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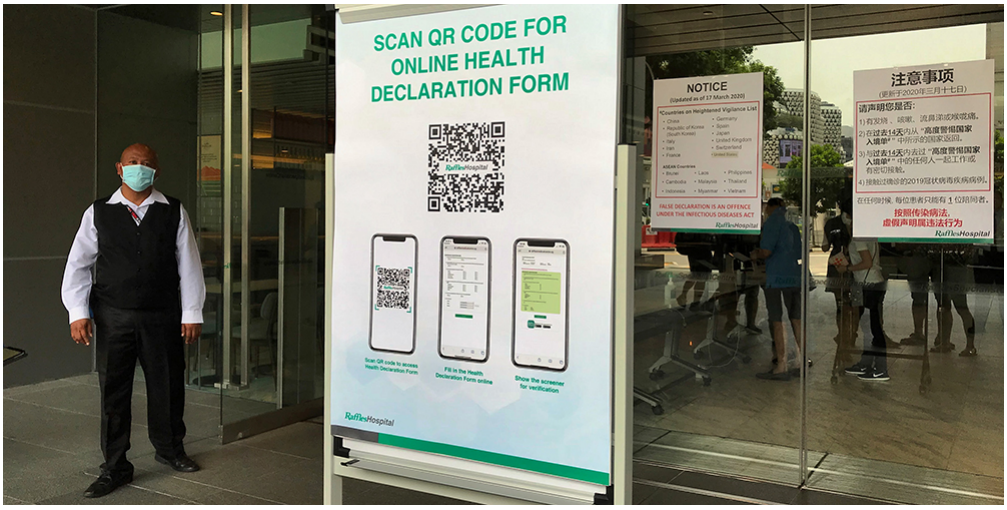
How to Leverage Big Data for Tourism Recovery



Big data analytics, together with digital tools such as digital health certificates, can improve COVID-19 monitoring and make it easier for people to move around safely. Photo credit: ADB.

Real-time data is critical for reopening borders, managing destinations, and for the industry to build back better from the crisis.

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Introduction

Big data has the potential to improve tourism policies and management especially as it recovers from the pandemic, which hit the industry hard.

According to the World Tourism Organization (UNWTO), global tourism suffered its worst year in 2020 with international arrivals down by 74% or about a billion less than in 2019. Revenue losses are estimated at $1.1 trillion. The crisis triggered by the coronavirus disease (COVID-19) also put more than a hundred million tourism jobs at risk, particularly in small and medium-sized businesses. Asia and the Pacific was the first region to suffer the impact of COVID-19 and is the hardest hit so far with an 84% drop in international arrivals in 2020.

Big data means large volumes of structured, semi-structured, and unstructured data generated at high speed, which require rapid processing. Sources of big data include mobile devices, social media, and the Internet of Things (IoT). Critically it can fill data gaps that traditional data cannot cover and provide

insights for evidence-based decisions and strategies with shorter delays compared to traditional data.

However, in general, the public sector has been slow in taking up big data for tourism management unlike the private sector, which has already been harnessing big data for marketing and product development for many years.

Rebooting the travel and tourism industry during and beyond the pandemic is a complex and challenging undertaking. The industry has never been hit so hard and the effects of such a crisis are not well understood. This makes the need for accurate and timely data even more important.

Before the pandemic, the Asian Development Bank (ADB) started studying how big data can enhance the development impact of tourism by informing policy and practice. After the COVID-19 outbreak, ADB collaborated with experts to explore how big data can contribute to the recovery of the tourism industry.

This article is based on preliminary findings of these studies and insights from experts at a webinar hosted by ADB and UNWTO.

Traditional Tourism Indicators

Traditional tourism statistics include data on indicators such as visitor arrivals, tourism receipts, and hotel and airline capacity. Before the outbreak, the sector enjoyed economic success, contributing 10.3% to global GDP and supporting 330 million jobs in 2019 based on research from the World Travel & Tourism Council. In Asia and the Pacific, it accounted for 9.8% of GDP and employed more than 180 million people.

The collection of traditional tourism indicators remains the best source of knowledge on the tourism industry, but it is time- and resource-intensive, particularly in countries where the data is not yet digitized. As a consequence, the data is often only available after a significant time lag. This is particularly challenging at the moment when the impact of the pandemic is unprecedented.

In recent years, the tourism industry has started to work with big data providers, particularly online travel platforms. With about half of bookings made online, these platforms offer billions of data points that track market demand, provide deep consumer insights and behavior analysis, and enhance market reach and targeting as well as product development. Yet these initiatives merely scratch the surface of big data’s full potential.

A Driver of Sustainability

ADB and UNWTO produced a study on leveraging big data for sustainable tourism, which was supported by research from the Pacific Asia Travel Association. This entails using big data to understand the hidden costs or the "invisible burden" of tourism on destinations in order to protect and preserve natural and cultural assets, mitigate adverse impacts on local economies and communities, and transform tourism into a driver of sustainable and inclusive growth.

These hidden costs may include the carbon footprint of travel and tourism activities, including construction and infrastructure upgrades; community displacement; overexploitation of resources (e.g., water, energy); and degradation of natural ecosystems and the cost of restoring them, which are often borne by local communities.

