Introducing a Framework to Develop a User Typology for the Visit NC Farms Mobile App

TTRA 2023 Extended Abstract

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Introduction

Agritourism (i.e., visiting a working farm for recreation or education) is an income diversification strategy for family farms to offset risk in uncertain agricultural markets (Barbieri & Mahoney, 2009; Nickerson et al., 2001). In addition to generating income by offering recreational services (e.g., corn maze) and educational services (e.g., farm tours), agritourism promotes local food consumption (Brune et al., 2021; Kline et al., 2016). Agritourism benefits rural communities as it is a food outlet, an employment source, and increases sales taxes stimulating local economies (Barbieri, 2013). In brief, promoting agritourism has the potential to advance socio-economic, environmental, and cultural dimensions of rural livelihoods, and society at large.

Three recent trends open unprecedented opportunities for agritourism to flourish. First, interest in visiting rural areas, outdoor recreation, and attractions within driving distance increased during the COVID-19 pandemic (Longwoods International & Miles Partnership, 2021). These trends favor activities and destinations that facilitate social distancing, such as agritourism. A second related trend instigated by the COVID-19 crisis is an increased interest in sourcing food from local suppliers and a desire for a greater engagement with local food systems (Ollove & Hamdi, 2021). For example, in North Carolina, online searches indicate an increased interest in produce boxes shortly after the COVID-19 crisis started (Schmidt et al., 2020). Finally, remote working trends have encouraged the population to move to small towns and rural areas (Fisher et al., 2020). These trends can greatly benefit rural businesses and the agritourism industry. Yet, for agritourism operators to take advantage of these opportunities, effective marketing, and information strategies are needed to support and facilitate farm visitors' interests and intentions to visit farms. Given that consumers' behavior will determine the economic viability of agritourism operations (Boys & Hughes, 2013), assessing innovative approaches to promote and facilitate farm visits can greatly advance the agritourism industry (McNeill & Hale, 2016).

Promoting Agritourism

Marketing strategies to motivate consumers' interest in agritourism and local food often entail providing information to consumers through websites (Jones et al., 2011), slogans (Sahakian & Wilhite, 2014), and social media (Bos & Owen, 2016). These strategies have mixed results in significantly promoting agritourism and local food consumption due to difficulties in ensuring the public notices and processes marketing messages, label meanings, and more importantly, guaranteeing a steady marketing presence while limiting costs (Heslop, 2007). Consequently, mobile apps have been called for to improve marketing efforts because of their ubiquity, user's familiarity with their functionality, and their potential to reach a wider population at a relatively low cost of implementation (Bos & Owen, 2016; Xu et al., 2011). Further, as demonstrated in other industries, mobile apps offer great potential to provide tailored marketing to target audiences (e.g., geolocated push notifications; Zaim et al., 2019).

Farmers increasingly use technology to communicate with consumers, providing information through websites and social media (Bos & Owen, 2016). Mobile apps present an unparalleled and underutilized opportunity to further market agritourism through a technology that is already widely used to influence consumer decision-making in other areas (Xu et al., 2011). Acknowledging all the potential benefits of marketing agritourism through mobile apps, several states have implemented apps, including Washington County Agritourism Guide, Colorado Farm Fresh, Florida Agritourism, and Agritourism in Mississippi. These apps seek to market farms by helping consumers discover farms with agritourism offerings and encourage farm visitation, nonetheless, there is limited research regarding the effectiveness of apps in achieving these goals.

Understanding agritourism mobile app users' characteristics (e.g., demographics, motivations, intentions) by developing a mobile user typology can contribute to mobile app functionality (Hyde, 2008). For example, some mobile app users with young children may be most interested in activities like pumpkin patches while visitors without children may be interested in visiting vineyards (Govindasamy & Kelley, 2014; Tew & Barbieri, 2012). Understanding who is using agritourism mobile apps and how they prefer to engage with an agritourism mobile app would help app developers in their marketing efforts. This user typology could also help the farmers participating in the app to better understand their audience and develop more targeted

agritourism offerings. Despite the proliferation of agritourism mobile apps, little research has been conducted about agritourism mobile apps users, their motivations for downloading the app, their experience with it, and how it may shape their intended and actual mobile app behaviors.

