Free and Open Source Software Adoption Framework for Swiss Small and Medium Sized Tourist Enterprises

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Abstract

Swiss small and middle size tourism enterprises (SMTEs) are disadvantaged due to their meager presence in the global tourism value chain (OECD 2008). Further, Switzerland's tourism industry is witnessing increased competition because of reduced demand, an increase in new tourism destinations, globalisation and revision in tourism policies worldwide (OECD 2006). While, ICT based innovations are advocated for improving SMTEs' competitiveness, there appears to be a lack in research initiatives regarding SMTEs' intent towards ICT adoption. Consequently, the aim of this study is to propose a framework to establish relevant factors. In the context of service industry and specific ICT, such as Free and Open Source Software (FOSS), the framework regards performance expectancy, effort expectancy, social influence, facilitating conditions and community participation as the determinants of FOSS usage intent.

Keywords: Small and Medium-Size Tourist Enterprise, ICT adoption framework, FOSS

1 Introduction

Tourism is considered an important economic sector in Switzerland. Tourism provides significant contributions to the Swiss national economy in terms of employment, Gross Domestic Product (GDP) and services export (OECD, 2008). The majority of tourism related firms operate as SMTEs. The Tourism industry is witnessing increased competition due to reduced demand, increases in new tourism destinations, globalisation and revision in tourism policies worldwide (OECD, 2006). Although the contribution of the SMTEs in the tourism products/services at a tourism destination is quite significant, the SMTEs are often equated to inefficient management with low productivity problems due to the inherent nature of their size. Moreover these problems are more prevalent in the developed countries (Keller, 2005). SMTEs have not fully explored the usage of ICT in their operations and as a result are lacking innovation initiatives (Collins, Buhalis & Peters, 2003). Innovation in the tourism industry has been described as product improvement, organisational reform and process improvements (OECD, 2006). In the context of small and middle size enterprises' (SMEs) innovation, the existing ICT applications appear "too complex, proprietary and expensive" (Merttins, Rabe, Weinaug & Jaekel, 2008). Therefore, in order to be competitive, SMEs opt for "easy to configure service packages based on open source software" (Merttins et al., 2008). Generally, SMEs' success requires "access to world markets, low-cost entry into new markets and the

ability to gain efficiencies in business processes" (Wickramansinghe & Sharma, 2005, p. 141). These circumstances compel for an appropriate ICT consideration in the SMTE context. Consequently, SMTEs appear suitable candidates to explore FOSS usage, since FOSS promises low cost and far reaching ICT innovations. Moreover FOSS has emerged as a key IT trend (Daffara, 2008). Despite its tremendous usage potential, its adoption among SMEs is quite insignificant, due to their limited knowledge of FOSS (Daffara, 2008). Along with the growth of FOSS related services such as its implementation, project management and consultation, the scope of FOSS systems has also evolved from infrastructure applications (i.e. operating systems) to middle-level applications (i.e. word processing, content management, customer relation management etc) (Johansson & Sudzina, 2008). SMTEs could potentially benefit from FOSS based innovations as SMTEs need to achieve economies of scale to reduce their transactional and operational costs and gain market presence innovatively (OECD, 2004). There is a paucity of research investigating SMTEs' intent towards ICT adoption/usage, especially in FOSS context. In order to identify factors which determine SMTEs' usage/adoption intent and to develop new theoretical insights, this study applies Unified Theory of Acceptance and Use of Technology (UTAUT) model by Venkatesh, Morris, Davis, & Davis (2003) as the primary research framework.

2 Literature Review

2.1 Swiss SMTEs

The Swiss lodging industry (with about 30,000 hotel and catering services) has become one of the main contributors to the Swiss tourism industry. It generated total revenues of Swiss francs (CHF) 21.6 billion in 2004 (Swiss Tourism in Figures, 2007). Based on records of the most visited tourist destinations in Switzerland (Swiss Tourism in Figures, 2007), the majority of hotel accommodations were found to be provided by SMEs. European Union (EU) defines SMEs based on the number of employees (>250) and an annual turnover not in excess of 50 million euro (Eurosearch 2006, 2007). Switzerland's tourism industry is still known to be the least productive segment of its economy, due to the low level of tourism innovations (Scheidegger, 2004). In view of this, it can be argued that SMTEs need to consider innovative methods to manage and align their activities at strategic, tactical and operational levels. Technological innovations by SMTEs could increase their presence in the global value chain, hence increase their customer base but so far, due to a lack of a strategic planning such innovations are hindered (Collins et al., 2003). Moreover, there is paucity in research regarding how SMEs adopt technology (Riemenschneider, Harrison & Mykytyn, 2003). Further, understanding the ICT acceptance antecedents that enable or hinder SMTEs' innovation need to be assessed first.

