

RGC Ref. No.: UGC/FDS24/B02/18 <hr/> (please insert ref. above)
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**RESEARCH GRANTS COUNCIL  
COMPETITIVE RESEARCH FUNDING SCHEMES FOR  
THE LOCAL SELF-FINANCING DEGREE SECTOR**

**FACULTY DEVELOPMENT SCHEME (FDS)**

**Completion Report**  
(for completed projects only)

<p><b><u>Submission Deadlines:</u></b></p> <ol style="list-style-type: none"> <li>1. Auditor's report with unspent balance, if any: within <b>six</b> months of the approved project completion date.</li> <li>2. Completion report: within <b>12</b> months of the approved project completion date.</li> </ol>
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**Part A: The Project and Investigator(s)**

**1. Project Title**

Smart Tourism and Destination Image: Moderating Effect of Theory of Mind (ToM)

(香港智能旅遊與目的地形象：心智理論的調節效果)

**2. Investigator(s) and Academic Department(s) / Unit(s) Involved**

<b>Research Team</b>	<b>Name / Post</b>	<b>Unit / Department / Institution</b>
Principal Investigator	Dr TAVITIYAMAN Pimtong / Senior Lecturer	PolyU SPEED
Co-Investigator(s)	Prof. QU Hailin / Regents Professor and William E. Davis Distinguished Chair	School of Hospitality and Tourism Management College of Human Sciences Oklahoma State University Oklahoma, USA
Co-Investigator(s)	Dr TSANG Lancy Wing-sze / Lecturer	College of Professional and Continuing Education
Co-Investigator(s)	Dr LAM Chin-wah (Rachel) / Lecturer	College of Professional and Continuing Education

### 3. Project Duration

	<b>Original</b>	<b>Revised</b>	<b>Date of RGC / Institution Approval (must be quoted)</b>
Project Start Date	01/01/2019	01/01/2019	-
Project Completion Date	30/06/2020	31/12/2020	09/03/2020
Duration ( <i>in month</i> )	18	24	09/03/2020
Deadline for Submission of Completion Report	30/06/2021	31/12/2021	09/03/2020

## **Part B: The Final Report**

### **5. Project Objectives**

#### 5.1 Objectives as per original application

- (1) To explore tourists' behaviors on smart tourism application;
- (2) To evaluate the moderating effect of cognitive and affective components on the relationships between tourists' behaviors on smart tourism application and overall destination image;
- (3) To analyze the effect of tourists' overall destination image and behavioral intention;
- (4) To investigate the interaction effect of tourists' psychological characteristics (frequency of visitation and smart tourism application usage) on the relationships between overall destination image and behavioral intention; and
- (5) To provide managerial recommendations to the relevant stakeholders for future smart destination development.

#### 5.2 Revised objectives

Date of approval from the RGC: N/A

Reasons for the change:

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- 1.
- 2.
3. ....

#### 5.3 Realisation of the objectives

*(Maximum 1 page; please state how and to what extent the project objectives have been achieved; give reasons for under-achievements and outline attempts to overcome problems, if any)*

N/A

#### 5.4 Summary of objectives addressed to date

<b>Objectives</b> <i>(as per 5.1/5.2 above)</i>	<b>Addressed</b> <i>(please tick)</i>	<b>Percentage Achieved</b> <i>(please estimate)</i>
(1) To explore tourists' behaviors on smart tourism application;	✓	100%
(2) To evaluate the moderating effect of cognitive and affective components on the relationships between tourists' behaviors on smart tourism application and overall destination image;	✓	100%
(3) To analyze the effect of tourists' overall destination image and behavioral intention;	✓	100%
(4) To investigate the interaction effect of tourists' psychological characteristics (frequency of visitation and smart tourism application usage) on the relationships between overall destination image and behavioral intention; and	✓	100%
(5) To provide managerial recommendations to the relevant stakeholders for future smart destination development.	✓	100%

## 6. Research Outcome

### 6.1 Major findings and research outcome

*(Maximum 1 page; please make reference to Part C where necessary)*

The deliverables of two peer-reviewed journal articles and two international conference papers are contributed from this FDS proposal. One peer-reviewed journal article is under review. The details of reference are as follows:

