

# Exploring the Role of Technology in Adventure Tourism



Tatiana Chalkidou and George Skourtis

**Abstract** Adventure tourism has seen a recent surge in popularity, as people are increasingly looking for fear and thrills (Cater, *Tour Manage* 27:317–325, 2006) and unique and adrenaline-rushing experiences (Pomfret and Bramwell, *Current Issues Tour* 19:1447–1478, 2014). However, compared to several other specialized tourism studies, the research in this sector has been limited (Buckley, *Tour Manage* 33:961–970, 2012), while the role of technology in adventure tourism management is still in its infancy, although it is considered one of the most rapidly expanding sectors and a significant part of the tourism industry. Thus, the purpose of this paper is to theoretically discuss how the adventure tourism industry is implementing and managing technology, addressing the changes that technology has brought, and identifying the opportunities that can be exploited. In order to better understand the role of technology in adventure tourism management, we suggest the adoption of service-dominant logic and its ecosystem perspective (Vargo and Lusch, *J Acad Market Sci* 36:1–10, 2008). More specifically, we propose a transition of adventure tourism management from the perspective of S-D logic, reconsidering the conclusions that have been drawn from traditional perspectives (G-D logic). Importantly, a service-ecosystems view broadens the scope of adventure tourism management and enables researchers and practitioners to zoom out beyond dyadic exchange encounters and to view technology as a necessary resource for value co-creation. To the best of our knowledge, this paper is the first which challenges adventure management literature by adopting an S-D logic perspective.

**Keywords** Adventure tourism · Technology · Value co-creation

**JEL Classification** Z32 Tourism and development

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281

## 1 Introduction

Adventure tourism is a type of tourism that involves taking risks and participating in activities that are outside the realm of normal vacationing. Adventure tourists often seek out destinations that offer opportunities for physical challenges and thrills. Technology has had a major impact on adventure tourism. The popularity of adventure tourism has grown in recent years as more people seek out new and exciting ways to travel. Adventure tourism offers travelers the chance to push themselves physically and mentally, while also experiencing different cultures and landscapes.

## 2 Origins and Description of Adventure Tourism

Modern adventure tourism originated from alpinism, which is the sport of mountaineering to reach the summit of the Alps. The first mountains were climbed for scientific curiosity and soon after became a competitive sport. In 1786, Montblanc was ascended, and in 1800, Grossglockner was summited. By 1865, all Alpine peaks had been conquered at least once (Standeven & de Knop, 1999). Furthermore, adventure tourism has been around since the late 1800s, when people began to travel to remote locations for hunting and fishing. Skiing and canoeing emerged as popular activities during this time, with France being one of the first countries to really embrace them. In the 1950s and 1960s, adventure tourism became more mainstream, due in part to media coverage of first ascents like climbing Mount Everest.

The boundaries of adventure tourism are debatable, in part because it is difficult to draw a clear distinction between ecotourism and adventure tourism (Fennell & Dowling, 2003; Fennell & Malloy, 1999; Ryan, 1998; Zurick, 1992); however, it is essential to differentiate between adventure tourism and ecotourism, as they are two entirely different things. Adventure tourism includes risk and adrenalin, while ecotourism does not (Beedie, 2005; Buckley, 2010; Hall, 1992; Weber, 2001). When it comes to classifying adventure tourism, strong similarities have been drawn with outdoor recreation and other adventurous pursuits (Pomfret & Bramwell, 2014; Sung et al., 1996). In addition to the above, the term “adventure tourism” itself is not used entirely consistently—other terms such as extreme, trend, active, or outdoor tourism are also employed. Furthermore, it is important to note that what one person perceives as an adventure might not be perceived as such by another individual (ATTA, 2010).

Adventure tourism, as the name implies, is a commercialized adventure activity that takes place outdoors. This activity generally involves a mix of physical exercise and risk and it can be described as a self-initiated recreational activity, typically involving a travel and overnight stay component, that usually involves close interaction with the natural environment, structurally contains elements of perceived or real risk and danger, and has an uncertain outcome that can be influenced by the participant and/or circumstance (Ewert, 2000). This description is very similar to one used by the Adventure Travel Trade Association, which describes adventure travel as “any

tourist activity including two of the following three components: a physical activity, a cultural exchange or interaction, and engagement with nature.” (ATTA, 2010, p. 2) which is similar to the one produced by UNWTO (2014, p. 10), where adventure tourism is conceptualized as:

[. . .] a trip that includes at least two of the following three elements: physical activity, natural environment, and cultural immersion.

