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A silver lining of tourism stagnation

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1. Introduction

In Korea, the two biggest travel agencies (Hana Tour and Mode Tour) lost 98% in sales during the second and third quarters in 2020 due to the COVID-19 pandemic.[1] With the recent easing of the lockdown and social distancing restrictions across some countries, domestic tourism has provided hope for rebuilding the economy (Florio, 2020). Therefore, it is of utmost importance that the tourism industry attracts domestic travelers.

In recent years, smartphone applications (apps) have become increasingly important in the hospitality and tourism industries. Apart from facilitating travel activities, such as searching for travel and hospitality information, making plans and reservations, and sharing travel experiences (Wang, Park, & Fesenmaier, 2012), smartphone usage enables tourists to feel more adaptable and less stressed, which enhances the holistic travel experience (Wang, Xiang, & Fesenmaier, 2014). Since the pandemic broke out, the reliance on smartphones has unprecedentedly mounted. Smartphone apps that support online shopping, social media, online food ordering, and cloud meeting have become new ways to keep up with the outside world (Emma, 2020). Therefore, mobile app data can play an important role in capturing consumer and traveler behaviors.

Using the panel data of mobile travel apps as a proxy of travel intention, we compared the usage of global and domestic travel apps to investigate traveler behaviors. We examined the period from January to July 2020, i.e., the time before, during, and after the first wave of the pandemic in Korea. Our results showed that a fall in global travel business and a boom in the domestic travel business may be associated with users switching between global and domestic travel apps. This behavior was more pronounced among younger and single users.

We postulate that these app users are motivated to travel for a stimulus of novelty and sensation to alleviate boredom. The repetitive lifestyle generated due to the social distancing environment aggravates the feeling of boredom (Deng, Wang, Xie, Chao, & Zhu, 2020). Because of global travel restrictions, domestic travel receives more attention owing to higher feasibility. This phenomenon is manifested by the records of the switch from global travel apps to domestic ones. Moreover, previous literature demonstrates that this tendency to alleviate boredom varies across demographic groups. The Travel Career Ladder theory (Pearce & Lee, 2005) suggests that younger people are more likely to travel to seek stimulating experiences than older people. Meanwhile, a recent study has suggested that, during lockdowns, single people (as opposed to married people) are more likely to feel bored, with a perception of slowing of time (Droit-Volet et al., 2020). Arguably, younger or single app users are more likely to switch apps.

2. Methodology

Fig. 1 shows the development of the COVID-19 pandemic in Korea. Fewer than five cases were confirmed between late January and early February 2020. There was a sudden jump in mid-February, mostly attributed to people in a southern city, Daegu. The disease then spread across the country and reached a peak in late February and early March, with more than 3000 confirmed cases weekly. From April, a rate of

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[1] Source: https://www.traveltimes.co.kr/news/articleView.html?idxno=110430.

