



Interview

TechTalk with Dr. Hannes Werthner: The First President of the International Federation for IT and Travel & Tourism

Jookyung Kwon^{a,*}  and Chulmo Koo^a 

^aCollege of Hotel and Tourism Management, Kyung Hee University, Seoul, Republic of Korea



"Smart tourism, as a system notion, is better than intelligence because in order to be smart, one has to do things cleverly and not necessarily optimally."

Dr. Hannes Werthner, professor emeritus of Informatics at TU Wien, Austria, is the first president of the International Federation for IT and Travel & Tourism (IFITT) and the first committee member to organize the ENTER conference in Innsbruck, Austria in 1994. The *Journal of Smart Tourism* interviewed Dr. Werthner in September 2021 for its TechTalk feature. The conversation has been edited for length and clarity.

Vision and future direction for the IT & Tourism community in the 1990s.

Dr. Werthner and three other committee members organized the first ENTER conference about the electronic market and virtual agents in 1994. Although most academic researchers and industry practitioners at the time said that these issues were nonsense and not worth their investment, the board members believed that technology will shape the future.

"Our vision was that tourism is information business." From the computer science perspective, Dr. Werthner believed that the tourism industry needs to rely on rich amounts of information and that the related "dynamic of IT" will change its industrial structure. With the strong business of tour operators in the 1990s, hotels faced problems in directly contacting their customers, and vice versa. With regard to this observation, Dr.

Werthner said, "We envisioned that suppliers and consumers can also contact each other directly. To achieve this, we need not only business innovation but also extensive research." In response to this call, convergence studies have been conducted in the fields of tourism, computer science, and geography, among others.

In the 1990s, books related to IT and tourism were mostly written from the perspective of tourism business or management science. However, according to Dr. Werthner, "If you want to talk about e-tourism, this electronic world has to be understood first because that's the basis of e-tourism." To understand e-tourism from the computer science perspective, Dr. Werthner and a co-author wrote the book, *Information Technology and Tourism: A Challenging Relationship*, in 1999. Following the rapid economic movement triggered by tourism as a key development tool, Dr. Werthner highlighted the importance of understanding tourism from a systematic perspective. "We did not focus on individual enterprises, but we had a system's point of view given that each destination is an aggregation of individual enterprises." He also offered some facets of the aggregated travel such as transportation, accommodation, food, museum, exhibition, and historic sites. In his words, "In computer science, we have—in general—centralized and decentralized systems that follow different coordination logics and depend on specific circumstances. One is better than the other. In this vein, we realized that tourism and computer science share the similar concept."

Tourism e-commerce: The past, the present, and the future

According to Dr. Werthner, "The histories of e-commerce and tourism are interchangeable. A business depends on the maturity of both consumers and enterprises and their capability to engage in online transactions."

Dr. Werthner proposed four phases of e-commerce, namely, the information phase where the demand meets the supply, the negotiation phase where people agree on a price, the settlement phase where people exchange goods, and the customer relationship or after sales phase where a company tries to retain its customer base. One advantage of tourism is that their customers visit the destinations to experience them. Therefore, the settlement phase is not necessary in e-tourism. Dr. Werthner added, "As e-commerce goes from different one device (e.g., mobile devices) to another (e.g., watches and glasses), how to measure e-commerce across different contexts remains a challenge."

*Corresponding author:

Jookyung Kwon, College of Hotel and Tourism Management, Kyung Hee University, Seoul, Republic of Korea

E-mail address: htmkwon@gmail.com

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Recommendation system in tourism e-commerce

A recommendation system needs to be established to help customers make decisions when faced with massive amounts of products or information. Accordingly, e-tourism needs to consider and understand both the destination and tourist segments. Dr. Werthner explained, "Recommendation systems force companies to understand their products and how to describe their brands. In addition, these systems help companies understand their customers. From the management perspective, the capacity to deliver should also be considered." He also highlighted the need to profile customers depending on their age, purpose of travel, and personality.

Dr. Werthner also pointed toward trust as the essence of a recommendation system. "Trust is not only a technique, it is also an entire system." He argued that customers want to have some estimate to trust recommendations. Therefore, customers should be informed about when and why they need a recommendation system. To provide reliable recommendations, Dr. Werthner proposed integrating statistical analysis and logic into a recommendation system. On the one hand, statistical analysis is the machine learning part of a recommendation system that generates forecasts based on huge datasets. On the other hand, logic is a top-down program that provides an explanation for a certain phenomenon. Dr. Werthner distinguished a collaborative filtering system from a content-based one: "A collaborative filtering system would say, 'We propose this product because individuals A, B, and C also like it, and these people are the same as you because they bought the same products that you purchased,' whereas a content-based recommendation system would say, 'You are interested in A, and this product may match your interest.' In this example, the machine learning part of the recommendation system is not yet complete as it only gives you a statistical analysis. The results of this analysis are then used by the logic part to provide a reasoning for its recommendations."

How to build resilient systems in tourism


Building a resilient system is critical to tourism. Dr. Werthner urged tourism companies to understand the power relationship between IT and tourism while considering the time frame in business planning.


"IT is not a neutral force; it has a power relationship." He explained that the sustainability of tourism is fundamentally changing given the important role of IT in connecting this sector to other industries and managing its capability. For instance, pairing devices (e.g., Internet of Things) can affect tourism by providing people with compartment connectivity. Therefore, the industry should understand how to integrate tourism business and IT and how different devices interact with one another.

From the management science perspective, the efficiency, or the relationship between input and output, of a recommendation system is also crucial. However, such efficiency is not long term, and a resilient and sustainable system may not be efficient. From the computer science perspective, Dr. Werthner highlighted the importance of the business planning time frame. "Efficiency is not the only essential criterion. Service providers must also set a target time frame. Are they aiming for 1 or 10 years? Depending on this time frame, they can formulate different strategies. For example, infrastructure development is usually long term, whereas flexible pricing is short term."

To end the conversation, Dr. Werthner stated that "There are several open issues in e-tourism, including privacy and measuring. How can you encourage participation while also respecting the rights and privacy of your customers? How do you measure consumer satisfaction? Can you measure it just by clicks or feedback? After experiencing a service, customers may not be satisfied. In this case, how can you link these measures and satisfaction?"

ORCID iD

Jookyung Kwon  <https://orcid.org/0000-0002-6438-5136>

Chulmo Koo  <https://orcid.org/0000-0002-9822-1279>

Author Biographies

Jookyung Kwon is a research professor at Smart Tourism Education Platform, Kyung Hee University, South Korea. Her research interest includes smart tourism, sustainability, inspiration, and luxury.

Chulmo Koo is a professor of Smart Tourism Education Platform, Kyung Hee University, South Korea. His research interest includes smart tourism, online reviews, IT & tourism, and MICE industry.