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Technology and Tourism: Building competitive digital capability

1. Big Data Marries Cloud Computing – Happily Ever After?

Tourists leave digital traces on the Web and through interactions with mobile technologies. The resulting data is not only massive but also multidimensional (e.g. movements through space and time) and requires new approaches for storage, access, and analytics. Most of big data is actually external data (e.g. tweets housed on Twitter) and needs a lot of data services. Big data is also about high level analytics that require great computational power. This is where big data meets cloud computing – instead of housing and managing big data behind the organizational firewall, cloud computing opens up opportunities for using big data through Web services. It also means data collection can be decentralized.

Big data means opportunity for innovation in business processes and the creation of new data services for the tourism industry. However, it also represents challenges in terms of information governance, data security and ROI of information assets. A lot of tourism data is sitting unused in data silos instead of being shared, compared and transformed into business insights. It is not clear whether organizations within the tourism industry have the organizational capabilities to embrace big data and the analytical mindset it requires. The tourism literature has identified innovation deficiencies in the tourism industry and the need for greater market orientation, strategic innovation as well as collaboration in order to take advantage of big data and stay globally competitive. While technology adoption of consumers is monitored, there is very little information on the digital capabilities of the organizations that make up the Australian tourism industry.

Big data analytics is not only about developing new approaches to sentiment analysis, natural language processing, click-stream pattern recognition and matching, predictive modelling and data visualization taking into account the idiosyncrasies of tourism and its industry but foremost about knowing what questions to ask and knowing how to interpret the findings from big data analytics.

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2. New Ways of Information Delivery – There's an App for That

There is not only more information than ever before available but this information can now be delivered in new ways to enhance tourism experiences and increase marketing effectiveness. Radio frequency identification (RFID) and Near-Field Communication (NFC) provide opportunities for mobile devices to interact with other devices or even things, and to support transactions by allowing for mobile payments. While we currently envision the Internet to be a network of computers, it will

become increasingly an Internet of Things. This brings with it new levels of context-awareness and on-demand delivery of information that is relevant and personalized. For the tourists these technologies mean new ways of interacting with destination environments. Augmented reality applications and gamification strategies ensure that such interactions become increasingly playful and engaging. Such mobile applications have been shown to encourage unplanned behaviours in tourists and can lead to significant changes in tourist movements within a destination, suggesting that their persuasive potential is high. This is especially important for businesses off the beaten path and regional destinations trying to capture the drive-through market. While car navigation systems in South Korea, for instance, have successfully integrated tourism-specific contents and advertisements, this opportunity is not currently being taken advantage of in Australia. Most importantly, such personalized anywhere, anytime tourism content delivery in engaging forms requires high speed and low cost Internet access, which is a major challenge in the Australian context. Advantages derived from providing tourists with free wireless networks and future changes promised by the NBN need to be anticipated and discussed.

For the tourism industry, the main challenge is to translate these technological opportunities into revenue and competitive advantage. What business models can be supported through such applications? What is the ROI on apps, especially in a touristic context that often involves interactions for only short periods of times instead of regular use that would warrant purchase of an app and investment in establishing comprehensive user profiles? What information should be delivered to whom and how in order to enhance their experiences at the destination? What collaborative marketing efforts can lead to economies of scale?

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3. Social Commerce – Connecting the Dots

Social Commerce is a form of eCommerce that takes advantage of user-generated contents and social networks created/supported through the use of social media. The fundamental elements of Social Commerce are described with 6 C's in the literature: Content, Community, Commerce, Context, Connection and Conversation. Social Commerce builds on theories of social influence, suggesting that messages spread through networks following contagion principles and are more persuasive if received from similar sources. That tourists increasingly rely on social media sources when making travel-related decisions is now a well-established fact. In contrast, issues related to how marketing works in the social media space are not resolved. Measures of effectiveness if implemented at all are not grounded in theory or empirical, comparative research. What is the ROI of a Facebook "like" in the tourism context? What types of social media interactions increase customer loyalty for a destination vs. for a hotel? How can churn on social media pages be measured and prevented?, etc. Measures of influence are also not sufficiently developed. It is critical for tourism marketers to be able to identify those individuals who will likely spread content to a large number of influential others. Social network analysis and mining is incredibly important in this

context but unfortunately not very common in tourism research and practice. While some research is available that discusses motivations of tourists to create and share contents online (with the main drivers being “helping other consumers” and “helping businesses” rather than “vengeance”), we currently have no comprehensive research that answers definitely what factors encourage travel consumers to create contents, share contents, and engage with contents posted by tourism marketers.

Not only the availability and adoption rates of specific social media platforms but also the types of uses vary considerably across cultures. Since conversations in tourism need to be held with an international audience, all the above questions have to be answered for different visitor markets. Further, while social media monitoring and sentiment analysis might be implemented by individual tourism industry players, there is currently no or only limited sharing of related data, making it impossible to add value through benchmarking. Further, social media sentiment is largely seen as a reactive measure to branding efforts and advertising campaigns, neglecting its predictive power with respect to future travel behaviour and ability to inform decision-making. Thus, the ultimate questions to be answered are how Australian tourism destinations and suppliers can increase their relevance in the crowded and fragmented social media space and how they can derive business intelligence from the enormous amounts of social media-related data.

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