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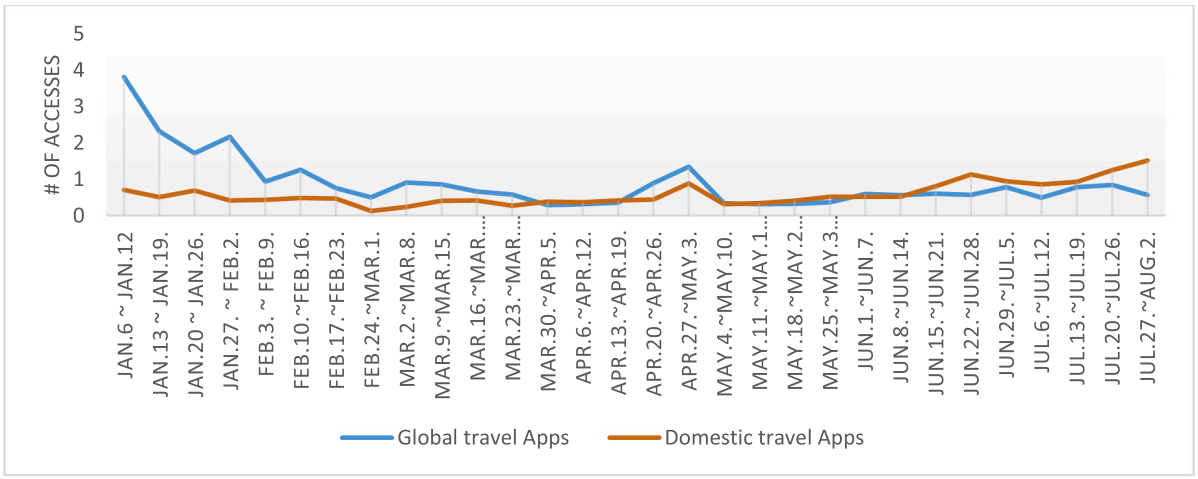
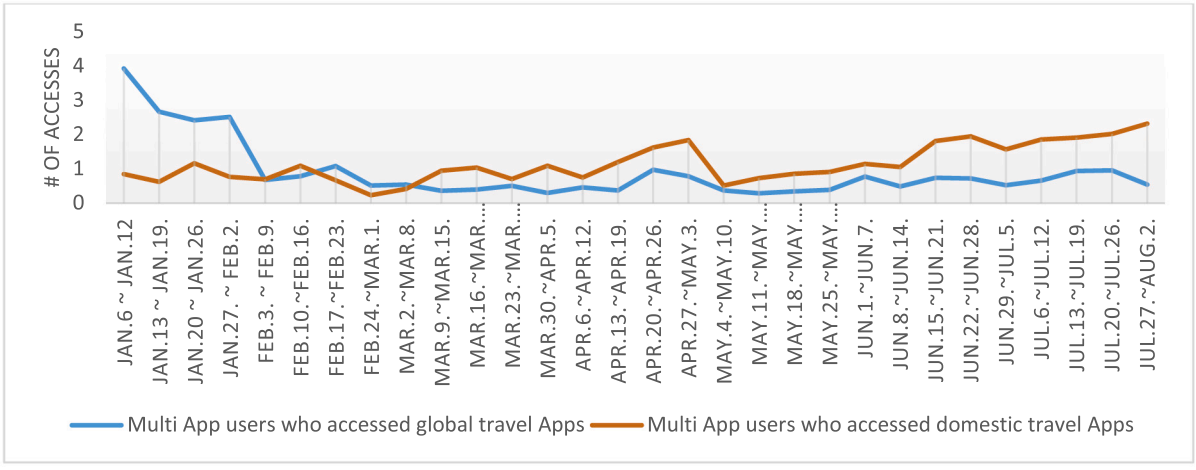
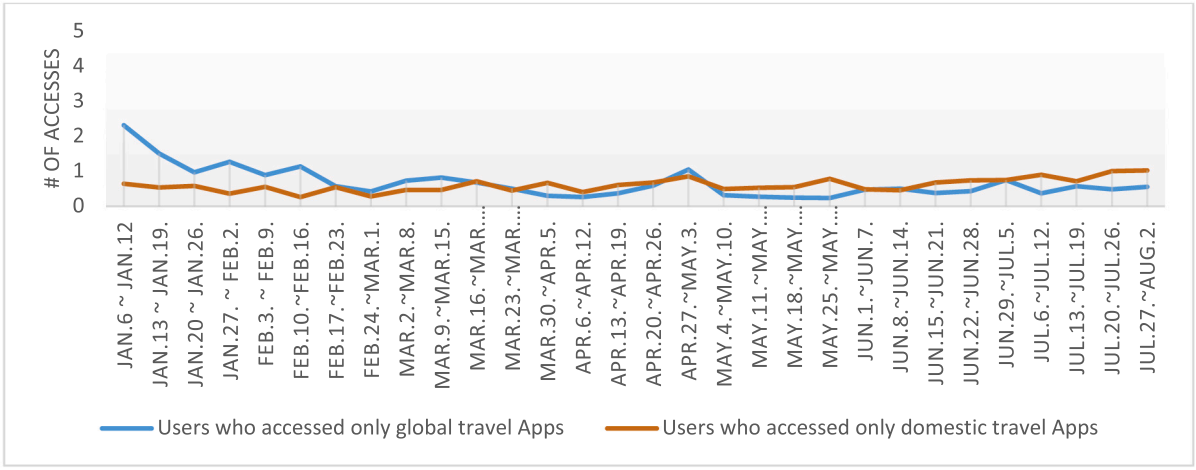


