Park, Kennedy Space Center Visitor Complex, Astronaut Hall of Fame Museum, U.S. Space Walk of Fame, Space Coast Birding and Wildlife Festival, Annual Melbourne Art Show, Port Canaveral, Ron Jon’s Surf Shop, Turkey Creek Sanctuary, and the Space Coast Stadium Sport Arena, coupled with exquisite beaches, that need to be targeted as potential tourism attractions. It is not enough to merely draw tourists with beaches, as this abounds along the entire coastline of the state of Florida. Consequently, what is needed is an emphasis on opportunities for which Orlando and neighbouring counties may not have to offer, while changing the present vision with the goal of creating the excitement necessary for attracting multiple market segments seeking memorable travel experiences. In accordance, Tip [13], concurred that the long-term economic viability of the industry itself was at risk from destination degradation, beach erosion, deforestation, and population displacement. Therefore, the opportunity is significant for working with local communities to take advantage of market opportunities vis-à-vis developing sustainable tourism products. The challenge is to do so during a current downturn in United States (US) tourism, which Kalwarski and Allen [14] stated that airlines and hotels were suffering the greatest damage.

It is common knowledge that human activities can impact global climate patterns, therefore the risks to the resources and the economy of Brevard County as well as the entire state of Florida, warrant an understanding and subsequent development of initiatives for addressing such concerns. Stanton and Ackerman [15] concurred that climate change has forever impacted the physical, economic, environmental, and social fabric of Florida communities. Currently, The Space Coast Climate Change Initiative (SCCCI) [16] works in conjunction with local governments to recommend strategic plans for addressing the unique concerns of Brevard County sustainability. These plans are reviewed on a regular basis in order to assure the efficiency and effectiveness of initiatives. The need for immediate concern is grounded in a study by Stanton and Ackerman [15], which concluded that the Space Coast is especially vulnerable to sea-level rise. Based on the study, it has therefore been determined that Brevard County ranks 1st in terms miles of vulnerable major roads and railways; 4th in terms of affected population; 5th in total land submerged; and 8th in the number of vulnerable housing units. Although investments have been made in the historic sections of
Cocoa, Melbourne, and Titusville, these ventures have not been aligned with and into major tourist attractions which might serve as the catalyst for increasing global favour in Brevard County from tourists of diverse cultural backgrounds.

NASA ended the human space program and shuttle launches in late 2011. With this space program ending, an “out of the box” thinking approach, as is evident of other counties such as Broward, Dade, Orange, Volusia, etc., may be needed. For example, in Volusia Country, the idea of an annual motorcycle parade in which thousands of enthusiasts visit Daytona Beach and then disseminate throughout the state, is an effort which creates added revenue for the county. In addition, the National Association for Stock Car Auto Racing (NASCAR) has contributed to the image of Volusia County with the Daytona Speedway. The Daytona Speedway has become a national spectator sport, which implies that Brevard County may need to pull from the major tourism attractions, such as Disney and Universal Studios, and establish a unique niche from which to create excitement and adventures. The beaches, refuge and wilderness locations, which include the Brevard County Zoo, are easily reached throughout the county, yet large-scale fishing, including charter fishing, airboat rides, cruise ships, and nature tour boats, are not as prevalent as one might find in Southern Florida counties. As for Brevard County malls, there is a need for vendors that will trade currency for American dollars as is currently being provided by various malls in other counties. In addition, Brevard County does not have any brand name designer outlet shops as are found in the neighbouring Indian River, Orange, and Volusia counties. As such, the local international air and sea ports must showcase Brevard County as more than appearing to be a stop-over for outside of the county attractions. The endeavour will be great in as much as it must be grounded in sustainability for the feasibility to be actualized in terms of environmental, economic, physical and social growth and development. It has been stated that Brevard County is the best kept secret in the state of Florida. However, what is needed is a conservative effort of local, state and private corporations as well as private foundations and higher education involvement to create the desire in others to seek and to experience all that Brevard County has – and all that it can offer in the future.

