



The influence of national culture on the attitude towards mobile recommender systems



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ABSTRACT

This study aimed to identify factors that influence user attitudes towards mobile recommender systems and to examine how these factors interact with cultural values to affect attitudes towards this technology. Based on the theory of reasoned action, belief factors for mobile recommender systems are identified in three dimensions: functional, contextual, and social. Hypotheses explaining different impacts of cultural values on the factors affecting attitudes were also proposed. The research model was tested based on data collected in China, South Korea, and the United Kingdom. Findings indicate that functional and social factors have significant impacts on user attitudes towards mobile recommender systems. The relationships between belief factors and attitudes are moderated by two cultural values: collectivism and uncertainty avoidance. The theoretical and practical implications of applying theory of reasoned action and innovation diffusion theory to explain the adoption of new technologies in societies with different cultures are also discussed.

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1. Introduction

Forecasting the adoption of technology in different cultural contexts is pivotal for the success of any organization. As technology grows, presenting users with enhanced features, uncertainty exists as to how such changes will affect consumer attitudes towards these new systems. In particular, consumers with different values and lifestyles might evaluate new technological features differently and, therefore, develop different attitudes. Extant literature provides abundant evidence that culture influences technological usage [1–5]. However, while these studies emphasize the importance of culture in understanding technology adoption, previous studies have not made clear the effect culture has on user attitudes towards new technologies. The study presented in this paper sought to

reveal how cultural values and belief factors intervene in the developmental process relating to user attitudes towards mobile recommender systems (MRSs).

One group of scholars has argued that culture needs to be considered to fully understand how and why societies adopt new innovative technologies. Some scholars have noted that TAM, which was developed to explain the acceptance of systems in the USA, is not valid when applied to other cultures [5]. Herbig and Palumbo [3] argued that the diffusion of innovation was different in Japan and the USA because of the differences in cultural attributes between the two countries. Al-Gahtani et al. [1] found that the unified theory of acceptance and use of technology (UTAUT) [6], tested in North America, needed to be adjusted for Saudi Arabian culture, because the moderating effect of age and experience was negative in certain cause–effect relationships. Hwang [7] tested whether uncertainty avoidance, an important cultural variable, had a positive relationship with the perceived ease of use in enterprise resource planning (ERP).

Yet, in spite of these initial studies, how other factors differentially shape user attitudes towards new technologies in

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different cultural contexts has remained largely unexplored. For example, perceived usefulness and social influence are most widely referenced in the literature as important factors that affect user attitude. However, perceptions of new technology and interpreting social influence are both psychological processes in which individual's cultural values play a role [8]. It may be inferred that an individual who highly values the group norm could be easily affected by the opinions of others therefore social influence would play a more significant role in a culture in which group norms are highly respected. Identifying the moderating role of culture in user attitudes towards new technologies can thus help predict how new technologies will be received.

This paper aims to reveal the moderating role of culture in the relationships between belief factors and user attitude towards MRSs. User attitude is used in this paper for the following reasons. Firstly, user attitude is one of the important factors that decide the adoption of innovative technologies in multiple theoretical frameworks. Lucas [9] found that attitudes of systems staff towards a computer's potential predicted its use. Karahanna et al. [10] showed that cultural attitudes affected IT adoption and explored how this effect was modified over time.

Understanding how culture plays a role in shaping user attitude towards new technology has wider implications for multiple theoretical frameworks seeking to understand and explain the adoption of new technologies. Secondly, attitudes are one of the most widely studied areas in social psychological domains involving cross-cultural and organizational factors [11]. The adoption of new technologies is also a psychological process in which attitude plays a major role. Thus, the findings of this study are important in interpreting the findings of existing studies in a broader context, including organizational and psychological research disciplines. IT researchers are similarly interested in the relationship between culture and information technologies at the organizational and national levels [12]. Some studies have used attitude as a dependent variable and have shown the influences of diverse constructs influenced by national cultural values of culture on IT adoption and use [13–15].

Focusing on MRS as the target technology is timely, because it is a relatively new technology, and is experiencing gradual global expansion as access to diverse applications and content services become more important to current users of mobile devices. Unlike desktop or laptop computers, mobile devices have limited features for navigating the Internet, including small display, inconvenient keypad, and short battery life [16,17]. Thus, the provision of personalized services to mobile users, which reduces the need to navigate with mobile devices, has increased in importance.

This paper first discusses factors influencing user attitudes towards MRSs and then examines the moderating role of cultural values on these influencing factors. We address following research questions.

- (1) What features (belief factors) of MRSs are important to user attitudes towards the systems?
- (2) Do cultural differences affect the cause–effect relationships between the belief factors and attitude towards MRSs?

To examine the effects of cultural factors, we collect data from the UK, China, and South Korea. We anticipate that an examination of these overlooked factors will help academics

understand how personalized systems are accepted by mobile users, and will assist practitioners in strategically focusing resources to increase market share. This study also sheds light on effective methods for predicting the effects of emerging mobile technologies on social change.

This paper is organized as follows. Section 2 provides a review of existing studies on the acceptance of recommender and mobile data services, and the role of culture in that process. Section 3 presents acceptance factors for MRSs and hypotheses about the moderating role of cultures on acceptance factors. Section 4 details the method used to test the research model, and Section 5 presents results. Section 6 discusses the theoretical and practical implications of the findings, and Section 7 presents conclusions.

2. Conceptual background

2.1. Mobile recommender systems

Recommender systems provide recommendations to a user by a combined analysis of three factors: a profile of the user's preferences or history, profiles of other similar users, and/or an analysis of alternative recommended content [18–22]. MRSs are applications, or the features of applications, that provide personalized recommendations to mobile device users. MRSs can exploit two peculiar characteristics of mobile data services: location awareness and ubiquity [23]. The evolution and advancement of mobile computing have enabled location-based recommender systems [24] that differ from traditional online web recommendations. A key factor contributing to the complexity of MRSs, compared with that of other recommendation systems, is its interface design, given that the small screens of mobile devices render the presentation of sufficient information difficult, compared with the comparative ease of the presentation of such information via desktop or laptop computer [25]. Moreover, fewer input keys and less advanced browsers with limited functionality also render mobile information services less user friendly [26,27].

Fig. 1 presents an example of MRSs available on smart phones. “Appolicious” is a mobile app that provides app recommendations based on previous app purchases and use patterns already present on smart phones (Fig. 1-a). “Genius Playlist” creates music playlists with songs similar to the song used to originate the list (Fig. 1-b). “PrkL8” is a content discovery engine. Users can rate web pages suggested by PrkL8 by touching two buttons on the screen. Increased use of these buttons leads to better suggestions (Fig. 1-c). Many apps which are used on smart phones have recommendation features. These recommender systems can increase the duration of user visits to sites by providing novel and relevant suggestions [28–32]. Recommender systems are popular and widely used [33,34] by online stores such as Amazon.com and Netflix.com. When MRSs provide more proper recommendations, it affects user attitude positively.

2.2. Attitudes towards mobile data services and web-based recommender systems

Several theoretical frameworks have been used to explain the adoption and diffusion of new technologies in organizations and societies. The theory of reasoned action (TRA) [35]

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