(a) Aggregate



(b) Users navigating both global and domestic travel apps



(c) Users navigating only global or only domestic travel apps

Fig. 1. COVID-19 Cases in Korea.

about 100 confirmed cases weekly was observed for months.

We obtained the panel data from Nielson Korea, which hired panelists[2] and collected their weekly app usage data from January to July 2020. This timeframe includes the peak pandemic period as well as the pre- and post-pandemic periods in Korea. The dataset also considered demographics, such as age, gender, income, and marital status.

Our empirical study used the access data of 1108 panels for various travel apps. We categorized travel apps into two types: domestic and global. The domestic travel apps provide hotel/resort reservation and tourist attraction information for only Korea. These apps are managed by domestic travel agencies/companies. The global travel apps comprise of well-known international travel agencies, such as Expedia, Hotels.com, Trivago, Kayak, etc. Although these apps also provide domestic services, they are not specialized for domestic tourism.

Fig. 2 shows the trends in users' weekly access patterns of domestic and global travel apps. Unsurprisingly, global travel apps lost popularity while the domestic travel apps gained it when the pandemic eased. This is consistent with the actual travel statistics. For example, the Korea Tourism Organization (kto.visitkorea.or.kr) reported a 95% drop in overseas travel between March and December 2020, compared to January–February in the same year. Conversely, according to the Jeju Tourism Organization (ijto.or.kr), visitors to Jeju Island almost doubled in May–July 2020 compared to February–April in the same year.

Moreover, the data enabled us to track the users' navigation across apps, thus helping us identify three types of users: 1) those who accessed only global travel apps (420 panels), 2) those who accessed only domestic travel apps (474 panels), and 3) those who accessed both (214 panels). The decrease in the use of global travel apps and increase in domestic travel apps were more noticeable for users accessing both types of apps than for users accessing only global or domestic travel apps. This finding necessitated further modeling of users' navigation behaviors across travel apps.

Thus, we built a Poisson model with mean $\lambda_{it}^{D\ (G)}$, where $Access_{it}^{D\ (G)}$ indicates the number of times user i accesses domestic travel apps (D) or global travel apps (G) during week t.[3]

$$Access_{it}^{D} \sim Poisson\left(\lambda_{it}^{D}\right)$$

$$ln\left(\lambda_{it}^{D}\right) = \beta_0^D + Demo_i\beta_1^D + \beta_2^D Covid19_t + Holiday_t\beta_3^D$$

$$+ \beta_4^D PastAccess_{it-1}^{D} + \beta_5^D PastAccess_{it-1}^{G} + \epsilon_i^D + \epsilon_t^D \quad (1)$$

where,

$$PastAccess_{it-1}^{D} = (1-\rho)\bullet\ln\left(\mathrm{Access}_{\mathrm{it-1}}^{\mathrm{D}} + 1\right) + \rho\bullet\mathrm{Past.Access}_{\mathrm{it-2}}^{\mathrm{D}}$$

$$PastAccess_{it-1}^{G} = (1-\rho)\bullet\ln\left(\mathrm{Access}_{\mathrm{it-1}}^{\mathrm{G}} + 1\right) + \rho\bullet\mathrm{Past.Access}_{\mathrm{it-2}}^{\mathrm{G}}$$

