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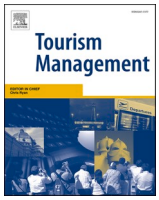

Uncovering crowdsourcing in tourism apps: A grounded theory study

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ABSTRACT

Even though crowdsourcing emerges as a new business principle of many successful tourism apps, its underlying mechanism in tourism remains unexplored. This research note explores this topic with a qualitative design through interviews with stakeholders involved in a crowdsourcing tourism app, *Gold Medal Tour Guide*. Applying the grounded theory, researchers propose a framework of crowdsourcing in tourism apps consisting of six themes and 15 subthemes. The framework identifies the drive of crowdsourcing and discusses the complexities and contradictions in multi-stakeholder collaboration. The contextual impacts of the COVID-19 pandemic on the crowdsourcing phenomenon are also examined. The findings provide practical implications for tourism destinations to take advantage of the crowdsourcing mechanism for sustainable operation and development.

1. Introduction

Crowdsourcing is a type of participative online activity in which individuals or organizations obtain services from a large, relatively open group of experts with varying knowledge, heterogeneity, and number (Enrique & Fernando, 2012). As an information technology artifact, crowdsourcing goes beyond organizations' boundaries and engages crowds into commercialized activities to solve problems, complete tasks, generate ideas, and produce services (Modaresnezhad et al., 2020). In the process, the crowd's knowledge is leveraged through a mix of bottom-up crowd-derived inputs and efficient top-down goal-setting initiated by an organization (Taeihagh, 2017).

Given its advantages of cost-saving, speed, quality, flexibility, scalability, and diversity (Prpić et al., 2015), many tourism crowdsourcing initiatives have been successfully developed. With the emergence of high-speed wireless network technology and increased market penetration of smartphones among tourists (Lu et al., 2015), most crowdsourcing start-ups embed their functions with mobile technology applications (apps) to serve tourists (TrendHunter, 2014). Amid COVID-19, tourist attractions have begun offering touchless services via apps, accelerating tourists' acceptance of and reliance on various tourism apps (Gursoy & Chi, 2020), including crowdsourcing tourism apps. Even though the effectiveness and uses of crowdsourcing have been studied in multiple disciplines (e.g., Zheng et al. (2018) in geography, Lin et al. (2018) in crisis management), the fundamental framework of crowdsourcing in tourism apps remains unexplored, failing to direct its application and future development in the sector.

The grounded theory approach is a classic qualitative method that lends itself particularly well to under-explored areas (Corbin & Strauss, 2008). Tourism studies often adopt this approach to understand participants' experiences and develop frameworks of evolving phenomena (Matteucci & Gnoth, 2017). As the grounded theory advocates contextualized understanding of the phenomena (Charmaz & Bryant, 2016), this research note employs stakeholder interviews and a focus group to address the aforementioned gap in the context of the COVID-19 pandemic.

With analyses of a fully functional crowdsourcing tourism app, the research note applies the grounded theory to construct a framework, which examines the systematic structure (conditions, processes, and outcomes) of the crowdsourcing phenomenon in tourism. Thus, this note contributes to the current literature with a preliminary framework extracted from a new tourism phenomenon and provides practical suggestions to incorporate the crowdsourcing business model in future tourism development.

2. Methodology

This study selects a Chinese tourism crowdsourcing app, the *Gold Medal Tour Guide* (Chinese name: "Jin Pai Jie Shuo," http://jweb.geeker.com.cn/, see Appendix A), as the study context. Founded in 2018, the

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app currently serves over 2000 tourist attractions nationwide (Jin Pai Jie Shuo, 2021) and was awarded by the Ministry of Culture and Tourism of the People's Republic of China as an exemplary tourism product in 2020 (Ministry of Culture and Tourism, 2020). The app is developed by the Daq Software company and partially supported by the local tourism administration, focusing on offering audio tour guide services. The audio clips are crowdsourced from tour guides: professional tour guides, who also work as tour guides offline, and part-time tour guides, who have jobs in other fields but possess expertise in specific areas. Thus, five involved stakeholders are Daq software company, local tourism administration, professional tour guides, part-time tour guides, and tourists.

Semi-structured interviews were conducted to explore all five stakeholders' views on the app. Sample questions were adjusted from Charmaz (2002) to fit this study's context (see Appendix B). A total of 25 interviews and one focus group with five participants were conducted between July and October of 2020 via virtual meetings, each lasting between 45 and 75 min (See Appendix C for respondents' demographics). The interviews were recorded, transcribed verbatim, and coded with the assistance of Atlantis.ti.8.4.25. The initial 25 interviews were analyzed to construct the preliminary crowdsourcing framework until reaching saturation (Corbin & Strauss, 2008).

