研究設計書

疫情時代下AR/VR於觀光餐旅應用教育

Exploring the factors influencing the adoption and usage of Augmented Reality and Virtual Reality applications in tourism education within the context of COVID-19 pandemic

吳智鴻

Chih-Hung Wu

國立臺中教育大學 數位內容科技學系

chwu@mail.ntcu.edu.tw
Website: chwu.weebly.com
Department of Digital Content and Technology NTCU

Structure of Abstract 摘要結構

- 摘要有規定的結構，如下:
  - 研究問題/背景
  - 研究目的
  - 研究方法
  - 結論
  - 貢獻或建議

參考範例

The exploration of continuous learning intention in STEAM education through attitude, motivation, and cognitive load

Chih-Hung Wu[1], Chih-Hsing Liu[2,3] and Yueh-Min Huang[4*]

Abstract

Background: This study proposes a learning cycle and a comprehensive research framework that integrates Bloom's taxonomy: the cognitive domain (cognitive load), affective domain (attitude and motivation) and psychomotor domain (implementation of science, technology, engineering, arts, and math [STEAM] activities) to explore the relationship between these learning domains and learning intention. The proposed innovative mediated-moderation model includes second-order factors derived from the technology acceptance model (TAM) (perceived usefulness, perceived ease of use, and perceived enjoyment), the attention, relevance, confidence and satisfaction (ARCS) model, and cognitive load (mental load and mental effort) to explain the continuous learning intention of STEAM education.

Results: A teaching material was designed for the STEAM activity, and an empirical experiment was subsequently conducted. The empirical experiment of STEAM activities with our design teaching material (micro:bit with artificial intelligence-based concept) was conducted at a university and an elementary school; a total of 145 questionnaire survey data were collected after the activities. University student participants were 20–24 years old and the elementary school student participants were at the K5–K6 level. The results showed that perceived usability directly influenced learning intention and strengthened the relationship between learning attitudes and intention. The ARCS plays a critical moderating role that positively influenced perceived usability and strengthened its effects on learning attitudes. Regarding the mediating effects, cognitive load negatively influenced perceived usability.

Conclusions: The findings of this study revealed that critical factors affect students' learning attitudes and intentions regarding STEAM education. The theoretical and educational implications of these findings were proposed to future instructors.

Highlights

- The STEAM learning cycle was proposed to describe four phases for successful STEAM learning.
- Affect factors of learning intention in STEAM education were investigated.
- Motivation factors positively influences perceived usability and learning attitude.
- Cognitive load has a significant negative effects influences perceived usability.
- Perceived usability directly influences learning intention and strengthens the relationship between attitudes and intention.

Exploring the factors influencing the adoption and usage of Augmented Reality and Virtual Reality applications in tourism education within the context of COVID-19 pandemic

Shiwei Shen, Kexin Xu, Marios Sotiriadis[*], Yuejiao Wang

Ningbo University-University of Angers Joint Institute at Ningbo, Ningbo University, China

VR360虛擬導覽提升旅遊意願研究

- 研究背景/問題#1:
  - Augmented Reality and Virtual Reality are regarded as smart and digital technologies that made their impact in many industries and settings. On the other hand, the ongoing pandemic of COVID19 raises a series of issues and challenges for the tourism education, one of the main being the shift from the conventional/face-to-face to digital/hybrid learning forms and tools.
  - 增強現實和虛擬現實被視為在許多行業和設置中產生影響的智能和數字技術。另一方面， COVID19 的持續流行給旅遊業教育帶來了一系列問題和挑戰，其中一個主要問題是從傳統/面對面到數字/混合學習形式和工具的轉變。

VR360虛擬導覽提升旅遊意願研究

- 研究背景/問題#2:
  - The adoption and usage of these digital technologies raise a series of challenges for all stakeholders involved.
  - 這些數位技術的採用和使用為所有涉及的利益相關者帶來了一系列挑戰。
  - The research question and study's aim were the influencing factors that determine the acceptance of Augmented Reality and Virtual Reality applications in the tertiary tourism education within the context of current pandemic.
  - 本研究的研究問題和研究目的是在當前流行病的背景下，確定決定三級旅遊業教育中增強現實和虛擬現實應用的接受度的影響因素。