$$0 \le \rho \le 1$$

In Eq. (1), $Demo_i$ includes the demographics of user i, namely, age, gender, income, and marital status. $Covid19_t$ indicates the number of confirmed cases of COVID-19 in week t. $Holiday_t$ indicates public holidays (Lunar New Year Days, children's and parents' days in April). Importantly, we incorporate the previous access data of domestic and global travel apps, $PastAccess_{it-1}^{D}$ and $PastAccess_{it-1}^{G}$, respectively, with the average of accesses in the past being weight ρ. $PastAccess_{it-1}^{D}$ represents previous accesses of the focal apps (i.e., a persistence effect), while $PastAccess_{it-1}^{G}$ captures converting behaviors across domestic and global travel apps (i.e., a switching effect from global to domestic travel apps). Finally, ϵ_i^D and ϵ_t^D capture normally-distributed random effects across users and weeks, respectively.

Additionally, β_5^D in Eq. (1) is extended to incorporate moderation effects with demographic variables. This helps identify which users tend to switch between global and domestic travel apps.

$$\beta_{5i}^D = \theta_0^D + Demo_i\theta_1^D \quad (2)$$

3. Results

First, the multi-app users of global travel apps showed a greater persistence effect than the single-app users, whereas for domestic travel apps, the single- and multi-app users showed similar persistence tendencies. This implies that multi-app users are more loyal to global travel apps than single-app users. Interestingly, low-income users tended to use one type of app while high-income users navigated both apps (Table 1).

Of particular importance are the opposite signs for the switching effects for global and domestic travel apps. The switching effect from domestic to global travel apps was negative and significant, implying that users are less likely to use global travel apps after accessing domestic travel apps. Conversely, the switching effect from global to domestic travel apps is positive and significant. This implies that users are more likely to use domestic travel apps after accessing global travel apps. These asymmetric switching effects indicate that global travel apps are losing customers to domestic travel apps, while domestic travel apps are flourishing by converting customers from global travel apps.

Turning to the moderation effects of switching by the demographics in Eq. (2), we found positive and significant moderation effects of age and marital status and negative and significant effects of gender on the switching effect from domestic to global travel apps. This indicates that younger and single female users decrease their usage of global travel apps after using domestic apps. Similarly, we found negative and significant moderation effects of age and marital status on the switching effect from global to domestic travel apps. This implies that younger and single users increase their usage of domestic travel apps by switching from global ones.

4. Conclusions

We in this study identified a switching behavior from global travel apps to domestic ones and demonstrated that this behavior contributed to a rebound in domestic travel app usage. Furthermore, we found that users with specific demographic attributes, i.e., the younger users and single users, manifested this behavior the most.

Our study provides empirical support for recovering domestic tourism and suggests that it can work by providing incentives and launching campaigns that precisely match the target customers. App managers could incorporate the natural fluctuations of pathogen load across time and geographic locations in their forecasting models for product and promotion offerings. Given the current findings, the age and gender parameters should be modified. These applied implications are of current necessity because the levels of pandemic severity could conceivably affect app usage across age and gender. Moreover, many countries are still experiencing recurrent waves of the pandemic. Meanwhile, global apps and international destination marketing organizations (DMOs) should promptly implement differentiation strategies. Although international travel is heavily restricted, regional travel has become possible in areas where travel-bubble agreements apply. Global app developers could focus more on promoting these areas. In addition, with the penetration of technology, new opportunities are open for international tourism, which is different from previous substitution effects in tourism. For instance, based on a larger database on the platform, global travel apps may work with overseas DMOs to explore creative virtual travel (e.g., Dream Now, Visit Later Campaign) to attract international audiences and arouse their interest in visiting later (WTM Team, 2020).

A limitation of our study is that owing to the challenges in measuring psychological status from the panel data under social distancing

[2] The participants provided their online-informed consent to Nielson Korea.

