Adoption of Cloud Computing Among Independent Hotel Operators in India

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Abstract

This empirical research tries to find the how perceived usefulness, and perceived ease of use affect the adoption of cloud computing among independent hotels in India in particular. Further it attempts to study various impediments of not adopting cloud computing technology by small and medium hotels in India in general. Though many large companies are moving, or indeed have moved to cloud, yet, still there are considerable numbers of barriers to cloud adoption, especially for small and medium hotel enterprises. This paper discusses such issues which both the small hotel operators and cloud computing vendors may look at.

Keywords - cloud computing; perceived usefulness; perceived ease of use; independent hotels; India

1. Introduction

In the market place, for a competing hotel, the success grossly lies on its strength of knowing its customer exactly what they want and fulfilling those expectations. To know what their customer want, hotels need to churn huge amount of transactional data, analyses and synthesize those and extract meaningful information which in turn helps to formulate right strategy to match the service delivery. Hotel operators are expected to become more dynamic and efficient in the way they make use of information technology (Vella et al., 2018). Now the pressure is on the hotel operators to free themselves from creating and maintaining physical infrastructure of property management systems.

As an emerging technology cloud computing helps hotel operators to save their resources by supporting them to keep and use resources over internet instead of keeping them on their desktop computers. Cloud computing could relive hotel operators to outsource such errand task to multiple vendors available in the market who have the competency and expertise in managing IT infrastructure remotely. Though all most all the large hotel operators have moved to cloud computing, it is observed that in spite of such advantage of outsourcing non-core activities, many small and medium hotel operators are reluctant to adopt such technology. Earlier the cost and complexity of cloud computing technology were so high that only a few large international chains were in a position to afford it. With technological innovation and simplification, the emergence of a large number of cloud computing vendors and a decrease in the cost of technology reduced the barrier to adoption of this technology by smaller and independent hospitality organization (Gursoy, 2010). Today hospitality organizations have started adopting cloud computing technology for their survival and growth (Wulf and Zarnekow, 2010). Cloud computing has become one of the most important technology for hospitality business operation (Law et al., 2014). This research paper attempts to study various impediments of not adopting cloud computing technology by small and medium hotels in India in general and how perceived usefulness, and perceived ease of use affect the adoption of cloud computing among independent hotels in India in particular.

2. Literature Review

In the last two decades, many studies were conducted on the application and prospect of information and communication technology in the field of tourism and hospitality. A large number of scholars particularly from China, North America, and the United Kingdom have researched and contributed varied of quality research articles on cloud computing (Sahoo et al., 2017). Earlier articles focused on prospect and growth of electronic distribution, whereas recent articles are more focused on impact and outcome of the changes. Among the technological changes, cloud computing technology is one of the most prominent changes which have brought new order in hospitality marketing. Cloud computing technology has strategic importance for hospitality suppliers in de-commoditization, communicate product differentiation, and gain competitiveness in the market (Leung et al., 2013). The connection between IT adoption and IT decision maker characteristics in hotel industry was studied by (Bulent Ozturk and Hancer, 2014).Bulchand-Gidumal and Melián-González (2015) studied on cloud computing adoption in Hotels. Issues rrelated to preliminary investment required in cloud computing in hotel industry was discussed by (Schneider, 2012). Mohanty, 2019 studied the challenges faced by small Irish restaurant owners while adopting cloud computing technology.

3. Proposed Conceptual Model

Based on the review work on adoption of cloud computing in hotels, a conceptual model is proposed. The proposed conceptual model is presented in Figure 1. The Conceptual Structural Model includes eleven constructs: relative advantage, complexity, compatibility, upper management support, training and education, technological competence, competitive pressure, trading partner support, perceived usefulness, perceived ease of use, and attitude towards using. All these constructs are being integrated into the proposed model to explain the cloud computing technology adoption in hotels.

