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A Study of the Contribution of Information Technology on the Growth of Tourism Economy Using Cross-Sectional Data

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ABSTRACT

Information technology (IT) has dramatically changed tourism industry, particularly in facilitating and improving information discovery and dissemination in tourism industry. Prior research has identified the key role that IT plays in the development of tourism industry. However, IT is examined solely, while other factors that drive the development of tourism industry are neglected in these studies. Guided by the new economic growth theory, this paper integrates fixed capital, labor, and IT and further examine how they together affect the development of tourism industry. Based on the cross-sectional tourism data of 2014 in 30 provinces in China, this article runs gray correlation analysis first and then applies a Cobb-Douglas production function model. The results indicate that fixed capital, labor, and IT are all correlated with the total tourism revenue at a certain degree, and that the development of tourism industry replies more on labor and IT than on fixed capital. Labor is the factor that makes the largest contribution to the development of tourism industry.

KEYWORDS

Cobb-Douglas Production Function, Gray Correlation, Information Technology, Tourism Industry

1. INTRODUCTION

Information technology (IT) is the acquiring, processing, storing, and disseminating vocal, pictorial, textual, and numerical information by a microelectronics-based combination of computing and telecommunications (Longley and Shain, 1985). Today, IT has impacted every aspect of our social life, including the tourism industry (Finogeev and Finogeev 2017; Furtado et al 2017; Levy, Brodsky, & Luo 2016; Xu, 2011; Xu et al., 2014; Liu et al., 2017; Yin et al., 2016). In fact, IT has been playing an important role in reservation and distribution systems since the 1960s (Werthner et al.,2015).

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Developments in IT, such as the Computer Reservation Systems (CRSs), Global Distribution System (GDSs), and the Internet, have dramatically changed industry structures, business practices and strategies since 1970s (Buhalis, 2003; Emmer, Tauck, Wilkinson, & Moore, 2003; O'Connor, 1999; Porter, 2001).IT is so essential to the tourism industry that the development of tourism cannot be separated from the use of IT, and its contribution to tourism companies has been extensively studied (Pease & Rowe, 2015).In particular, tourism industry has been transformed by IT globally and IT is playing a critical role for the competitiveness of tourism organizations and destinations (Buhalis & Law, 2008; Law, Leung, & Buhalis, 2009). Since early 1990s, tourism has become a major application of web-based services (Werthner, Alzua-Sorzabal, Cantoni, Dickinger, Gretzel, Jannach, Neidhardt, Pröll, Ricci, Scaglione, & Stangl, 2015).

Prior research has examined how IT facilitate and improve information discovery and dissemination in tourism industry. On one hand, IT empowers travelers to identify, customize, and purchase tourism products. Specifically, IT enables travelers to directly access reliable and accurate information as well as to undertake reservations with less time, lower cost, and less inconvenience required by conventional methods (Buhalis, & Law, 2008; O'Connor, 1999). Travelers rely much less on travel agencies because they can search travel-related information, make online air-ticket bookings, and reserve rooms online themselves (Morrison, Jing, O'Leary, & Cai, 2001). Recently, social networking is applied to the tourism industry, allowing travelers to review all hotels around the world and to share their experiences, reviews, and comments in discussion forums, a powerful platform for information discovery and dissemination between peers (Buhalis, & Law, 2008; Wang & Fesenmaier, 2004). On the other hand, for tourism products providers, IT provides them effective tools to develop, manage, and distribute their offerings worldwide (Buhalis, 1998). With the help of IT, tourism products providers can quickly identify travelers' needs and reach potential clients with comprehensive, personalized and up-to-date products and services (Buhalis, & Law, 2008). In addition, IT has changed radically how travelers interact with tourism products providers (Buhalis, 2003). IT allows tourism products providers to effectively gather feedback from travelers for improving their service quality and travelers' satisfaction, increasing their brand awareness, and strengthening brand association (Buhalis, & Law, 2008).

These studies identify the key role that IT plays in tourism industry. However, IT is examined solely in these studies, whereas other factors that drive the development of tourism industry are neglected. A comprehensive approach that integrates IT and other factors, such as fixed capital and labor, for studying the development of tourism industry is missing. Accordingly, this paper applies the new economic growth theory to explore how multiple factors impact the development of tourism industry. Specifically, this paper integrates fixed capital, labor, and IT and further examines how they together affect the development of tourism industry. Based on the cross-sectional tourism data of 2014 in 30 provinces in China, this paper runs gray correlation analysis first and then applies a Cobb-Douglas production function model. At last, the contribution of fixed capital, labor, and IT on the development of tourism industry is calculated individually. The results show that fixed capital, labor, and IT are all correlated with the development of tourism industry, and that the development of tourism industry replies more on tourism labor and IT than on fixed capital. Labor is the factor that makes the largest contribution to the development of tourism industry.

2. LITERATURE REVIEW

Economy and productivity are affected by various factors, such as human capital, material, and technological progress (Bayraktar-Sağlam and Yetkiner, 2014; Lima 2016; Mankiw et al., 1992; Solow, 1956).Many studies (e.g. Dewan and Kraemer, 2000; Jadhav and Mundhe,2011; Li, Cao, Xu, Yin, Deng, Yin, and Wu, 2014; Li, Xu, Jeng, Naik, Allen, and Frontini, 2008; Miribel 2006; Niu, Xu, and Bi, 2013; Tan, Xu, Xu, Xu, Zhao, Wang, and Fu, 2010; Wang, Xu, and Peng, 2007)