The coding process occurs in three following stages to disclose the underlying relationships (Corbin & Strauss, 1990). First, open coding generated 189 codes. Second, axial coding categorized open codes into 15 subthemes and corresponding six themes. Third, selective coding integrated themes into a story and developed a framework. Finally, a focus group was conducted to verify the framework by incorporating further modifications to best interpret interviewees' opinions.

3. Results

Applying the grounded theory analysis, the study developed a framework consisting of six themes and 15 corresponding subthemes to explain the crowdsourcing business model in the tourism app (Fig. 1). The first theme, *Current Dilemma in Providing Tour Guide Services,* is the starting point for generating a crowdsourcing mechanism. Three pairs of supply-demand conflicts on tour guide services are summarized as three subthemes: *service convenience versus resource constraints*, *personalized needs versus labor shortages*, and *low-price products versus high labor costs*. Before introducing the app, in-person and wearable audio tour guide services were the two mainstream products offered by local tourism administrations for years. Yet, these services were far from satisfactory neither from administrators' nor tourists' perspectives: Tourists complained about the high-cost and stereotyped offerings without flexibility and convenience. Constrained by resources and rising labor costs,

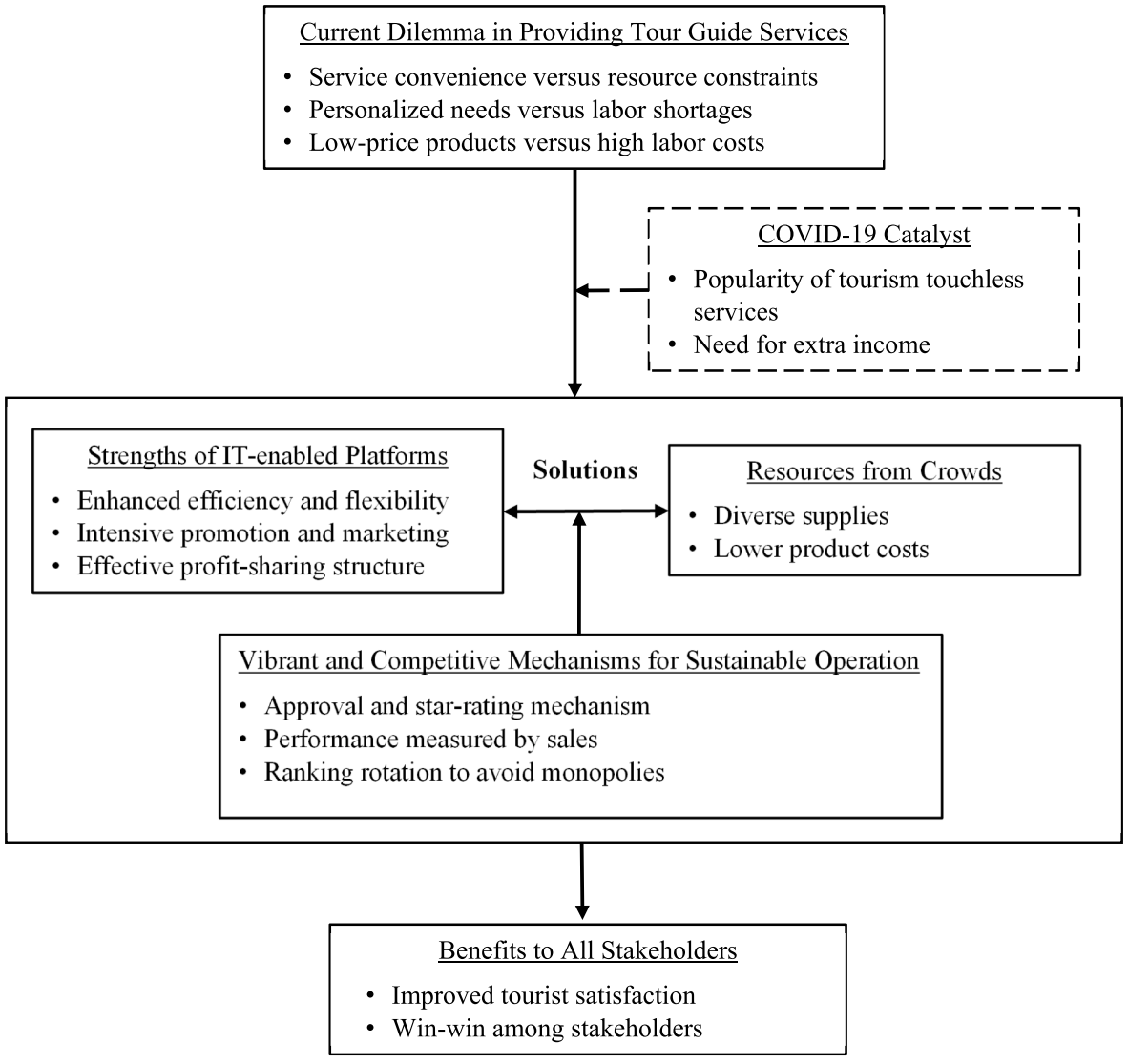

Fig. 1. A framework of crowdsourcing in tourism apps.