7 Tourism life cycles

According to Karplus and Krakover [17], only a limited number of tourism models describe the evolutionary process of tourism areas. The best known tourism life cycle model encompassing the stages of birth to maturity and decline has been augmented by Butler [18] to include the following stages which has developed into a cornerstone in tourism research development: 1) exploration; 2) involvement; 3) development; 4) consolidation; 5) stagnation and; 6) either decline or rejuvenation. Although Butler’s model has been one of the most significant tourism research paradigms, it is important to note that tourism areas evolve based on unique internal and external factors including those which may be unknown or immeasurable which implies that it is practically impossible for one model to account for all variances in the tourism
life cycle [17]. Measuring tourist aversion to sustainable practices may be difficult to measure – yet these practices greatly impact the success of a sustainable tourism initiative at all phases of a life cycle. Giannoni [19] conceded that visiting tourist generate overcrowding and waste, which means that in order to attain and increase sustainable growth, a location must develop mass-tourism based on environmentally friendly facilities. This may be a challenge according to the author [19] due to the large scale application and initiative toward tourist rejuvenation and potential increase in growth. Pollution for example, arises from additional sources in which the building of tourism facilities is seen a source of visual pollution for residents and destroys part of the natural habitat of the ecosystem [19]. As many industries are faced with an uncertain economic future, downsizing and restructuring, the opportunity for tourism as a catalyst for the movement toward a simpler life which is described by Tip [13] as placing family and interpersonal relationship above that of material possessions. Translated into travel, this can offer more meaningful experiences with local people and cultures, as opposed to spending a large portion of time in guided tours or all-inclusive resort establishments. Local communities must therefore develop cooperative partnerships in order to work toward attaining shared goals [13]. Accordingly, an understanding of the tourism life cycle is an integral component of an all-encompassing effort toward strategic planning for sustainable successful tourism planning and initiatives.

8 Tourism data sets

To create an awareness of the importance of tourism for Brevard County, a study was compiled by the Brevard County Economic Impact Analysis of Tourism and presented by Price [20], which provided an analysis of tourism contribution to the local economy. A brief summary of the findings indicated that in 2008, tourists spent $2.89 billion in Brevard County among which included the following monetary allocations: lodging: $839,474,000 million; dining: $509,809,000 million; entertainment: $120,437,000; retail purchases: $450,323,000; Kennedy Space Center: $597,065,000 and; Port Canaveral: $109,626,000. The majority of Brevard County tourists are from the following ten states: Florida, Ohio, Illinois, Michigan, New York, Virginia, Wisconsin, Georgia, Minnesota and Pennsylvania. Global visitors are primarily from Canada, England, Germany, Italy and China [20].

Brevard County holds art festivals each spring or fall along with various annual festivals throughout the year. Statistics from the Brevard Cultural Alliance [21], illustrated the average cultural attendee spent $20.80 per event, while 20% of cultural tourists spent an average of $38.17 per event for 2008. During 2007, the non-profit arts and culture industry contributed over $42 million to Brevard County [21]. In addition, The Annual Grant Seafood Festival attracts approximately 50,000 people for the 2-day February event. Established in 1966, it is now the Southeast’s largest and longest running seafood festival [22]. According to Prada [23] however, data suggested that Florida tourism will not recover until well after the national economy rebounds. Visits by non-
Floridians have fallen by as much as 9% during the fiscal year ending June 3, 2009, according to the state legislature’s Office of Economic and Demographic Research. Connor [24] stated that the average annual salary at Kennedy Space Center, which draws huge crowds for shuttle launch events, was $77,235 or doubles that of the typical worker in Brevard County. As a result, if the shuttle program ends, this can have a negative effect on the local economy by affecting the gross each year. Best [25] concurred that the hotel and tourism industry will have its ups and downs in 2010. On the other hand, two major 4,000 plus passenger cruise ships are expected at Cape Canaveral Port: this will positively affect tourism growth for 2010 [25]. Thus, we see that tourism, according to Jackson [26], can often be used as a national or regional development tool, which can positively or negatively impact the community.