找出研究目的

- 研究目的:

A B S T R A C T

Augmented Reality and Virtual Reality are regarded as smart and digital technologies that made their impact in many industries and settings. On the other hand, the ongoing pandemic of COVID-19 raises a series of issues and challenges for the tourism education, one of the main being the shift from the conventional/face-to-face to digital/hybrid learning forms and tools. The adoption and usage of these digital technologies raise a series of challenges for all stakeholders involved. The research question and study's aim were the influencing factors that determine the acceptance of Augmented Reality and Virtual Reality applications in the tertiary tourism education within the context of current pandemic. To address this aim, the study was drawn on the theoretical basis of Technology Acceptance Model (TAM). It takes a students' perspective to suggest a research model that was empirically investigated within the Chinese context (tourism departments in Chinese universities). The sample population consisted of 604 Chinese students and data was collected during February 2021. The data were analyzed using PLS-SEM. Findings indicated that perceived usefulness, hedonic motivation and price value are important predicting factors for Chinese students' adoption and use of these applications. These findings contribute to the extension of the TAM theory and the effective implementation of digital technologies in university settings. The study is completed by summarizing theoretical and practical implications of findings.

找出研究目的 (解答)

- 研究目的:
- 找出影響接受AR/VR科技，應用在觀光教育的影響因素

- 理論:
  - Technology Acceptance Model
  - 研究構面:
    - Perceived usefulness, hedonic
    - Motivation, price value
- 研究方法
  - 問卷回收法，回收604份(中文問卷)
  - 統計分析: PLS-SEM

ABSTRACT

Augmented Reality and Virtual Reality are regarded as smart and digital technologies that made their impact in many industries and settings. On the other hand, the ongoing pandemic of COVID-19 raises a series of issues and challenges for the tourism education, one of the main being the shift from the conventional/face-to-face to digital/hybrid learning forms and tools. The adoption and usage of these digital technologies raise a series of challenges for all stakeholders involved. The research question and study's aim were the influencing factors that determine the acceptance of Augmented Reality and Virtual Reality applications in the tertiary tourism education within the context of current pandemic. To address this aim, the study was drawn on the theoretical basis of Technology Acceptance Model (TAM). It takes a students' perspective to suggest a research model that was empirically investigated within the Chinese context (tourism departments in Chinese universities). The sample population consisted of 604 Chinese students and data was collected during February 2021. The data were analyzed using PLS-SEM. Findings indicated that perceived usefulness, hedonic motivation and price value are important predicting factors for Chinese students' adoption and use of these applications. These findings contribute to the extension of the TAM theory and the effective implementation of digital technologies in university settings. The study is completed by summarizing theoretical and practical implications of findings.
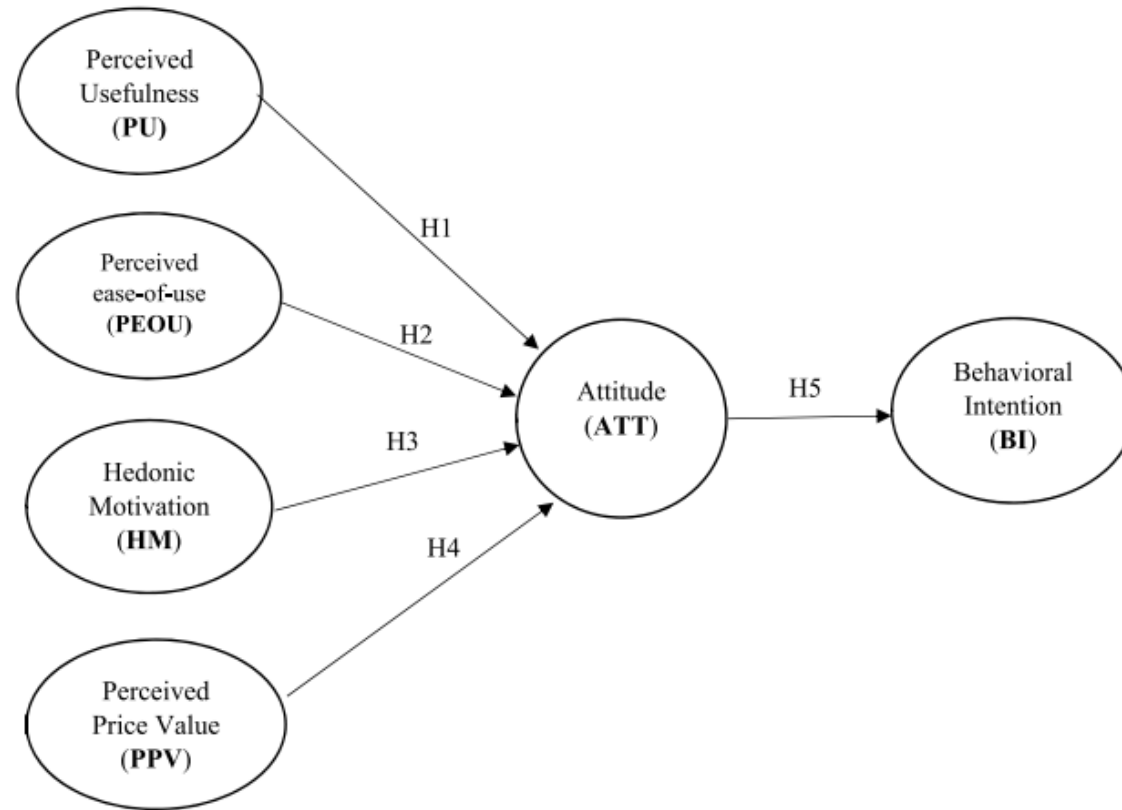
研究架構