administrators could not respond to personalized, low-cost but high-quality, and convenient requests from tourists.

The three interrelated themes, *Strength of IT-enabled Platforms*, *Resources from the Crowds*, and *Competition Mechanisms for Sustainable Operation,* jointly provide a solution to the dilemma above. The three themes summarize how the crowdsourcing phenomenon is generated, maintained, and performed in the tourism context. The theme *Strength of IT-enabled Platforms* reflects how Daq Software company developed the IT-enabled crowdsourcing platform in the mobile app. Along with the high penetration of smartphones, tourists gain access to online products from anywhere and at any time via this crowdsourcing app.Online payment and offline marketing were also realized through an efficient business operation. These strengths of IT-enabled platform successfully respond to tourists' convenience and efficiency requests to tour guide services.

The theme of *Resources from the Crowds* indicates that open crowds (professional and part-time guides) leveraged their knowledge and expertise to provide diverse and personalized content supplies in the app while cutting the price dramatically. As an online platform, the app itself does not produce any content and relies on the input of those who can create high-quality tour guide content. Two significant provider groups stand out together to solve tourists' requests for diversified offerings: One is composed of current professional tour guides who specialize in comprehensive tour introductions. The other is from the crowd who have expertise in relevant fields. As for the service price, high human and affiliate costs contributed to the high prices of the in-person and wearable tour guide services. In contrast, the app is installed on tourists' mobile phones with no fixed costs and affiliate fees (i.e., maintenance). As for labor costs, these pre-recorded guide clips listed in the app can simultaneously accommodate millions of tourists and repeated replay by purchasers; therefore, with crowdsourced resources, each tourist's average cost was dramatically reduced from 31 USD to 1.5 USD in the app.

The theme of *Vibrant and Competitive Mechanism* solves the sustainable operation issue of the app with adequate quality control. Although crowds contribute diversified audio clips to the app, the quality of the content varies. False or misleading information may lead to the infringement of consumer rights, disputes between stakeholders, and harm done to the destination image. Local administration undertook the responsibilities of screening and star-rating clips before listing them on the app. Sales data were regularly monitored to remove unpopularity from the product gallery, enhancing content innovation to better accommodate tourists' needs. In addition, the app optimized its algorithm by randomly selected two products with the same rating every week and listed them as top recommendations. With this rotation, all tour guides have an equal chance of gaining exposure and actively involved in contributing novel products. Such a vibrant and competitive mechanism guarantees service quality to tourists while maintaining contributors' enthusiasm and the platform's vitality.

The next theme, *Benefits to all Stakeholders,* demonstrates crowdsourcing's win-win outcomes by satisfying all tourists' requests on convenience, diversity, and low-cost products and efficiently distributing revenues to contributors (Daq, local administration, and content providers). Besides monetary incentives, content providers enjoyed the feeling of recognition, achievement, and gratification. These feelings motivated content providers to improve their content to meet tourists' preferences. Moreover, local administration maintained destination image while Daq expanded its businesses. The win-win among stakeholders also contributed to the sustainable operation of crowdsourcing mechanisms and the long-term development of destinations.

As necessitated by the grounded theory approach, the contextual influence of COVID-19 is scrutinized as *COVID-19 Catalyst*. The interview data demonstrated that COVID-19 became a contextual catalyst to the crowdsourcing phenomenon from both the demand and supply perspectives. From tourists' perspective, due to the hygiene concerns regarding both in-person tour guide services and wearable devices, the pandemic accelerated tourists' acceptance and willingness to use contactless services provided by the app. For content providers, the financial difficulties experienced due to the pandemic forced both the professional and part-time tour guides to seek extra income. The app became a significant income-generating opportunity, with minimal time input but continuous income, motivating tour guides to be more engaged in the app.