9 The Space Coast Tourism Model (SCTM)

The Space Coast Tourism Model (SCTM) is designed around existing modelling strategies [2, 4, 5, 10]. However, the research design for the SCTM is non-experimental and qualitative. Because of the qualitative nature of the research, the main tourism statistical measurements should be descriptive statistics for the demographic data and analysis [9, 11, 12].

The SCTM addresses questions on tourism planning initiatives to gauge tourism on the Space Coast of Brevard County, Florida. The SCTM uses 6 years of tourism life-cycle and data sets to answer questions on where and how people travel from various origins and combines these patterns with forecasts of visitor growth to estimate how the demand for travel is likely to change in the future.

The SCTM flow includes traveller types, traveller origins, year and season, and transport modes. The origin-destination analysis is segmented by mode of transport – what mode of transport tourist use for travel destinations. The modelling completes the network flow analysis by converting travel demand to estimates of transport usage. In addition to travel decisions of where to go and how to get there, the model addresses what to do when tourist reach their destination [9, 10].

The activity parameters include visits, visitor nights, expenditure, accommodation type, transport type, activities undertaken, age group, and travel style. In addition, the SCTM presents flows that describe processes to define spatial layers, data sources, and how to manage data of sample sizes [2, 9]. Results reveal modelling, based on an origin-destination style, models and projects the movements of domestic and international tourists as a valid tool for providing past, present, and future estimates of tourism on the Space Coast. In conclusion, the Space Coast model presents flows of different types of tourist by road and air, forecast tourist flows over time, shows tourism intensity on the Space Coast, and tourist destination with purpose and activities (see Figure 1 below) [1, 9, 10].
Brevard County Space Coast faces the management challenge of how to sustain economic viability and maintain the integrity of its environmental resources as results of the ending of NASA’s human space program and the end of shuttle launches in 2011. The impact of tourism affects the economic, environmental, social, and cultural dimensions of Brevard County. The county must recognize that community planning requires the availability of pertinent and accurate information concerning tourism activities, and using best technology and scientific methods [28]. The county features a wide array of historical and recreational activities that include surfing, fishing, golf, boating, and bird and wildlife experiences. Thus, the SCTM model is a valid tool for providing past, present, and future of responsible tourism covering accessible tourism, ecotourism, and sustainable tourism on the Space Coast.

Using the SCTM model can help to explain how to apply the principles of sustainability to the design of better practices towards tourism on the Space Coast of Brevard County. The SCTM model can help define the changing

Source: Cook [27]

Figure 1: SCTM Model: tourism life-cycle (6 yrs).

10 Tourism ventures for Brevard County

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expectations of tourists and help define the effects of tourism on the environment, local communities, and the economics of the county. Using the SCTM model, Brevard County Space Coast can work with the state and local county officials to facilitate new tourism industries directed towards both domestic and international travellers. Two very important county tourism entities are Brevard County Tourist Development Council (TDC) and the Florida Space Coast Office of Tourism. Tourism officials must work in harmony to promote tourism in geographic areas of the county – geographic sectors of importance for the SCTM model are Titusville Area (north), Cocoa/Cocoa Beach Area (central), and the Melbourne/Palm Bay Area (south). Using the SCTM model and developing tourism data sets from industry participants, county officials can facilitate tourism industry participation with trade and consumer shows, promote media missions to the top global visitor markets, work closely with travel agents, tour operator, and meeting and event planners. The SCTM model can be an analysis tool for all Brevard County Space Coast tourism stakeholders to understand the impact of tourism growth for both the development of sustainable and unsustainable industries for the area. Thus, the SCTM model can serve as a tool for gauging tourism needs on the Space Coast. Questions can be answered on how strategic planning initiatives will fill the void between anticipated workplace downsizings to subsequent increasing tourist activities. In doing this, Brevard County can leave vacationers inspired by its natural beauty of sunny skies, blue ocean waters, and lush landscapes. This inspiring environment can lead to green travel involving ecotourism activities that help to preserve the county’s splendour of state parks and unspoiled beaches. In addition, so much more can be done will offering green lodging accommodations in the local state parks where visitors can help preserve the beauty of the county. Lastly, Brevard County must showcase the area with explorations in wildlife adventures, history adventures, space adventures, and water adventures [29].