Fig. 1. Research model.

問卷

Table 1
Questionnaire - Constructs and measurement items.

Constructs	Items
Perceived usefulness (PU)	PU1: AR/VR applications are useful in tertiary tourism education
	PU2: AR/VR applications enhance the quality of my learning
	PU3: AR/VR applications enable me to accomplish tasks more quickly
	PU4: Using AR/VR applications enhance my learning effectiveness
Perceived ease of use (PEOU)	PEOU1: Learning to use/operate AR/VR applications would be easy to me
	PEOU2: It is easy for me to become skillful at using AR/VR applications
	PEOU3: I find that the use of AR/VR applications is not complicated/does not require a lot of mental effort
	PEOU4: My interaction with AR/VR applications is clear and understandable
Hedonic motivation (HM)	HM1: Using AR/VR applications in learning is fun
	HM2: Using AR/VR applications in learning is enjoyable
	HM3: Using AR/VR applications in learning is very entertaining
Perceived Price Value (PPV)	PPV1: AR/VR applications could be beneficial for me compared to the needed efforts.
	PPV2: AR/VR applications should be worthwhile for me compared to the requested sacrifice.
	PPV3: Overall, AR/VR applications are of good value
Attitude to AR/VR applications (ATT)	ATT1: I like the idea of using AR/VR applications in my studies/learning
	ATT2: AR/VR applications make my learning more interesting
	ATT3: I like learning with AR/VR applications
	ATT4: My general opinion regarding AR/VR applications is positive
Behavioral intention (BI) to use AR/VR applications	BI1: I intend to use AR/VR applications for my studies in the future
	BI2: I predict I would use AR/VR applications for my learning experiences
	BI3: I plan to use AR/VR applications frequently