Moreover, the theme of risk and uncertainty is common in most definitions or descriptions used for the specific concept. However, the risk is subjective and dependent on past experiences (Ewert, 1989; Rantala & Rokenses, 2018). It is perceived differently in different situations, and people’s risk perceptions are influenced by personality, lifestyle, and level of skill and experience. In addition to the above, the most commonly used models of adventure tourism are founded on these or similar definitions and were built on specific setting-based attributes (Ewert & Hollenhorst, 1989), concepts related to the adventure experience such as fear, eustress, distress, abilities, and attitudes (Priest, 1992) and models of risk recreation (Robinson, 1992).

There are three types of adventure tourism: hard, soft, and nature-based (Cloke & Perkins, 1998; Buckley, 2006, 2010; McKay, 2013). Nature-based adventures are those that include interactions with wild animals, such as elephant walks (Buckley, 2010) whereas some soft adventure activities include backpacking, birdwatching, camping, canoeing, fishing, hiking, horseback riding, kayaking, safaris, sailing, and surfing. Furthermore, hard adventure activities may include caving, rock climbing, and trekking. At this point, it is important to mention that soft activities performed under manageable conditions (i.e., kayaking on easy rivers) can be classified as hard adventures if performed on more difficult terrain. Thus, in general, hard adventure travel is riskier and requires more skills and experience. In addition, some of the soft adventure activities only seem risky to tourists because they are not accustomed to the activity, even though there is little-to-no objective risk involved (Swarbrooke et al., 2003).

In addition to the above, adventure tourism is usually examined under the goods-dominant (G-D) logic (Vargo & Lusch, 2004) which argues that tourism activities are designed with value and which is based on the soft/hard classification of adventure tourism activities. Janowski, Gardiner, and Kwek (2021) reviewed a number of adventure tourism dimensions that found the following ones to be included: physical activity, natural environment, risk and danger, challenge, socializing and camaraderie, learning and insight, use of skills, novelty, conflicting/intense emotions, thrill and excitement, well-being, cultural experience, involvement and locus of control, accomplishment, fun and enjoyment, flow, exploration, fear, rush, escapism, play, and uncertainty.

It can be argued that in the past two decades, definitions of adventure tourism have been largely based on insight theories, risk paradigms, flow experiences, notions of playfulness, and more recently discovered factors such as “the rush” (Ponte et al., 2021). The term “rush” was recently coined to express the feeling that skilled and experienced adventure tourists get from commercial adventure tours. According to Buckley (2012), “rush” is described as “a particular kind of excitement associated

with the physical performance of a specific adventure activity, at the limits of individual capability, under highly favourable circumstances, by a person who is already skilled and trained in the activity concerned” (p. 936). It is important to note that theories about insight, risk, flow, rush, and deep play mostly focus on the demand side of things; however, these don’t acknowledge the supply side of adventure tourism products (Swarbrooke et al., 2003). Furthermore, Ponte et al., (2021) examined adventure tourism definitions and found that there is a “shift from the physical aspects of the experience to the psychological aspects, and, more recently, the incorporation of specialized equipment and the role of guided tours” (p. 2), while Rantala et al. (2021) (cited in Ponte et al., 2021) suggested that “the different approaches to these definitions have led some authors to be more inclined to a ‘product-oriented’ perspective (Ponte et al., 2021, p. 2)”.

### 3 A Shift Toward Adventure Tourism Experience Co-creation

From the goods-dominant perspective, adventure tourism was conceptualized as an activity offered by firms to travelers. Whereas G-D logic views that value is created and delivered by firms as an output that is determined in the exchange, as value-in-exchange, S-D logic acknowledges that value is co-created (FP6) by both firms and customers as resource integrators (FP9) (Vargo & Lusch, 2004, 2008), while it is experienced by beneficiaries in a specific context (Vargo & Lusch, 2008), and therefore understood as value-in-context (Chandler & Vargo, 2011). In an adventure tourism context, this means that firms cannot create and deliver activities i.e., value propositions (embedded with value) in terms of output, because in this manner customers are still considered operand resources (i.e., targets) that accept those activities provided by firms, and consequently value derived from adventure tourism activities is still determined through value-in-exchange. Contrary, S-D logic considers customers as operant resources (Lusch et al., 2007), and thus the fundamental source of strategic benefit (FP4). Moreover, S-D logic embraces a process-driven approach rather than an output approach focus (Vargo & Lusch, 2008) and this contributed to an understanding that adventure tourism requires a resource integration process (co-creation process) rather than the delivery of specific activities. Also, S-D logic posits that value is always determined by the beneficiary FP10, and thus is a context-specific phenomenon. In adventure tourism, acknowledging that value constitutes the travelers’ perception of an activity’s use value, therefore activity-related value should be determined by the traveler. In addition, because value co-creation is coordinated through institutions and institutional arrangements (FP11), in adventure tourism the role of these institutions must be central in enabling the development of the adventure tourism activities.