The SCTM model can draw from wildlife data-sets to promote wildlife adventures on the Space Coast. Promoting wildlife encounters will lead vacationers to discovering the riches of the county’s natural environment, including the inland habitats, the coastal habitats and the barrier islands. Vacationers can view beautiful vistas and surprising wildlife, such as alligators, river otters, bobcats, wild hogs, manatee, dolphins, ducks, and wading birds when visitors explore key wildlife sites [29]. Brevard County beaches are the one of the most important nesting site in the world for loggerhead sea turtles. Unusual bird species, not found in any other state, can be found on county scrub and wetlands. Florida Scrub Jays, Gopher Tortoises, turtles, alligators, manatees and other aquatic creates live in the unique habitat called Florida scrub. In addition, the county is home to a national wildlife refuge; a vast wilderness home to remarkable variety of plants and animals on coastal dunes, in saltwater estuaries and marshes or freshwater impoundments, and in scrub, pine flatwoods and hardwood hammocks [29]. Thus, the tourism officials can use the results of analysis from the tourism flow model to promote the unique environmental features of Brevard County that make it such a desirable vacation destination.
The SCTM model can draw from history/cultural data-sets to promote history adventures on the Space Coast involving historic buildings, theatre groups, art galleries, and seasonal arts and crafts festivals. Promoting history adventure on the Canaveral National Seashore will lead vacationers to sites featuring shell mounts where ancient peoples lived up to 7000 years ago. The shell mounds are spectacular examples of Native American lifestyle, the largest shell mounds of oyster shells in the nation [29]. The first permanent Brevard County settlement was near Cape Canaveral in 1848. The first lighthouse on Cape Canaveral was also built in 1848. A new lighthouse was completed in 1868 and was restored in 2009. Serving as an important transportation link in Florida’s inland waterway system was The Old Haulover Canal. The canal was built in 1854 linked the Mosquito Lagoon to the Indian River and served as a crossover point for travel down the inland waterway [30]. Other sites include historic turn-of-the-century houses. The Eldora House was an example of earlier life along the Mosquito Lagoon. Several more county houses are fully furnished with period furniture and accessories from the late 1800s. Other historic buildings that can be seen in the county include Florida “cracker” wood-frame houses built in native pine and cypress, with aluminium shingled pitched roof, and front and back porches [30].

Another popular county architectural style that developed in the early 1920s was the Spanish style and stucco siding. The Spanish style buildings were characterized by clay tile roofs, arched windows, and tower domes. Built in the 1920s the Belcelona Hotel (now home to Florida Air Academy) in Melbourne was a beautiful example of the Spanish style of architecture. The stucco style was often made of steel or wooden frame, tile block, and stucco covering. Stucco was an outside coating to cover concrete, cinder block, or clay bricks. The Old Florida Power and Light Company Ice Plant, built in 1926–1927, was an example of a steel frame and stucco siding. It is also an example of the Modernistic architectural style typical of the commercial and industrial buildings of the 1920s [30]. Throughout the year, the Brevard County Space Coast showcases fine arts and crafts shows, musical arts (ranging from folk, bluegrass, blues, classical, jazz, new age, to rhythm and blues, rock, and spiritual), theatre and literary arts, art tours, and seasonal festivals. Thus, tourism officials can use the results of analysis from the tourism flow model to promote its different historic buildings, theatre groups, art galleries, and seasonal arts and crafts festivals [29, 30].

