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The Economics of Technology in Travel, Tourism, and Hospitality

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Travel, tourism, and hospitality (TTH) are intrinsically connected to technology. Tourists book their flights and accommodation through technology, reach the destination with the help of technology, explore the destination with technology, and share their experience online with technology. Inevitable, research on technology in TTH has flourished in recent decades (Benckendorff, et al., 2019; Law, et al., 2014). Several academic journals dedicated to tourism and technologies, namely *Journal of Hospitality and Tourism Technology*, *Information Technology & Tourism*, and *Journal of Smart Tourism*, were launched while IFITT (International Federation for IT and Travel & Tourism) organises an annual conference in the field.

Technology research in TTH focuses on a diverse scope of topics that cannot be comprehensively covered in a short viewpoint like this one. Research largely focuses on the perspective of the tourists – their perceptions, attitudes towards and adoption of specific technologies (Esfahani & Ozturk, 2019; Zhu & Morosan, 2014), tourists experience design through technology (Neuhofer, et al., 2014), and countless other directions. A significant body of literature focuses on the supply side and the perceptions of TTH managers of different technologies (Vatan & Dogan, 2021), TTH employees' technology skills (Carlisle, Ivanov & Dijkmans, 2021), decent work environment (Tuomi et al., 2020), and many other topics.

One major gap in the literature on TTH technology is its economic aspects. They are important because if TTH companies do not see economic benefits of the implementation of specific technological solutions they will not be willing to invest in them (Ivanov & Webster, 2019b). Tourists may want to use a specific type of technology but it is the TTH Company that decides and invests in it to make it available to the tourists. Therefore, TTH managers and owners need to be persuaded that it is worth investing in this technology. For instance, a hotelier must see that the economic benefits generated from its in-room tablets (e.g. additional sales of room service, saving time of employees for providing information that hotel guests could find through the tablet) exceed the costs for their installation, insurance and maintenance. If the costs are higher it does not make sense to have this piece of technology in the hotel regardless of how fashionable that technology is. Furthermore, technology implementation in a TTH company may have significant impacts on its market positioning, the willingness to pay of its customers, productivity, efficiency, profitability, and competitiveness (Ivanov, 2019). However, much of the technology research in TTH disregards the economics of technology and implicitly assumes that TTH companies will invest in particular technologies provided the tourists are ready to use them. Such an assumption

is not only invalid; it is dangerous because it creates an overly optimistic attitude toward technology and to the disappointment of TTH managers and owners when the promises of technology promoters do not match the reality.

Research on the economic aspects of technology in TTH is quite limited compared to its importance and follows several lines. First, research is dedicated to the willingness to pay for technology-delivered/enhanced TTH services and the factors that drive it (e.g. Erdem, et al., 2019; Huang, 2021; Yoganathan et al., 2021). Here we see that some studies deal with the willingness to pay *more*, i.e. they implicitly assume that customers perceive technology as a tool for value enhancement and that is why they would be ready to pay more for technology-delivered/enhanced TTH services. This, however, is not necessarily true. A study by Ivanov and Webster (2021) shows that tourists see robots as cost-saving devices and they want part of these savings to be transferred to them in the form of price discounts; hence, they were willing to pay *less* for robot-delivered services than for human-delivered services. More studies are needed in this direction. These studies should provide respondents with symmetric answer options for willingness to pay more and less for technology-delivered/enhanced TTH services rather than focus on the willingness to pay more only.

Second, the implementation of various technological solutions, especially automation technologies, changes the operational processes in TTH companies. Some tasks are automated, others remain unchanged, yet new tasks are created (Ivanov, 2020). Here research needs to shed light on which front-of-house and back-of-house tasks tourists, TTH employees, managers and owners consider appropriate to transfer to technology and which should be implemented by human employees (Ivanov & Webster, 2019a). Identifying these tasks would show the line of least resistance in the technology adoption in TTH companies.

Third, and closely connected to the previous direction, technology adoption leads to the elimination of some jobs, the transformation of others and the creation of new jobs in TTH companies. Research needs to evaluate the effect of technology on jobs not only in terms of substitution (replacing human labour for technology) and enhancement (improving employees' productivity through technology) (Ivanov & Webster, 2019b) but creating a decent work environment as well (Tuomi et al., 2020). Additional empirical research has to assess how technology changes the productivity of TTH companies and employees (Sigala et al., 2004; Torrent-Sellens et al., 2016), the efficiency of the service delivery system of TTH companies, companies' competitiveness (Hua, 2020), and, ultimately, its impact on profitability.

We should not forget that TTH companies are not charity organisations but businesses that need to generate value for their shareholders. They are run by economic principles like any other business. Their decisions to invest in technology are also driven by economic factors. That is why, academic research needs to acknowledge and pay more attention to the economics of technologies in travel, tourism and hospitality. This short viewpoint sketched some of the possible directions for future research in the field.

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