In this notion, micro-adventures are a subset of adventure tourism, which is becoming increasingly popular among young urban people. The British Adventurer

Alastair Humphreys created the concept of micro-adventures to make activities more approachable for a working, mostly urban audience, and as such promote nine-to-five adventures as perfect adventures for people who want to get away from their everyday lives without having to commit to a long vacation (Humphreys, 2014). This trend also presents opportunities for businesses, such as tour operators offering wild camping spots or packaged micro-adventures (Gross & Werner, 2017).

Similar to the benefits accrued from adventure tourism, the benefits of micro-adventures are many and varied, but they can be broadly summed up as being good for one's health and well-being (Kane & Zink, 2004; Triantafyllidou & Pet al., 2016), on top of being sustainable tourism experiences that promote the conservation of natural areas. Overall, tourists' adventure experiences are quite complex, and the growth of adventure tourism in recent years is closely linked to the overall increase in nature-based tourist activities.

## 4 The Role of Technology in Adventure Tourism

Over the years, adventure tourism has gained in popularity, with hotspots in several locations and jurisdictions (ATTA, 2013), as people are increasingly looking for fear and thrills (Cater, 2006) as well as unique and adrenaline-rushing experiences (Pomfret & Bramwell, 2014). The number of participants and adventure travel goods has grown considerably, and in many Western countries, it has emerged as an important element of the tourism industry (e.g., Canada and New Zealand), while in non-western countries adventure tourism is gaining more traction (e.g., China, Brazil, Russia, and India). Indicative of this are the findings of the Adventure Travel Trade Association (2013) that approximately up to 40% of European and South American and almost 15% of North American travelers go on adventure activities these days. The market for international adventure tourism was estimated to be worth USD 683 billion (ATTA, 2018).

Given the diversity of activities involved, it's no surprise that scholarly interest in this sector of the tourism industry has increased as a result of its exponential expansion (Beckman et al., 2017; Cheng et al., 2018). However, compared to several other specialized tourism studies, the research in this sector has been limited (Buckley, 2012). In addition, the literature on technology and adventure tourism management is still in its infancy, although it is considered one of the most rapidly expanding sectors and a significant part of the tourism industry. Understanding the role of technology in adventure tourism is of primary importance since technology not only affects the tourism experience (Neuhofer et al., 2013,) but also remains the central driver of tourism innovations and growth (Croce, 2018).

Overall, the technology sector is in a constant state of flux, with new technologies and innovations disrupting established industries on a regular basis. Technology disruptions can be described as processes whereby a technologically superior product or service replaces an existing technology. One may argue that the technology revolution began in the early 1990s with the advent of the internet and online booking

systems. This allowed consumers to shop around for the best deals on travel and accommodation and made it easier to compare prices and find the most affordable options. This increased competition among providers and led to a race to the bottom in terms of prices.

The next major technology disruption came with the development of mobile technology and apps. This allowed consumers to book travel and accommodation on the go and made it even easier to compare prices and find the best deals. This led to further price reductions as providers competed for business. The latest technology disruption to hit the tourism industry is the rise of the sharing economy. This is where people use technology to share resources, such as accommodation or transportation. This has led to a new wave of companies, such as Airbnb and Uber that are shaking up the industry. It is therefore important for companies in the tourism industry to keep up with the latest technology trends and developments, to avoid being left behind.

Since adventure tourism is a subsector of the tourism industry, inevitably it is also affected. In recent years, technology has disrupted the adventure tourism industry in a number of ways, from increasing access to information and booking tools to improving safety and security. The adventure tourism industry has been growing rapidly in recent years, thanks in part to advances in technology which has made adventure travel experiences more accessible and convenient. Technology has made it easier than ever for people to find information about adventure activities and book travel arrangements. In addition, technology has played a role in improving safety and security in the adventure tourism industry. In recent years, safety has become an increasingly important concern for the adventure tourism industry. This is due in part to the increased popularity of extreme sports and other high-risk activities. To address this issue, several companies have developed safety-focused technologies, such as GPS tracking systems and safety monitoring apps.