- Tavitiyaman, P.,** Qu, H., Tsang, W.S.L., & Lam, C.W.R. (2021). Smart tourism application and destination image: Mediating role of Theory of Mind (ToM). *Asia Pacific Journal of Tourism Research*. DOI: 10.1080/10941665.2021.1928252 (SJR – Q1) (**Attachment 1**)
- Tavitiyaman, P.,** Qu, H., Tsang, W.S.L., & Lam, C.W.R. (2021). The influence of smart tourism applications on destination image and behavioral intention: The moderating role of information search behavior. *Journal of Hospitality and Tourism Management*, 46, 476-487. DOI: 10.1016/j.jhtm.2021.02.003 (SJR – Q1) (**Attachment 2**)
- Tavitiyaman, P.,** Qu, H., Tsang, L.W.S., & Lam, R.C.W. (2020). *A cross-cultural study of tourists' perceptions on smart tourism applications and information search behavior*. APacCHRIE 2020, 27-28 October 2020, Hong Kong. (**Attachment 3**)
- Tavitiyaman, P.,** Qu, H., Tsang, L.W.S., & Lam, R.C.W. (2019). *Influence of smart tourism management on destination image and behavioral intention*. Tourism and Retail Management (TRMC) 2019 Conference, 27-28 October 2019, Tianjin China. *Best Paper Award Recipient*. (**Attachment 4**)
- Tavitiyaman, P.,** Zhang, X., & Qu, H. (2021). Impact of smart tourism technologies on overall

destination image through co-creation experience: Interaction between cultural difference and duration of information search. *International Journal of Tourism Research*. (under review) (Attachment 5)

Two journal articles have been published in Q1 journal ranking cited by Scimago Journal & Country Rank (SJR). One journal article is under review (Q1 journal ranking as well). Meanwhile, one of the two conference papers has been awarded as Best Paper Recipient.

Major findings of this FDS project are explained below.

**On Paper 1**, this study aims to explore the mediating role of theory of mind (ToM) on smart tourism application, destination image and behavioural intention. Using a sample of international tourists in Hong Kong during July–September 2019, structural equation modelling was applied to the sample to investigate the causal relationship between the proposed and alternative models. From the result of the proposed model, ToM plays a mediating role in enhancing the image of a smart destination and consequently improves tourists' behavioural intention. The alternative model shows the direct effects of smart tourism application on destination image.

**On Paper 2**, this study aims to investigate tourist perceptions on the smart tourism application (STA) attributes, which can later influence their perceived images of a destination and enhance their future behavioral intention toward the destination. Furthermore, it investigates the moderating effect of information search on the relationship between STA attributes and perceived destination image and between perceived destination image and behavioral intention. The results show that among six smart tourism application (STA) attributes, the attributes of smart information systems, smart sightseeing, e-commerce systems, and smart forecasting had a positive influence on tourists' perceived destination image. Consequently, tourists' perceived destination image positively enhances their behavioral intention. Furthermore, regarding the effect of information search moderation, the less time spent on information search, the more the likelihood of a relationship between STAs and perceived destination image increases. However, the more time tourists spent on information search, the more the relationship between perceived destination image and behavioral intention increases.

**On Paper 3**, this paper aims to compare tourists' perception toward smart tourism applications (STAs) and behavioral intention in terms of region of residence and income level and assess the association between the tourists' information search and region of residence. A total of 6 out of 14 STAs and 3 out of 5 behavioral intention items are statistically significant based on the region of residence and income level. Moreover, an association was observed between the tourists' information search behavior and region of residence.

**On Paper 4**, this study aims to analyse the influence of smart tourism applications on tourists' destination image and behavioural intention. Results showed that the effectiveness of smart tourism applications on information management, safety and forecast positively influences destination image. Consequently, destination image positively enhances tourists' behavioural intention. However, smart sightseeing has no impact on destination image. The implications will be further discussed.