App user information helps understand visitor behavior, improve app user experience and can inform decisions about differentiated messaging that could enhance agritourism experiences (Amoretti et al., 2017). In this paper, we introduce the theoretical and methodological approach to develop a mobile user typology using the Visit NC Farms mobile app in North Carolina. Launched in 2018 by the North Carolina Department of Agriculture and Consumer Services (NCDA&CS), the Visit NC Farms mobile app has over 17,000 downloads and 10,000 active users. Thus, we will survey existing users to develop Visit NC Farms mobile app user typologies. In doing so, we will advance the knowledge of mobile apps as marketing tools to promote agritourism contributing to the knowledge of tourism apps in general.

User Typologies

Developing user typologies seeks to categorize users into distinct user types that describes the different ways in which individuals use technology, indicating a variable amounts of activity preferences, use frequency, and variety of use (Brandtzæg, 2010). Typologies split users into groupings corresponding to usual behavioral or characteristic patterns contributing to understanding diverse patterns of technology use (Barnes et al., 2007). User typologies have been developed involving technology such as internet usage (Barnes et al., 2007; Brandtzæg et al., 2011), social networking sites (Bulut & Doğan, 2017), and smart phone use (Elhai & Contractor, 2018; Hamka et al., 2014). As these different technologies can converge, (e.g., we can use a smart phone to browse the internet, the internet to go on social networking sites or mobile apps), these convergence suggests similarities in user typology across technologies which is usually based on frequency of use (Brandtzæg, 2010). Thus, user typologies usually entail categories related to use frequency. Brandtzæg, (2010) attempted to create a unified media user typology which resulted in eight categories: Nonusers, 2) sporadics, 3) debaters, 4) entertainment users, 5) socializers, 6) lurkers, 7) instrumental users, and 8) advanced users. These categories may help inform future research into mobile app user typologies.

Studies on mobile apps adoption usually focus on intention to adopt using established models such as the Technology Acceptance Model (TAM) (Davis, 1989) or the Unified Theory of

Acceptance and Use of Technology (UTAUT; (Venkatesh et al., 2003). These models tend to emphasize technology adoption and use incorporating individual characteristics as predictors of behavioral intention, which at the same predict mobile app use. With one notable exception (Singh & Thomas, 2020) this theory has not been used to develop mobile app user typology leading to scarce segmentation studies on mobile apps users.

Theoretical Approach: The Unified Theory of Acceptance and Use of Technology

Venkatesh et al., (2003) developed UTAUT by integrating several technology acceptance theories and approaches. UTAUT has four key constructs: 1) performance expectancy (i.e., the degree to which using a technology will provide benefits to consumers in performing certain activities); 2) effort expectancy (i.e., the ease associated with consumers' use of technology); 3) social influence (i.e., the extent to which consumers perceive that important others (e.g., family and friends believe they should use a particular technology); and 4) facilitating conditions (i.e., consumers' perceptions of the resources and support available to perform a behavior) that influence behavioral intention to use a technology.

Venkatesh et al., (2012) later expanded UTAUT to improve its suitability to the consumer technology acceptance by incorporating the constructs hedonic motivation (i.e., the fun or pleasure derived from using a technology), price value (i.e., consumers' cognitive tradeoff between the perceived benefits of the applications and the monetary cost for using them), and habit (i.e., a settled or regular behavior). For our research, price value does not apply because the mobile app is free to use. The construct habit was also removed for this research because the agritourism activities are highly seasonal which would make it difficult for the mobile app to be used habitually. Hence, from this expansion we only include hedonic motivation because of the recreational nature of agritourism. Additionally, individual difference variables, namely age, gender are theorized to moderate various UTAUT relationships (Venkatesh et al., 2003). Thus, we depart from UTAUT and hedonic motivation to develop a user typology for the Visit NC Farms mobile app.