These tools can help adventurers stay safe while participating in adventure activities. While technology has always been a part of adventure travel (consider GPS units and satellite phones), advances in mobile technologies and social media are making it easier than ever before for travelers to plan and book their adventures as well as to find information about destinations. They are also using technology during their trips to stay connected and share their experiences with others, making the actual experiences more immersive and memorable. There are several apps and websites that specialize in adventure travel, offering everything from trip planning resources to last-minute deals on gear and accommodations. And with more people sharing their adventure travel experiences online, it's easier than ever for tourists to find inspiration for their next trip (Kim & Tussyadiah, 2013; Wang et al., 2002). It has also made it possible for people to share negative experiences with a wider audience, which can hurt a destination's reputation. Furthermore, virtual reality technology, for example, is being used by some tour operators to give potential customers a taste of what they can expect on a trip and drones are becoming increasingly popular for capturing aerial footage of breath-taking landscapes and action-packed activities.

The increased digitalization is one of the primary reasons for the increased demand for adventure tourism. Individuals participating in outdoor adventure activities utilize technological means to travel into remote locations and wilderness areas, which are

typically challenging to reach (Berger & Greenspan, 2008). The majority of adventure travelers plan their vacations by browsing online and endorsing adventures and places on social networking sites. Technology, on the other hand, has had an influence not only on traveler behavior at each stage of the purchasing process but also on how adventure tourism businesses and destinations position and market their services. As technology advances, so too does the industry's ability to offer customers a better experience with increased customer service quality at lower costs than ever before (Kim & Ham, 2007) and determines the strategy and competitiveness of tourism organizations and destinations (Buhalis & Law, 2008).

In recent years, there has been much talk about how technological innovation in this sector could help improve services by reducing costs while also streamlining operations (Singh et al., 2006) but what many people don't realize is just as importantly impacts travel safety worldwide. For example, digital maps make navigation easier because they show terrain features like rivers along roadsides which would otherwise be invisible without them. Furthermore, new developments in technology, such as targeted SEO strategies using social media platforms, customer services backed by artificial intelligence (AI), the use of virtual reality (VR) as an effective marketing tool, and the use of Big Data are expected to enhance tourists' (co-creating) adventure experiences as well as marketers' relevant knowledge. However, in spite of the role of technology in the growth of adventure tourism, its role as an operant resource in value co-creation (Akaka & Vargo, 2014) is highly neglected. As Maglio and Spohrer (2008) argued, value is co-created in dynamic configurations of resources (people, technology, information, organizations) connected internally and externally through value propositions. Since technology facilitates (Buhalis, 2019) co-creation experiences, adventure tourism experiences should be reconsidered by considering the role of technology within the adventure tourism service ecosystem.

## 5 Conclusion

According to a UNWTO study from 2014, worldwide visitor arrivals are predicted to reach 1.8 billion by 2030, and the industry's overall expansion will be aided greatly by established and new adventure tourism markets across the world. Though the latest innovations and dynamic market trends may initially present a challenge for adventure tourism businesses, the sooner they adapt to the new technological advancements, the more competitive they will be in the race to provide personalized and world-class experiences to potential customers, and thus the more growth opportunities will present themselves. We suggest that an S-D logic approach and its service ecosystem perspective (Vargo & Lusch, 2004) could advance adventure tourism research. Looking to the future, it is likely that technology will continue to play a major role in the tourism industry, both in terms of how holidays are booked and in terms of the actual experience of travelling. New transportation options, such as autonomous vehicles, are likely to have a significant impact on the way that we travel, while new platforms and apps will continue to make it easier for travelers to

find and book holidays. People will continue to search for unique experiences that go beyond the everyday. This includes new markets such as space and deep sea tourism. In addition to traditional travel, the use of virtual reality and augmented reality looks set to become more widespread, with travelers able to get a realistic sense of their destination before they even leave home. Likewise, the use of artificial intelligence is likely to increase, both in terms of customer service (for example, using chatbots to answer queries) and in terms of things like planning itineraries and making recommendations. All of this is likely to make the adventure tourism industry even more competitive, meaning that those businesses that embrace new technologies and which use these to create value will be the ones who succeed, whereas those which do not, will suffer the consequences. Thus, a service ecosystem approach includes all the aforementioned components and also enables researchers and practitioners to zoom out beyond dyadic exchange encounters and to view technology as a necessary resource for value co-creation.

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