Sustainable and ICT-Enabled Development in Developing Areas: An E-Heritage E-Commerce Service for Handicraft Marketing

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Abstract. Human-induced threats serve as potential hazards to cultural heritage assets, especially in developing areas where the local community, in general, is a deprived class. Sustainable tourism development is acknowledged as an economic activity to ensure careful management of assets along with local community empowerment and participation. As such, ICT-enabled development is applied in rural development projects to promote sustainable rural livelihood, but success is still limited due to a lack of community involvement and sharing in the economic gains of tourism. With this perspective in mind, the present study focuses on emerging marketing models (e-commerce) that can provide new business ventures for local communities by identifying critical online marketing elements driven by local residents.

1. Introduction
A large number of cultural heritage assets around the world are in danger from human-induced threats. Neglect, illegal trading of cultural property, theft, ethnic and religious conflicts, pollution, disappearances, fires, and ignorance all serve as potential hazards to heritage assets [1-4]. Some human-induced hazards include the deterioration of the two 5th century Buddha statues in Bamiyan [5], the threat to the Taj Mahal posed by an oil refinery in India three decades ago [6], the neglect of the Buddhist Temple of Borobudur in Java that was rediscovered in 1814 under volcanic ash [7] and the Buddhist ruins in Takht-i-bahi in Pakistan [8].

Sustainable tourism development is acknowledged as an economic activity that ensures careful management of the use of inherited environmental and cultural heritage assets for preservation and tourism development [9, 10]. Because of geographic expansion and the labour-intensive nature of the tourism industry, there has been an increase in economic growth and a reduction in poverty in the developing world [11]. However, the developing world’s share of international tourists is smaller in size and population when it comes to heritage tourism [12]. Heritage tourism is a subset of tourism that is utilized to increase regional development in rural areas [13, 14]. Heritage tourism entails places holding tangible and intangible features perceived by visitors [15]. Most heritage attractions are sponsored by elite groups or governmental bodies, and its representatives impose their own agendas and plans without involving local residents. It seems that local residents are entirely ignored in sustainable development processes, thus they become a deprived class and remain disempowered. Therefore, interpretation of heritage attractions should not be aimed mainly at visitors’ motivations; it should delivered be more strongly to invite local residents [16].
Previous studies have emphasised local community empowerment through ICT-enabled development (e.g. [17], [26], [19], [12], and [20]). These studies have shown that empowerment is a voluntary, collaborative, and distributive process in which power and resources are used to enhance individual and collective capacities for sustainable economic and social development. Lyons et al. argued that community empowerment depends on commitment to empowering individuals through education and training [18]. Most local residents are poor farmers, landless workers, low-level traders, and rural artisans who are socially and economically deprived. As such, lack of participation in decision-making, of sharing in economic gains, and of awareness, funding, skills, and management to accommodate growth of heritage tourism turn into hurdles for sustainable development processes [21]. ICT-enabled development has been applied in rural development projects to promote sustainable rural livelihood by alleviating poverty through entrepreneurial activities and market access, rural empowerment and participation, environmental sustainability, and community network establishment [22]. To date, developing countries have faced considerable environmental issues related to the loss of natural habitats and biodiversity and threats to cultural treasures [23, 2]. In this regard, studies have focused on the use of ICT and Internet facilities to handle these issues through more environmentally sustainable models of economic development and to evaluate emerging eco-friendly technologies, equipment, and applications for sustainable development. However, most ICT projects face implementation challenges, and, ultimately, the use of ICTs results in projects that are not sustainable for rural and developing areas.

ICT-enabled development is categorized into two approaches. The first approach is the top-down professional development approach that pushes for local residents to participate via outside development [24]. Government agencies, NGOs, and other social workers provide financial support, leadership services, and technical assistance to empower local residents, fund micro-level entrepreneurship, and make new business ventures. In spite of such huge investments and resources and considerable trust of external bodies involved in sustainable rural development and livelihood enhancement, success has been limited [25]. The reasons for this may be deficiency, instability, or improper usage of financial resources; inexperience of external actors; and the need for local actors who can utilise local communities’ skills for sustainable development. The second approach is community-driven development, whereby local residents drive their own development with full authorization and access to manage cultural and environmental assets without the feeling of being pushed into participation by external forces [26, 27]. This approach is more useful in terms of community participation because the top-down professional development approach, by not sharing economic gains, entirely ignores the readiness of local residents in the tourism management and development processes. However, the latter approach lacks the potential to create new business ventures and trade opportunities that generate net profits for the poor, covering economic, sociocultural, and sustainable environmental benefits rather than merely increasing revenue for businesses owned by third parties.