[3] The model for global travel apps λ_{it}^{G} is specified by interchanging superscripts D and G in Equation (1).

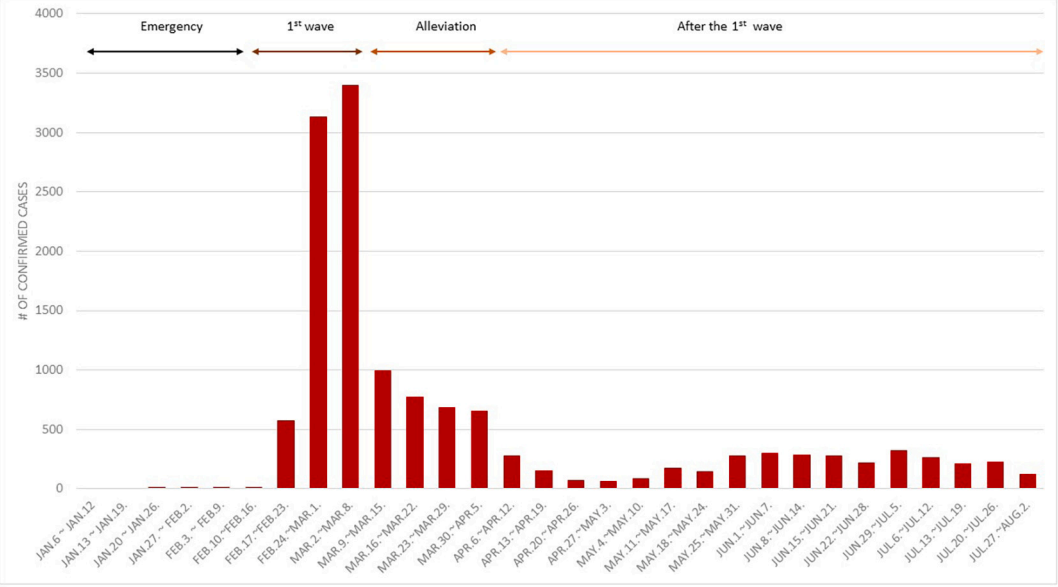


Fig. 2. Access trends for global and domestic travel apps.

Table 1
Estimation results.

User type		Single-app users		Multi-app users			
				Main effect		Moderators	
App type		Global only	Domestic only	Global	Domestic	Global	Domestic
Intercept		0.37	−1.30	**−0.72***	−0.13	**−0.88***	0.06
Sex (male = 1)		0.02	−0.01	−0.23	−0.28	−0.21	−0.31
Age		**−0.39***	−0.09	**−0.16***	**−0.23***	**−0.13***	**−0.26***
Income (5000+ USD per month = 1)		**−0.33***	**−0.37***	**0.47***	**0.35***	**0.50***	**0.34***
Marital status (married = 1)		**−1.20***	**0.25***	**−0.30***	**−0.47***	**−0.29***	**−0.53***
Covid-19 cases		**−0.16***	0.00	**−0.15***	−0.12	**−0.13***	−0.12
Children's and parents' days		−0.04	0.22	−0.10	0.27	−0.13	0.19
Lunar New Year		0.41	0.21	0.43	0.04	0.36	0.02
Persistence effect	Previous access of the focal apps	**0.50***	**0.46***	**0.71***	**0.43***	**0.71***	**0.43***
Switching effect	Previous access of the other apps			**−0.13***	**0.21***	**−0.52***	**0.67***
Moderator	Sex					**−0.13***	−0.02
	Age					**0.13***	**−0.11***
	Income					−0.06	−0.02
	Marital status					**0.14***	**−0.15***

* Significance at the 95% level.

restrictions, we did not investigate the mechanism underlying traveler behaviors. Future research could use an inter-disciplinary approach to conduct experiments that test this underlying mechanism and incorporate the field data of actual visitors at domestic travel attractions.

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