**On Paper 5**, this research aims to explore tourists' perception on the relationships among smart tourism technologies (STTs), co-creation experience, and overall image of smart destination. It further examines the interaction between cultural difference (Asian and Western regions) and duration of information search (hours spent on Internet search) on the STTs. We recruited 1,469 international tourists who visited Hong Kong to participate in the self-administered questionnaire. Results showed that STTs of smart sightseeing, smart traffic, and smart e-commerce positively enhanced tourists' co-creation experience and consequently improved their overall destination image. However, smart forecasting technology was insignificant on co-creation experience. The

interaction of cultural difference (Asian tourists had more positive perception than Western tourists) and duration of information search (duration of 2–4 hour information search increased perception than shorter or longer durations) was significantly found on e-tour map and mobile payment attributes. Discussions on theoretical development and implications were addressed.

## 6.2 Potential for further development of the research and the proposed course of action (*Maximum half a page*)

Future research development can focus on the following aspects.

1. Smart tourism destination can be further extended to the Greater Bay Area of China. Many tourists from Mainland China and Macao can visit Hong Kong more frequently. Understanding tourist behaviour would help Hong Kong to promote its destination more effectively.
2. Investigating the details of tourists' smart device usage and behaviour would allow the smart destinations to provide acceptable technological functions and tools in terms of WiFi access and data availability of travel information. This condition could enhance tourist satisfaction and perceived positive image of the destination.
3. This study focused only on tourist groups as the target stakeholders. Future studies can explore the perceptions of other tourism stakeholders, such as governments, tourism policymakers and tourism providers. The inclusion of these groups would broaden the scope of the study to a macrolevel perspective.
4. Future studies can explore other criteria to visit future smart tourism destinations. The effect of smart tourism on specific supplier performance, such as hotels, restaurants and theme parks, is another area for further study.

## 7. Layman's Summary

(*Describe in layman's language the nature, significance and value of the research project, in no more than 200 words*)

The significance of this research project presents the causal relationships among smart tourism applications, ToM, destination image and behavioural intention. The most important smart tourism applications are intelligent traffic systems, e-commerce systems, smart safety and smart sightseeing; they positively enhance cognitive evaluation. Only smart forecast negatively enhances cognitive evaluation. ToM, which indicates cognitive and affective evaluation, mediates the relationship between smart tourism applications and destination image. Destination image enhances the behavioural intention of tourists. ToM represents the beliefs and attitudes of tourists after they experience smart tourism applications. Tourists feel confident and rely on smart tourism applications. Thus, cognitive beliefs and attitudes can positively increase their overall perception of destination and their behavioural intention.

The study also presents the theoretical model development by introducing the direct relationship between smart tourism applications and destination image. The implications of smart tourism applications are not generalisable from one destination to other destinations (Mehraliyev et al., 2020). In the selected smart tourism destination (e.g., Hong Kong), the results show a partial relationship between e-commerce systems and intelligent traffic on destination image. Promoting the image of a destination as a smart tourism destination requires a high standard of e-commerce and intelligent traffic systems.

**Part C: Research Output****8. Peer-Reviewed Journal Publication(s) Arising Directly From This Research Project**

(Please attach a copy of the publication and/or the letter of acceptance if not yet submitted in the previous progress report(s). All listed publications must acknowledge RGC's funding support by quoting the specific grant reference.)

The Latest Status of Publications				Author(s) (denote the corresponding author with an asterisk*)	Title and Journal / Book (with the volume, pages and other necessary publishing details specified)	Submitted to RGC (indicate the year ending of the relevant progress report)	Attached to this Report (Yes or No)	Acknowledged the Support of RGC (Yes or No)	Accessible from the Institutional Repository (Yes or No)
Year of Publication	Year of Acceptance (For paper accepted but not yet published)	Under Review	Under Preparation (optional)						
2021	-	-	-	Pimtong Tavitiyaman*, Hailin Qu, Wing-sze Lancy Tsang, and Chin-wah Rachel Lam	The influence of smart tourism applications on perceived destination image and behavioral intention: The moderating role of information search behavior, Journal of Hospitality and Tourism Management	2020	Yes (Attachment 2)	Yes	Yes
2021	-	-	-	Pimtong Tavitiyaman*, Hailin Qu, Wing-sze Lancy Tsang, and Chin-wah Rachel Lam	Smart tourism applications and destination image: Mediating role of Theory of Mind (ToM)	2020	Yes (Attachment 1)	Yes	Yes
2021	-	-	Yes	Pimtong Tavitiyaman,* Xinyan Zhang, and Hailin Qu	Impact of smart tourism technologies on overall destination image through co-creation experience: Interaction between cultural difference and duration of information search	2020	Yes (Attachment 5)	Yes	No