2.2 ICT adoption framework

Despite the fact that ICT adoption research has reached certain maturity, similar research in SMTEs' context is reasonably lacking. Theoretical models attempting to

comprehend ICT adoption by organisations and individuals have roots in information systems, psychology, and sociology (Venkatesh et al., 2003). Further, these models attempt to analyse technology adoption at organisational and/or individual level by manipulation of users' behavioural variables. This usually leads to the creation of a conceptual learning framework in the context of ICT adoption. A widely acknowledged ICT uptake model, UTAUT by Venkatesh et al., (2003) synthesises Theory of Reasoned Action, Technology Acceptance Model (TAM) and TAM2, Model of PC Utilisation, Motivational model, Theory of Planned Behaviour (TPB), combined TAM and TPB, Social Cognitive Theory and Diffusion of Innovation Theory. Moreover, UTAUT has its roots in TAM, which is considered as a robust model for determining ICT adoption based on usefulness and ease of use as the primary ICT adoption determinants. UTAUT was developed to consolidate previous TAM related research (Marchewa, Liu & Kostiwa, 2007). The basic concept embedded in UTAUT is to assess users' reaction to using ICT, which in turn could be related to intention to use and the actual use of ICT. The core components predicting user behavioural intentions towards technology acceptance as outlined in UTAUT are "performance expectancy, effort expectancy, social influence, and facilitating conditions" (Venkatesh et al., 2003). Empirical substantiation suggest that UTAUT framework is better equipped for elucidating users' intentions of ICT adoption than the individual eight models which UTAUT encompasses (Xiaoping & Jing, 2008).

UTAUT might be rationally able to explain ICT uptake in SMTE from the users' perspective, since SMTEs' are usually setup as individual/family led businesses (Kim, 2005) but Venkatesh et al (2003) also insist that a deeper understanding of ICT adoption and usage behaviour could be derived by further investigation of the specific ICT in question. Therefore, while considering FOSS acceptance and usage, it's only logical to pinpoint the specifics of FOSS which differentiate it from commonly used proprietary software applications. FOSS scopes a range of innovative ICT applications, which are essentially non-proprietary and are developed and supported by a network of individuals, organizations and various other stakeholders. FOSS applications present advantages such as independence from sole proprietary firms, and their cost free availability (Hoe, 2006). FOSS is a network based community phenomenon, therefore community participation along with training and awareness are considered as the most crucial constructs favouring FOSS usage intent (Daffara, 2008).

2.3 Proposed SMTE framework for FOSS acceptance

In this research, the proposed framework acknowledges the existing ICT adoption frameworks, which might be suitable in a generalist ICT adoption scenario. Since, FOSS is an alternate to proprietary software; its propagation is dependent on FOSS community participation, awareness and training (Daffara, 2008). Since these attributes are not reflected in UTAUT constructs, modification of UTAUT's constructs is necessary. Therefore, community participation, awareness and training are integrated into our proposed framework. The main constructs included in the proposed framework are; Performance expectancy, 'the degree to which an individual believes that using the system will help him or her to attain gains in job performance'

(Venkatesh et al., 2003, p.447). Effort expectancy 'the degree of ease associated with the use of the system' (Venkatesh et al., 2003, p.450). Social influence, 'the degree to which an individual perceives that important others believe he or she should use the new system' (Venkatesh et al., 2003, p.451). Facilitating conditions refer to user training and user awareness related characteristics (Özel, Cilingir & Erkan, 2006). Community participation refers to the propensity to participate (collaborate, cooperate, communicate) in similar interest groups. This construct assess a user's inclination towards virtual communities participation (Dholakia, Bagozzi & Pearol, 2004). In order to validate the proposed framework the following hypotheses are conceptualised. (The above constructs are moderated by socio-demographic variables namely age, gender and experience.)

H1 Facilitating conditions will have a positive influence on Effort expectancy
H2 Facilitating conditions will have a positive influence on Performance expectancy
H3 Effort expectancy will have a positive influence on Performance expectancy
H4 Social Influence will have a positive influence on Behaviour intention
H5 Performance expectancy will have a positive impact on Behaviour intention
H6 Effort expectancy will have a positive influence on Behaviour intention
H7 Community participation will have a positive impact on Effort expectancy
H8 Behaviour intention will have a positive impact on Usage

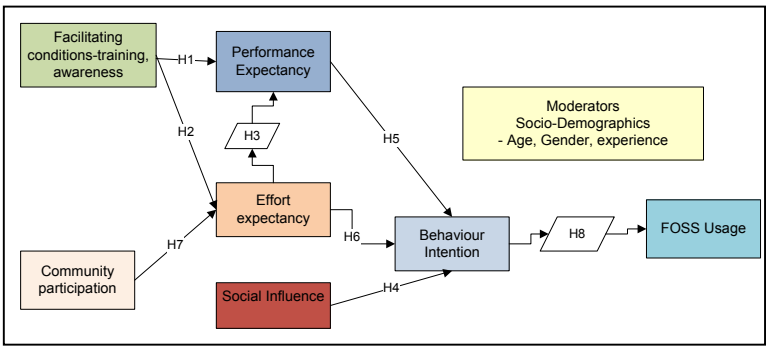

Fig 2.1. Proposed framework

3 Conclusion

This research aims to establish a FOSS adoption framework in the context of SMTEs. A framework predictive of behavioural intentions could provide crucial insights to the business community, FOSS users/developers and SMTEs themselves about likelihood of new technology being accepted. Academically, finding out the factors which are crucial for FOSS development in SMTEs will provide avenues for further research on FOSS development and adoption. Further, insights into ICT adoption intentions will address the paucity of research in the context of SMTEs. In further research this framework will be tested and its hypotheses will be verified in the context of Swiss SMTEs.

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