The SCTM model can draw from water data-sets to promote water adventures on the Space Coast. Promoting water adventures will lead vacationers to some of the best water culture in the nation. With its ocean and vast network of rivers and canals, there is an opportunity for more water activities in the county. Swimming with manatees, legally done with proper guides, can offer an experience of a lifetime for many vacationers. Eco-thrills can be created with the eco-friendly extreme sport of kite boarding. The Space Coast surfing sports stretch from Cocoa Beach to Sebastian Inlet. One can surf in near isolation off 72 miles of beautiful beaches. The Space Coast sports both salt water and fresh water fishing. Fishing is a year round activity and home to sportfishing charter boats at Port Canaveral. Port Canaveral is considered to be one of the safest
ocean inlets on the east coast for sportfishing. Kayaking adventures can be scenic paddling in the ocean, canals, or rivers of the country [28, 29]. In addition, Port Canaveral is a major deepwater gateway for leisure cruise destinations to the Bahamas, the eastern Caribbean, and Mexico’s Gulf resorts [28, 29]. Thus, tourism officials can use the results of analysis from the tourism flow model to promote its varied inland and coastal water experiences.

Promoting space adventures will lead vacationers to several unique space museums, visits to the Kennedy Space Center Complex, Kennedy Space Center (KSC) Vehicle Assembly Building, and the KSC Visitor Complex where the orbiter Atlantis will be on permanent display. The Space Coast has and continues to be associated with aligning itself among the events surrounding NASA, the space shuttles, astronauts, and aerospace achievements. Future launches will continue to be viewed from Cape Canaveral. At this juncture, the Space Coast can be equated to that of finding itself at the crossroads of the Space industry similar to when the airlines were in its infancy at the beginning of the 21st century. According to Charles Bolden (2012), current NASA Administrator, the end of the space shuttle program may not be the end of NASA. Bolden reports that NASA has a robust program for exploration (designing and building the capabilities to send humans to explore solar system and landing humans on Mars), technology development, and scientific research for the future [31, 32].

Indeed, with less oversight from the federal government, space innovation opens the door to the private sector. Privatized space flight may provide innovation for human space travel from Cape Canaveral. Several private companies are developing rockets and space systems for commercial customers, as well to the military and NASA [33]. Privatized space flight may also come in the form of space tourism – space travel for recreational, leisure or business purposes. The space tourist concept was developed as early as 1985, but the development of space tourism has been slow. Thus far, orbital space tourism has been limited and expensive, with only the Russian Space Agency providing transport to date [34].

That is not to say that space tourism is not being proposed in the United States. Several private space companies are proposing orbital ventures. SpaceX, Space Adventures Ltd., and Excalibur Almaz are developing their own rockets and capsules for commercial flights. SpaceX anticipates that human spaceflight from Cape Canaveral could be achieved within 3 years [35]. According to Couwels [36], the Space Coast Economic Development Commission continues to work in conjunction with Space Florida “to attract an increasingly diverse aerospace industry including design and manufacturing” [36] this strategy appears to be successful. Couwels [36] states that organizations including “Rocket Crafters, electronics systems provider Sierra Nevada Corporation and aircraft manufacturers Boeing and Embraer have committed to expand or begin operations in Brevard County.” It is these developments which have created more of an interest in tourism. There is no question that the NASA Spaceport along with continued launches for tourists to see are and will continue to create enthusiasm from visitors from around the world to come and gain insight into the future of space travel.
How effectively Brevard County Space Costs deals with the challenges of tourism sustainability will define the area for decades to come. The county must ensure enjoyable experiences for tourists through meaningful connections with local cultural/historical and environmental destinations. Current and future tourism sustainability strategies must directly focus on three important factors: 1) visitor needs; 2) recognize the looming threats from rising tourist over-consumption; 3) and, the need to emphasize the outcomes of business actions measured in terms of environmental and economical well-being of the country. The Space Coast must make the business case for fostering mindful consumption in their approach to tourism sustainability [36, 37]. Thus, the SCTM model is a valid tool for providing past, present, and future of responsible tourism covering accessible tourism, ecotourism, and sustainable tourism on the Space Coast.