4. Discussion and conclusion

The proposed framework organizes and connects the problem, solution, mechanism, and contextual environment of a crowdsourcing tourism app to systematically uncover this new phenomenon. This research note contributes to the existing tourism literature by being the first to discover crowdsourcing's fundamental principles and mechanisms in tackling tourism practices. The grounded theory approach addresses the gap in the literature by holistically identifying the origin of problems and the need for collaboration among stakeholders to achieve win-win outcomes. The research note also reveals the importance of a dynamic competition mechanism to ensure service quality, resulting in a possible solution to the long-existing quality control challenge in crowdsourcing. Finally, the timely contextual examination of COVID-19 offers a unique lens to compare pre-and post-pandemic research findings, improving our knowledge of how best to cope with crises. This research also encourages future research to carefully examine the contextual influence on stakeholders' choices and behaviors in tourism development.

The research note also provides valuable practical implications for tourism industry practitioners. First, as a relatively new initiative, local tourism administrations (i.e., DMOs) are encouraged to optimize crowds' resources to solve practical problems and capitalize on stakeholders' delicate collaboration in crowdsourcing, thereby maximizing the benefits to destination management. Notably, local administrations should work closely with IT-platform providers in project design and execution to fit the local settings, thereby optimizing the strengths of crowdsourcing. DMOs should also pay closer attention to dynamic evaluation and modification based on stakeholders' feedback, which is crucial for crowdsourcing's long-term success.

In addition, the meticulous design of a profit-sharing structure is required to keep the mechanism running smoothly. IT-enabled platform providers should capitalize on emerging business opportunities in tourism service areas and leverage relevant stakeholders' resources to generate profit. In particular, as managers of the profit-sharing mechanisms in crowdsourcing, platform providers should consider negotiating profit allocations with involved stakeholders to achieve win-win results. What's more, content providers are encouraged to get involved in tourism crowdsourcing initiatives in their spare time. Considering the large volume of participants, content providers should get involved in such initiatives with accurate positioning and timely product updates to survive the fierce competition.

Future studies can expand the scope of crowdsourcing phenomena to other tourist services in other countries, enriching the proposed framework derived from tour guide services provided by a Chinese app. As the world gradually gets the pandemic under control, future research could further trace and explore the impacts of COVID-19 identified in the proposed framework in post-pandemic times. Scholars may also collect quantitative data to verify the relationships presented in the framework and examine crowdsourcing applications in other fields.

Impact statement

The research note uncovers the underlying mechanism of crowdsourcing phenomena in the tourism context and contributes to sustainable operation and development in destinations. The findings are widely influential to social policy, environmental and cultural conservation, and sustainable development as follows: (1) Policymakers could consider adopting crowdsourcing in striving for sustainable development and profitable partnerships in tourism destinations. The sustainable operation mechanism embedded in the crowdsourcing tourism app enhances stakeholders' cohesion and provides avenues to benefiting local communities, tourists, and businesses amid COVID-19. (2) As an innovative approach to optimize crowds' dispersed resources, crowdsourcing can help to promote local culture to tourists and tackle tourism problems without harming the environment. (3) The research advocates destinations to adopt crowdsourcing with profit-sharing and vibrant competition designs in tourism practices, while achieving sustainability in the long run.

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Appendix A

Screenshots of Gold Medal Tour Guide app's home page, tourist attraction page in one example (Dujiangyan), and sample tour guide's product page (From left to right).


16:16
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405.97万
15.53万
金牌解说
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都江堰市十佳讲解员
富察格格为您解说都江堰
81.79万人收听
3.37万人购买
包含36个讲解点
10元
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好声音陪您游古堰
33.54万人收听
1.25万人购买
包含36个讲解点
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Appendix B. Sample Interview Questions

1. How would you describe *Gold Medal Tour Guide* app? How does the app work?
2. What was your use/collaborating experience with the app?
3. Why did you decide to develop/support/use the app? How did you support its development?
4. How did the app impact/change the tour guide services? Please describe both advantages and disadvantages the app brings to local tour guide services.
5. What were the challenges you encountered while adopting/promoting/using the app? How did you cope with them?
6. Did COVID-19 bring any changes to your understanding/support/usage of this app?
7. What are the positive and negative consequences of adopting the app?
8. What are your suggestions for its improvement/future plans of the app?
9. Are there any additional comments you would like to add?