Methodology

Instrument Development

The survey instrument will capture users' socio-demographic characteristics (e.g., age, gender, race, education), and departs from the constructs of the extended version of UTAUT (Table 1).

Table 1: Constructs, Survey Items, Anchors and Source

Survey Items	Source and Anchors
Performance Expectancy	Likert-Scale (Not at all - Extremely)
The Visit NC Farms mobile app is…	
… helpful to find farms to visit	Source: Venkatesh et al (2003)
Effort Expectancy	Likert-Scale (Not at all - Extremely)
The Visit NC Farms mobile app is…	
Easy *to use*	Source: Venkatesh et al (2003)
Social Influence	Likert-Scale (Not at all - Extremely)
People who are important to me (e.g., family and friends)…	
Use the Visit NC Farms app	Source: Venkatesh et al (2003)
Hedonic motivation	Likert-Scale (Not at all - Extremely)
Using the Visit NC Farms mobile app is…	
Fun	Source: Venkatesh et al (2012)
Behavioral Intention	Likert-Scale (Not at all - Extremely)
I intend to continue using the Visit NC Farms app	Adapted from Venkatesh et al (2012)
Use	
Please indicate how often you use the following features in the Visit NC Farms app:	Likert-Scale (Never-Always)
Farms + Fisheries	New item based on the mobile app
Experience	
Please indicate how often do you use the Visit NC Farms	
Agritourism behaviors	
How likely or unlikely are you to engage in the following behaviors?	Likert-Scale (Not at all - Extremely)
Visit a farm to pick your own produce	Brune et al (2021)
Facilitating conditions	
I have adequate access to internet to use the Visit NC Farms app	Adapted from Venkatesh et al (2003)

After designing the survey, we will share it with the North Carolina Department of Agriculture and Consumer Services (NCDA&CS) and other key stakeholders such as the local level app administrators and NC State extension officers involved with supporting the Visit NC Farms app. After incorporating their feedback, we will pilot test the survey for clarity with a small sample of mobile app users using the Qualtrics platform, before launching the survey.

Recruitment & Data Collection: All 10,000 users of the app will be invited to participate in the survey. Power analysis indicates that 250 participants will be needed to conduct the necessary analysis, but we will aim to obtain 1,000 responses (10% response rate) to maximize analysis. Users will receive a push notification through the app with an invitation to participate in the

study and a link to access consent forms and the survey. To increase the participation rate, respondents will be invited to submit their email addresses to obtain $5 dollar reward. The email addresses will be kept separately from survey responses to preserve anonymity.

Data Analysis: We will use descriptive statistics and cluster analysis to generate user typologies. A combination of cluster analysis and multiple linear regression will be used to test how typologies predict mobile app use.

Expected outcomes and how results will be used: The establishment of typologies as well as links between typologies and preferences will help develop tailored marketing recommendations for use by app managers, farmers, and local food stakeholders about the best marketing techniques to attract more users. Examples might include development of tailored push notifications through the app.

Conclusion

Mobile apps are part of our daily lives offering convenient access to information on demand. Thus, it is important to leverage the role that mobile technologies can play in marketing agritourism. This research will provide key insights into links between app user characteristics and an agritourism mobile app use. These findings will assess the Visit NC Farms app performance, but findings can inform the development user typologies in tourism mobile apps in general. Through mobile apps, the agritourism industry may modify its marketing strategies to boost farm visitation and contribute to rural economic development. This paper will contribute to conceptualizing mobile technology as a driver of change for sustainable rural livelihoods and pioneer the research needed to accelerate app development, implementation, and effectiveness. Thus, this research will advance the literature on mobile app user typology and the effect of mobile user typology on mobile app use and marketing.

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