### 9. Recognized International Conference(s) In Which Paper(s) Related To This Research Project Was / Were Delivered

*(Please attach a copy of each conference abstract)*

Month / Year / Place	Title	Conference Name	Submitted to RGC <i>(indicate the year ending of the relevant progress report)</i>	Attached to this Report <i>(Yes or No)</i>	Acknowledged the Support of RGC <i>(Yes or No)</i>	Accessible from the Institutional Repository <i>(Yes or No)</i>
Oct 2020/The Hong Kong Polytechnic University	A cross-cultural study of tourists' perceptions on smart tourism applications and information search behavior	18 <sup>th</sup> APacCHRIE 2020, 27-28 October 2020	2020	Yes <i>(Attachment 3)</i>	Yes	Yes
Oct 2019/Nankai University, Tianjin China	Influence of smart tourism management on destination image and behavioural intention	International Conference on Tourism and Retail Management 2019, 27-28 October 2019	2019	Yes <i>(Attachment 4)</i>	Yes	Yes

### 10. Whether Research Experience And New Knowledge Has Been Transferred / Has Contributed To Teaching And Learning

*(Please elaborate)*

- The theoretical development of ToM, which is originally in the area of psychology, has been integrated in the area of smart tourism from the tourists' perspective. The results show that the application of these concepts is feasible and can be tested in sample groups of international tourists.

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- The concept of smart tourism has been incorporated with upcoming research projects in smart city and development in the Greater Bay Area of China.

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- The outcomes and key findings have been taught to students in major hospitality and tourism management, such as in BHMS4644 Integrated Study (Hospitality and Tourism Management).

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- Three undergraduate students were involved in this research project as research assistants. They helped develop the online survey link, recruit the targeted samples, collect data and distribute souvenirs with international tourists.

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### 11. Student(s) Trained

*(Please attach a copy of the title page of the thesis)*

Name	Degree Registered for	Date of Registration	Date of Thesis Submission / Graduation
N/A			



**12. Other Impact**

(e.g. award of patents or prizes, collaboration with other research institutions, technology transfer, teaching enhancement, etc.)

- The conference paper received the 2019 TRMC Best Paper Award. It is sponsored by Journal of Quality Assurance in Hospitality and Tourism at the International Conference on Tourism and Retail Service Management (TRMC) on 27–28 October 2019 in Tianjin China. Amongst 69 conference papers with stand-up presentations, five papers were nominated for the 2019 TRMC Best Paper Award. Our research paper entitled “Influence of Smart Tourism Management on Destination Image and Behavioural Intention” was selected by the Conference Committee as one of the best conference papers. **(Attachment 3)**

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- Research collaboration with another institution, Oklahoma State University, was established. Knowledge sharing and transfer among PI and Co-Is was developed, including instrument development, data collection procedure, data analysis techniques and a journal paper publication.

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- The outcomes and key findings have been shared and exchanged in various educational platforms, such as international conference presentations (two conference papers), journal publications (two Q1 journal papers), and one journal paper under review.

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**13. Statistics on Research Outputs**

No. of outputs arising directly from this research project	Peer-reviewed Journal Publications	Conference Papers	Scholarly Books, Monographs and Chapters	Patents Awarded	Other Research Outputs (please specify)	
					Type	No.
	2 (published) 1 (under review)	2	-	-	-	-

**14. Public Access Of Completion Report**

(Please specify the information, if any, that cannot be provided for public access and give the reasons.)

Information that Cannot Be Provided for Public Access	Reasons
N/A	N/A