Appendix C. Participants' Profile

No.	Stakeholder Group	Age	Gender	Organization and Position
First Round of Participants (Framework Generation)				
1	Daq Software Company (3)	40	M	General Manager
2		35	M	Marketing Supervisor
3		31	M	Sales Manager (Business Development)
4	Local Administration Officials (3)	45	M	Supervisor of Technology Dept.
5		30	F	Supervisor of Regional Information Center
6		45	F	Team leader of Sichuan tour guide services
7	Professional Tour Guides (5)	25	M	Tour guide at Qingchengshan
8		34	F	Tour guide at Qingchengshan
9		34	F	Tour guide at Dujiangyan
10		36	F	Tour guide at Dujiangyan
11		27	F	Tour guide at Dujiangyan
12	Part-time Tour Guide (5)	24	F	Radio host
13		32	F	TV host and voice actor
14		52	M	A historian in Bashu (ancient name for Sichuan)
15		30	M	Expert in Bashu culture
16		69	F	Associate librarian at Culture Museum (retired)
17	Tourists (9)	28	M	Sales
18		27	M	Freelancer
19		34	M	Administrator
20		27	F	Software developer
21		27	F	Business operation
22		27	F	Web engineer
23		21	F	College student
24		21	F	College student
25		26	M	Sales
Second Round of Participants (Framework Verification)				
26	Daq	51	M	Chairman of the Board
27	Administration	47	F	Deputy Secretary of Tour Guide Association
28	Professional Guide	37	F	Tour guide at Dujiangyan
29	Part-time Guide	25	M	Local radio host
30	Tourist	22	F	College student

References

Charmaz, K. (2002). Qualitative interviewing and grounded theory analysis. In J. Gubrium, & J. Holstein (Eds.), *Handbook of interview research: Context and method* (pp. 675–694). Thousand Oaks, CA: Sage.

Charmaz, K., & Bryant, A. (2016), 2016. In D. Silverman (Ed.) (4th ed.,*Qualitative researchConstructing grounded theory analyses* (pp. 347–362). London: Sage.

Corbin, J., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology, 13*, 3–21.

Corbin, J., & Strauss, A. (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Enrique, E., & Fernando, G. (2012). Towards an integrated crowdsourcing definition. *Journal of Information Science, 38*(2), 189–200.

Gursoy, D., & Chi, C. G. (2020). Effects of COVID-19 pandemic on hospitality industry: Review of the current situations and a research agenda. *Journal of Hospitality Marketing & Management, 29*(5), 527–529.

Jin Pai Jie Shuo. (2021). *Make sound and beauty happily blended; Let culture and travel muturally promoted*. Retrieved from http://jweb.geeker.com.cn/index.html.

Lin, W., Wu, T., Tsai, M., Hsu, W., Chou, Y., & Kang, S. (2018). Filtering disaster responses using crowdsourcing. *Automation in Construction, 91*, 182–192.

Lu, J., Mao, Z., Wang, M., & Hu, L. (2015). Goodbye maps, hello apps? Exploring the influential determinants of travel app adoption. *Current Issues in Tourism, 18*(11), 1059–1079.

Matteucci, X., & Gnoth, J. (2017). Elaborating on grounded theory in tourism research. *Annals of Tourism Research, 65*, 49–59.

Ministry of Culture and Tourism. (2020). 关于发布*2020*年度文化和旅游信息化发展典型案例名单的通知 [Notice on releaseing representative case list in cultural and tourism Informationization development in 2020]. Ministry of Culture and Tourism of the People's Republic of China. Retrieved from http://zwgk.mct.gov.cn/zfxxgkml/kjjy/202012/t20201206_918680.html.

Modaresnezhad, M., Iyer, L., Palvia, P., & Taras, V. (2020). Information technology (it) enabled crowdsourcing: A conceptual framework. *Information Processing & Management, 57*(2), 102135.

Prpić, J., Taeihagh, A., & Melton, J. (2015). The fundamentals of policy crowdsourcing". *Policy & Internet, 7*(3), 340–361.

Taeihagh, A. (2017). Crowdsourcing, sharing economies and development. *Journal of Developing Societies, 33*(2), 191–222.

TrendsHunter. (2014). *20 Examples of crowdsourced tourism innovations*. Retrieved from https://www.trendhunter.com/slideshow/crowdsourced-tourism-innovations.

Zheng, F., Tao, R., Maier, H. R., See, L., Savic, D., Zhang, T., Chen, Q., Assumpção, T. H., Yang, P., Heidari, B., Rieckermann, J., Minsker, B., Bi, W., Cai, X., Solomatine, D., & Popescu, I. (2018). Crowdsourcing methods for data collection in geophysics: State of the art, issues, and future directions, 1985 *Reviews of Geophysics, 56*(4), 698–740.

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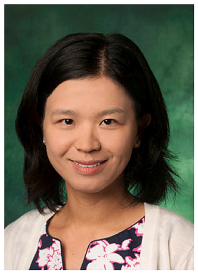

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