The study suggests shifting the focus of big data use from marketing to the holistic management of tourism. This entails supplementing traditional tourism statistics and big data from tourism operators with big data from smart cities. This can help to capture a greater range of costs from tourism growth, map resource consumption, and inform policies to improve net benefits for communities. Smart cities have many sensors that typically use IoT-driven apps for monitoring water usage, traffic and parking, air and noise pollution, energy consumption, etc. These are automated sources of practical data that are highly accurate and may be tied to the management of a destination. The data may also be used to guide the planning of sustainable tourism investments and infrastructure.

This approach can also help local communities whose livelihoods are affected by climate change to shift to sustainable and resilient alternatives, such as community-based tourism and ecosystem management.

However, there are several issues that need to be addressed in using big data, such as selection and availability bias, data privacy, cybersecurity, skills shortage in data analytics, and cost.

National or local governments need to take stock of what data and resources (e.g., skills, technical capacity) are available across different agencies and ensure a holistic approach to tourism strategy, which brings all players together, such as transport, finance, and foreign affairs. Governments will need to ensure that small and medium-sized enterprises and vulnerable populations are well represented and able to benefit from programs utilizing big data. Close coordination between national and local efforts as well as public and private sector initiatives ensures that learnings can be used by everyone.

Building Back Better After COVID-19

The complexity of reopening borders and destinations during a pandemic underscores the importance of research and data in designing economic recovery policies and plans.

In Asia and the Pacific, the ADB–UNWTO study notes that the emerging strategy for supporting travel and tourism recovery is twofold: first, leverage online platforms to accelerate the digitalization of the

industry, and second, enhance the harmonization of health standards and inbound and outbound travel protocols using digital technology, such as biometrics and blockchain.

Tourism businesses are partnering with online payment service providers, such as WeChat and GrabPay, so that they can offer customers a “no contact” or cashless payment method or enable them to redeem e-vouchers being handed out by national tourism boards as an incentive.

Some organizations are developing smartphone apps or systems to provide travelers with digital health passports that contain their medical clearance for COVID-19 and proof of vaccination.

For example, the CommonPass app, an initiative of the World Economic Forum and the Rockefeller Foundation through The Commons Project, was developed in partnership with airlines and health systems to store the health credentials of travelers in a QR code that may be shown to authorities at different checkpoints of their journey without disclosing unnecessary private information. It uses blockchain to securely link different systems across the globe, such as airline, airport, immigration, and health databases to make safe and seamless travel possible.

It is also possible that a digital health passport or certificate will be adopted by some countries for gaining entry into public places, such as a hospital, theater, or shopping mall.

The study cites two COVID-19 recovery models that focus on data, McKinsey & Company’s Tourism Nerve Center and a Marshall Plan for Tourism of EplerWood International, which is also behind the “invisible burden” concept. Both call for putting in place a system of coordination between public and private sector stakeholders to address the crisis and include a facility or dashboard for keeping track of real-time supply and demand data or impacts of tourism on destinations.

Real-World Example

A joint ADB and Korea Telecom (KT) study looks at how big data can be used to understand the tourism market, including the impact of COVID-19.

KT identifies tourists using LTE data applying sophisticated algorithms. Tracking the LTE signal between base stations and mobile devices enables the company to estimate changes in the tourist population every 5 minutes by capturing movement patterns. In comparison to 3G data based on calls and SMS, LTE data is considered more accurate as it holds many more data points and therefore provides less biased usage patterns and a regular flow of data. A set of criteria was developed based on the data to distinguish residents from tourists, including foreign visitors who can be identified from KT’s roaming data. Statistical techniques are applied for data calibration. Adjusting for KT’s market share and demographics, the company can achieve 95% accuracy in identifying domestic tourists and 75% accuracy for foreign tourists.

KT created a big data analytics dashboard, called Travel Intelligence Platform (TrIP) to compare the tourism competitiveness of areas in the Republic of Korea using LTE data. It tracks changes in the number of visitors, provides the breakdown of tourists, and ranks destinations. It also gives the

demographic profile of domestic tourists—their gender, age, and where they are from. It can identify the nationality of foreign tourists. The GIS interface shows the inflow and outflow of visitors in the area.

TrIP can deliver detailed analysis by looking at the demographics and movement patterns. For example, it sees where young people like to go at a certain time.

During the pandemic, analysis of KT data showed a negative correlation between areas with high COVID-19 cases and population movement, indicating that people were reluctant to travel. During public holidays when residents usually travel abroad, such as last year's Golden Week of Korea from April 30 until May 5, 2020, TrIP data showed that people chose still to travel but to stay in the country because of the pandemic.

Data also shows that Seoul suffered the greatest loss in number of visitors because of COVID-19 while the impact on Incheon was in terms of reduced tourism expenditures. Spending patterns were tracked using credit card use data, which also showed that duty-free shops saw the sharpest decline in sales. The effect of the pandemic is less severe in provincial areas, which gained appeal probably because these are less densely populated The example of KT's big data on tourism nicely illustrates how big data can be exploited to better understand the impact of the pandemic on tourism flows and to design appropriate policies.

The COVID-19 pandemic has brought about dramatic changes within a short amount of time. Given its timeliness, big data plays a crucial role in understanding the current situation and in developing pertinent recovery strategies for the tourism industry.

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Asian Development Bank (ADB)

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