Figure 1: Conceptual Model for Cloud Computing Technology Adoption
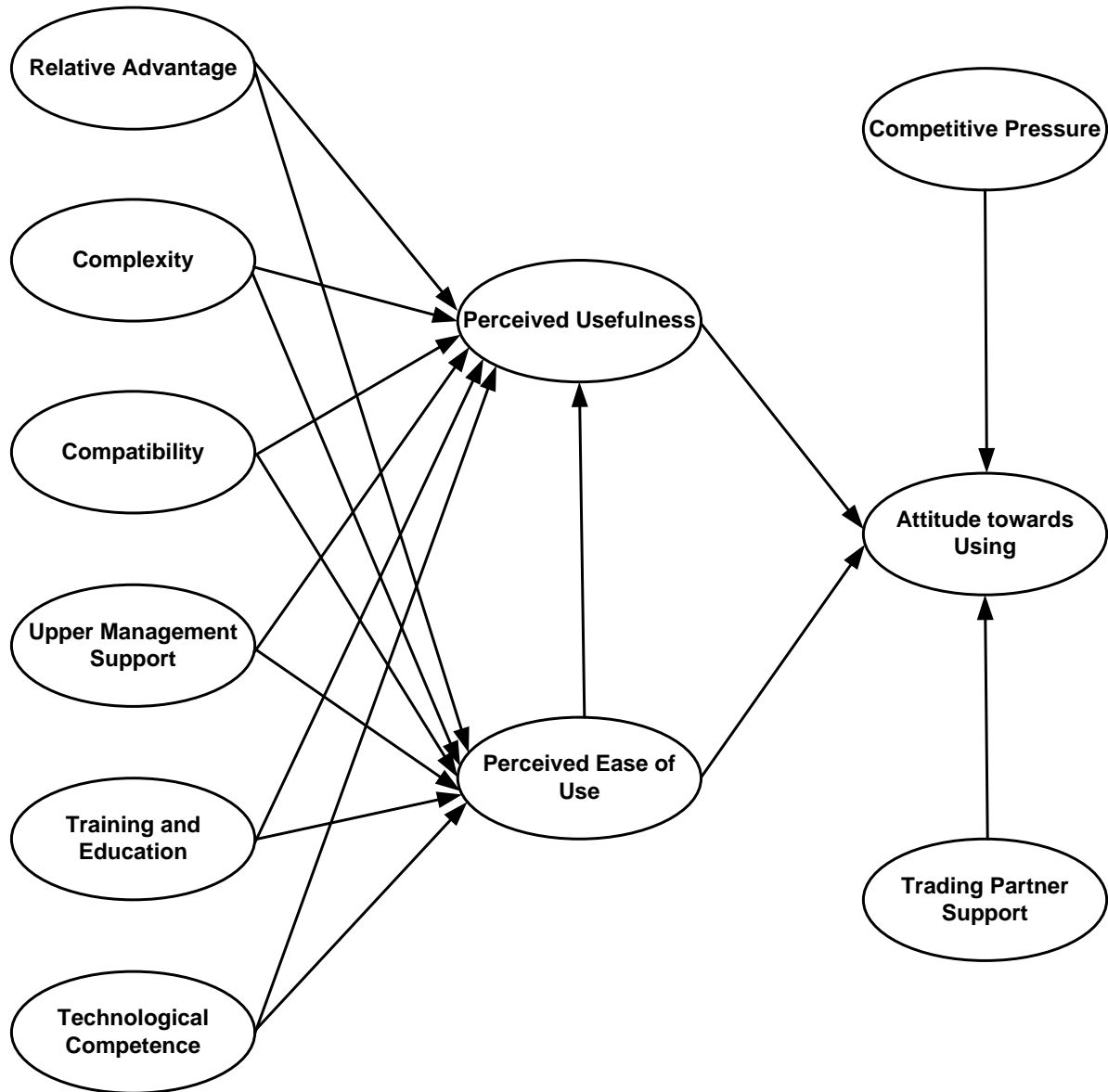
The conceptual model exhibits the indirect effects and direct effects among the constructs as identified from the literature. These constructs are (i) relative advantage (RA), (ii) complexity (CXR), (iii) compatibility (C), (iv) upper management support (UMS), (v) training and education (TE), (vi) technological competence (TC), (vii) competitive pressure (CP), (viii) trading partner

support (TPS), (ix) perceived usefulness (PU), (x) perceived ease of use (PEU), and (xi) attitude towards using (ATU).