Most local residents are potential artisans and artisans who can reproduce antiques, such as cultural artefacts, paintings, costumes, and souvenirs that are significant, authentic cultural heritage assets [28-30]. Until now, the use of ICT-enabled development driven by local residents in antique reproduction has not been studied. With this perspective in mind, the present study focuses on emerging marketing models (e-commerce) that can provide new business ventures by identifying critical online marketing elements. For this purpose, this study first confirms an e-heritage e-commerce service for handicraft marketing using the Technology Acceptance Model (TAM), which was put forward by Davis [31]. The study concludes by suggesting a design for an e-heritage e-commerce ecosystem for handicraft marketing owned by local residents.

2. Research model
The objective of using TAM is to predict the probability that a new e-heritage e-commerce service for handicraft marketing will be adopted by participants who are potential customers (See figure 1). To determine the intention to accept the use of the service, two constructs, perceived usefulness and perceived ease of use, were used to predict whether the new service would be acceptable to potential customers. According to Davis et al. [32], intention is the degree to which a potential customer has
expressed a disposition to execute or not to execute a particular future behaviour. This behaviour is affected by two main factors: usefulness and ease of use. For usefulness, customers may attempt to get many benefits of the e-heritage e-commerce service as per their interest in handicraft products. For ease of use, which concerns gaining the defined benefits of e-heritage, customers are able to easily do tasks such as collecting information and descriptions about cultural objects and their historical significance, ordering cultural artefacts of their choices, and educating themselves about cultural heritage assets.

![Figure 1. TAM for e-heritage e-commerce service.](image)

According to this study, potential customers are those who find collecting/buying cultural objects over internet as useful and easy and who tend to accept the use of e-heritage e-commerce services for handicraft marketing. This suggests the applicability of using the TAM to predict the intention of potential customers to accept the e-heritage e-commerce service. This study seeks to answer the following question: How do perceived usefulness and perceived ease of use of e-heritage e-commerce services influence the intention of potential customers to accept their use?

3. Method

3.1. Questionnaire and constructs
The methodological guideline in this study was a quantitative approach specified to the TAM. The data used in this research was obtained through a standard questionnaire based on studies conducted by Davis [31] and Davis et al. [32]. The questionnaire was divided into three scales: perceived usefulness, perceived ease of use, and intention to accept the use. The majority of questions were adopted from previous research instruments (e.g. [33], [34], and [35]) with proven reliability and validity.

After modifying some questions, the reliability and validity of each construct of the research model (8 items for perceived usefulness, 4 items for intention to accept, and 8 items for perceived ease of use) was estimated by calculating Cronbach’s alpha (α). None of the items were excluded, as the value of α fluctuated from 0.713 to 0.768 in all constructs.

The questionnaire’s 20 items were measured on a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree).

3.2. Sample
A total of 67 internet users were contacted via email. From that group, 43 users were considered potential customers (27 male and 16 female; age range 24–36), as they showed interest in cultural heritage and cultural artefacts. Because e-heritage e-commerce services for handicraft marketing are a new phenomenon, it is relevant to investigate users’ intention to accept the use of the services.

3.3. Procedure and analysis
Based on current e-commerce principles, a dummy e-commerce store for handicraft products was developed. The products were taken from two rural areas of Pakistan: the Gandhara civilization in Taxila and the Indus Valley civilization in Harrapa and Mohenjo Darro. Both areas have historical significance and histories dating back to about 3300 BCE. As shown in figure 2, the store contains a total of 20 different products in seven categories.

![Main page of e-commerce store.](image)

**Figure 2.** Main page of e-commerce store.

As shown in figure 3, users had to review each product and its description for its historical significance. Subsequently, the users had to respond to the questionnaire.
Figure 3. Product description and reviews page.

A multiple linear regression analysis was used to test the model for two independent variables – perceived usefulness (PU) and perceived ease of use (PEU) – and one dependent variable: intention to accept use (IEES). The objective was to determine the degree to which participants’ readiness for online marketing benefits affected their acceptance of using an e-heritage e-commerce service for handicraft marketing.

4. Results and discussion
A multiple linear regression was performed to predict IEES for handicraft marketing based on PU and PEU. These variables’ statistically significantly predicted the intention to use an e-heritage e-commerce service for handicraft marketing, $F(2, 40) = 41.18$, $p<0.0005$, $R^2 = 0.673$ (See table 1). The model interpreted 67% variance in acceptance of an e-heritage e-commerce service for handicraft marketing.