問卷調查程序

- 紙本: 自己大學中，中國的大學生
- Online問卷: 提供給其他地區的
- Step1. 問卷設計成英文與中文
- Step2. Pilot test, 10個學生(觀光餐旅專業)填寫，檢視是否清楚與合適。
- Step3. 研究團隊搜尋合適的AR/VR影片。剪輯這些影片於16mins。
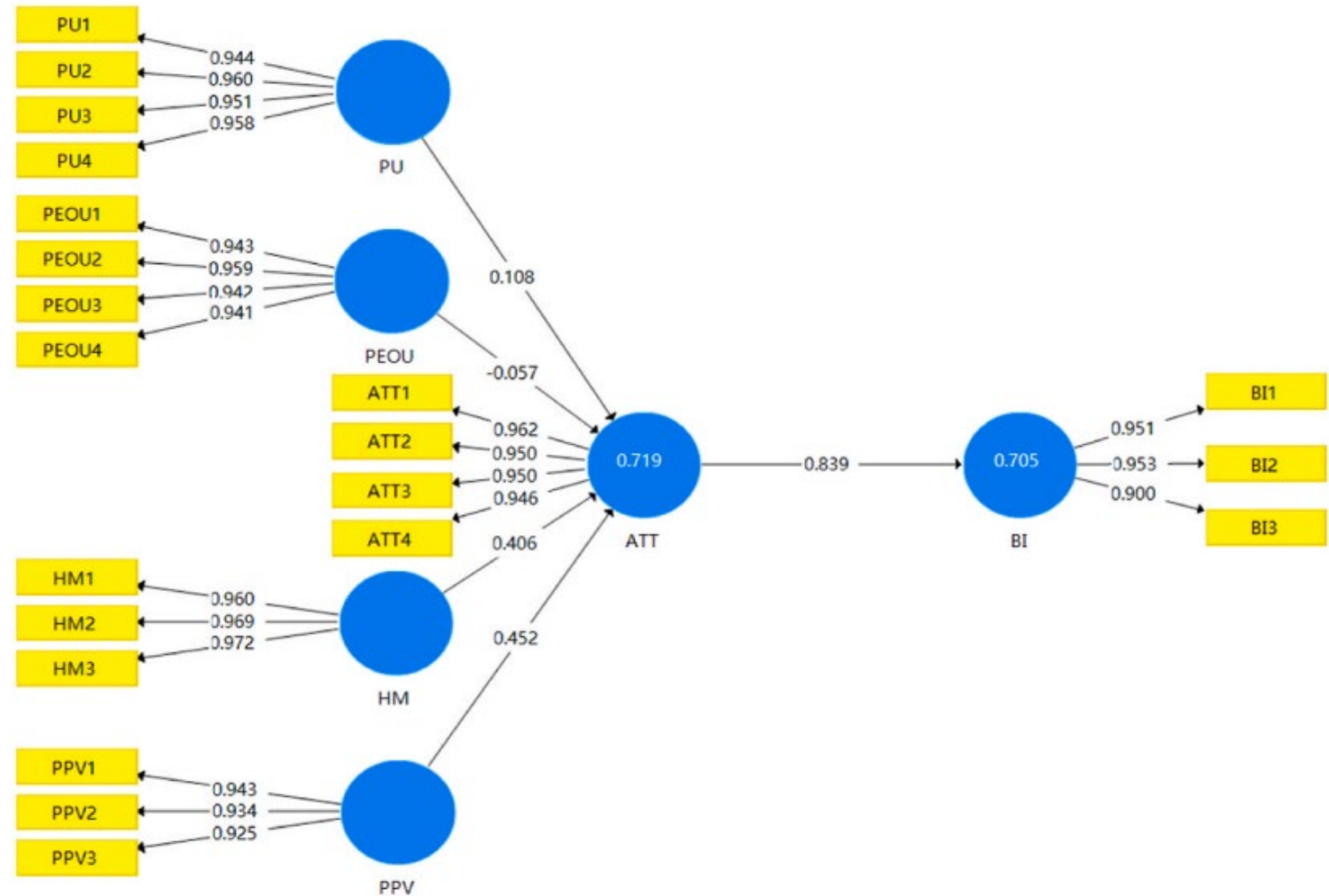- Step4. 給學生觀看這些影片。然後進行簡短的討論。
- Step5. 給學生填寫。總共花45分鐘。

研究結果

Fig. 2. Structural model with results.

參考文獻

- Shiwei Shen, Kexin Xu, Marios Sotiriadis, Yuejiao Wang,

- Exploring the factors influencing the adoption and usage of Augmented Reality and Virtual Reality applications in tourism education within the context of COVID-19 pandemic,

- Journal of Hospitality, Leisure, Sport & Tourism Education,

- Volume 30,

- 2022,

- 100373,

- ISSN 1473-8376,

- https://doi.org/10.1016/j.jhlste.2022.100373.

- Keywords: Tourism and hospitality education; Augmented reality; Virtual reality; Extended technology acceptance model; China