11 Conclusions and recommendations

This research effort was explanatory in nature and chooses a qualitative approach to give content description, interpretation, verification, and evaluation of tourism related activities for the Space Coast in Brevard County, Florida [7, 12]. The paper proposes a model as a valid tool for providing public agencies with accessible information to make important tourism related decisions for the Space Coast in Brevard County, Florida. We have proposed data analysis from complementing tourism life-cycle and data sets to extract information for a Space Coast Tourism Model to build a picture of current and future tourism flows in the county [2, 5]. The SCTM provides answers to problems dealing with strategic planning initiatives for the county and is an analysis tool for tourism stakeholders to understand the impact of tourism growth and the development of sustainable and unsustainable tourism industries for the area. In addition, the model provides identification areas for private and public investments with for high impact revenue. The county must introduce responsible tourism as to how tourist-host encounters can be managed in practice so as to meet the objectives for investing in responsible management of county resources. The model will contribute on the factors or variables which can positively or negatively affect the nature of the encounters’ between tourists and their hosts [37]. Thus, the model will contribute towards strategic planning initiatives for the purpose of filling the void between NASA’s workplace downsizing and the reduction of tourist activity on the Space Coast.

Tourism, according to Jackson [26], was often used as a national or regional development tool, which can positively or negatively impact the community, therefore policymakers must employ a model which minimizes the perceived negative impact of tourism planning. Brevard County has a very strong potential for attracting tourists from around the world. The emphasis should therefore be on a long-term plan in which monetary allocation can be made available both in the form of small business loans and grants for local business to develop “out of the box” events. The application of such events should be different from what is found in other Florida counties which depict the ecosystem tourism while becoming a mecca for convention themes encompassing areas such as
culture/history, education, health, industry, and technology. Brevard County Space Coast additionally needs to adjust to the end of the shuttle space program and the reality that NASA continues to reduce its 2012 workforce profile [38, 39]. With the proposed model in place, these events should not be considered to be major strategic disadvantages against the tourism economy of the county.

There is no question that the NASA Spaceport along with continued launches for tourists to see are and will continue to create enthusiasm from visitors from around the world to come and gain insight into the future of space travel. Although the NASA’s shuttle program has ended, “NASA is expecting its human and commercial spaceflight development program to evolve into new paradigm” [36]. With this in mind, tourism officials can use the results of analysis from the tourism flow model to promote the unique space related experiences from the Kennedy Space Center to the Cape Canaveral Air force Station Space Launch Complex [35]. According to Ball et al. [40]:

1. The Kennedy Space Center (KSC) has a unique and un-duplicable position in the global space launch exploration and recovery marketplace. Accordingly, the Kennedy Space Canter’s transition to numerous customers and resident programs is strategically critical to a sustainable spaceport infrastructure;

2. Traditional NASA programs will continue to comprise core business elements however, the portfolio will expand vis-à-vis commercial launch providers and their customers, as well as with other government users;

3. The KSC will use The Space Act among other authorities to build a community of government and commercial spaceport tenants and users to provide access to launch areas as well as leverage the underutilized capacity of the center’s existing infrastructure.

The Kennedy Space Center will remain as the center for launches mainly because of its geophysical location. Leger [41] concurs that the Florida Coast has a “strategic location allowing for both low and high orbit launches which is a key component for commercial space companies. It is therefore recommended the extension of global reach for increased Space Coast tourism be initiated through the establishment of tourism offices in major cities throughout Asia. Two recommended areas are Hong Kong and Shanghai. Other cities would include Seoul, Korea and Tokyo, Japan. The vision can additionally be designed to attract school groups to come and enjoy what the Space Coast offers while at the same time a coordinated effort can be initiated for adults to attend courses at area universities. In addition, The Kennedy Space Center Visitor Complex inspires people of all ages interested in space exploration to enjoy a hands-on experience as to what it feels like to be an astronaut. Social media such as Facebook, Twitter, YouTube, etc. is therefore recommended as a vehicle for reaching and informing multiple generations of the past, present, and future of aerospace exploration offered at the Space Coast of Florida.
References