Table 1. Multiple linear regression analysis results

|        | $R$ Square | $F$    | $Sig.$ |
|--------|------------|--------|--------|
|        | 0.673      | 41.18  | 0.000$^a$ |

a. Predictors: (Constant), PU, PEU
b. Dependent Variable: EES

In spite of the whole model’s significance, each variable was tested for significance. Depending on this test, the main question was supported, including PU and PEU (see table 2).

| Constructs | Coefficients | T value  | Sig. |
|------------|--------------|----------|------|
| PU         | 0.433        | 2.23     | 0.031|
| PEU        | 0.355        | 2.03     | 0.048|

Both PU and PEU were significant. PU explained 43% of the variance and PEU explained 35%. This meant that 43% of the variance was accounted for by perceived usefulness and 35% by perceived ease of use, indicating the intention to accept the use of an e-heritage e-commerce service for handicraft marketing.

Model Compute $EES = (.433*PU) + (.355*PEU) - .615$

The results confirmed the applicability of an e-heritage e-commerce service for handicraft marketing and explained the intention to accept use of one. The findings might be accredited to the nature of technological innovation in applying emerging marketing models in question. Because online handicraft marketing associated with cultural heritage assets is still new, there are currently not many customers, which might potentially explanation the inconsistencies. It cannot be argued that the potential customers are not aware of the presence of handicraft marketing, as all of the participants in this study showed interest in cultural heritage and cultural artefacts crafted by artificers. The findings showed that perceived usefulness was more influential in determining the use of an e-commerce service for handicraft marketing, thus it is crucial for designers in the field of sustainable development to design systems that are perceived to be more useful than easy to use.

5. Conclusions

It is obvious that a large number of cultural heritage assets around the world are potentially in danger from human-induced threats, especially in developing areas, because of local community disempowerment and deprived economic conditions. As such, sustainable development processes, including the sustainability of heritage assets, are seriously affected. Sustainable tourism development has been acknowledged as an economic activity that ensures careful management of heritage assets for tourism and community empowerment through ICT-enabled development. Studies have shown that the approach entails focusing on visitors’ attraction to heritage tourism and its promotion while ignoring local residents, especially in the economic gains of tourism. This has resulted in deprived conditions and disempowerment for local communities. It has been suggested that needs of local communities should be elicited to consider the basic social and economic activities and that notions of sustainability should consider whether ICT approaches support activities that benefit local residents.

The present study focused on community-driven development to create new business ventures that generate net profits and that may empower local residents through active participation in development and economic gains. With this perspective in mind, this study presented notions of existing emerging marketing models that can be used to highlight local communities’ skills in antique reproduction for new business ventures. It is widely known that local residents are potential artificers and artisans, so it suits them to bring forward their valuable skills through new, emerging markets. Thus, we developed an e-heritage e-commerce service for handicraft marketing by designing a website that contained cultural artefacts crafted by local artificers and artisans. Because the phenomenon is new, we used the TAM to confirm the intention of potential customers to accept its use. The findings showed the
applicability of an e-heritage e-commerce service for handicraft marketing by determining the intention to accept its use.

The findings suggested the design of a self-organizing e-heritage e-commerce ecosystem that demonstrates community-driven development. The concept of an ecosystem in this context can provide a basis to underline local communities’ skills and to reveal different roles, identifying internal actors in the community who can help create social and economic changes in developing areas that need sustainable development. In addition, such an ecosystem can provide a platform that gives rise to local residents who produce, supply, or distribute products that can be sold via e-heritage e-commerce services. In other words, local communities can easily participate in this type of service by constantly adapting the ecosystem. It can also be argued that an e-heritage e-commerce ecosystem for handicraft marketing could open participation of local communities by diversifying work opportunities. With these results, the study concluded by providing suggestions on how to utilize ICT-based community-driven development in developing areas with rich cultural assets by identifying new business ventures for deprived local residents.

Future research should continue to identify key actors that initiate, lead, and form the design of a self-organizing e-heritage e-commerce ecosystem. These actors may include internal actors in communities who identify and encourage craftsmen and local artisans, e-tailers and e-supply chain partners. These services need proper resources, support, and stakeholder engagement, thus institutional partners and sponsors should also be identified. Research should also continue under the assumption that such services can be sustainable and can foster sustainable heritage tourism development.

6. References

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