4. Methodology

In this exploratory research study, quantitative research methodology has been used. A detailed questionnaire survey was employed among the small and medium sized independent hotel operators in the city of Ahmedabad to collect empirical data for this study. Emails and telephone calls were made to these 93 short listed organizations to seek appointment before visiting them. Identified hotel organization's employees were approached by the survey instrument administration. These employees need to be working in the room sales and marketing department, and front office department. From these 93 short listed organizations, 417 responses were collected. In an average, little more than four responses were collected from each of these organizations. The emphasis was givento the opinions given by the respondents through the survey questionnaire. The method of this research has been well defined and structured. The resultant data were analyzedthrough in-depth statistical techniques. To pre-check the validity and reliability of the survey instrument, a preliminary pilot test was carried on. The pilot test was undertaken to uncover issues of error, set the right wording for the survey questions, pre-check data collection results and to ascertain that the planned research design would work as per the set plan (Hair et al., 2013). The statistical techniques like mean; standard deviation (SD); correlation analysis; composite reliability; average variance extracted etc. were used in interpreting and analyzing the data. For testing the hypothesis, structural Equation Modelling (SEM) techniques were used by using IBM-SPSS, Ver. 24.0 and IBM-AMOS, Ver. 23.0 software. Mediating effects of two mediator variables in fourteen paths were analyzed. Effect of direct, effect of indirect and total effects of fourteen exogenous variables on endogenous variable was estimated.

5. Data Analysis and Results

The two mediating variables (i) perceived usefulness, and (ii) perceived ease of use in the modified conceptual model were observed. Their significance of mediation was calculated based upon a test of mediation effect as suggested by Sobel (1982). The actual t statistics (t value) and probability values (p value) were computed using the online interactive website of Soper (2016) which is given in table 1.

Table 1: Mediation effects of Perceived Usefulness and Perceived Ease of Use

I. V.	Dir.	M.V.	Dir.	D.V.	RC1	RC2	SE1	SE2	t value	p value
RA	→	PEU	→	PU	0.713	0.731	0.098	0.044	6.664	0.000
CXR	→	PEU	→	PU	0.446	0.731	0.163	0.044	2.699	0.000
C	→	PEU	→	PU	0.361	0.563	0.058	0.049	5.472	0.000
TE	→	PEU	→	PU	0.361	0.731	0.058	0.044	5.828	0.000
TC	→	PEU	→	PU	0.437	0.672	0.049	0.049	7.476	0.000
C	→	PU	→	ATU	0.446	0.563	0.163	0.049	2.666	0.007
UMS	→	PU	→	ATU	0.443	0.731	0.026	0.044	11.894	0.000
TE	→	PU	→	ATU	0.713	0.563	0.098	0.049	6.146	0.000
TC	→	PU	→	ATU	0.721	0.571	0.096	0.053	6.161	0.000
RA	→	PEU	→	ATU	0.444	0.672	0.049	0.049	7.56	0.000
CXR	→	PEU	→	ATU	0.371	0.563	0.097	0.049	3.628	0.000
C	→	PEU	→	ATU	0.48	0.672	0.049	0.049	7.971	0.000
TE	→	PEU	→	ATU	0.512	0.672	0.049	0.049	8.311	0.000
TC	→	PEU	→	ATU	0.443	0.563	0.026	0.049	9.526	0.000

Notes
I.V.   Independent variable
Dir.   Direction
M.V.   Mediator variable
D.V.   Dependent Variable
RC[a]   Regression coefficient for the relationship between independent variable and mediator
RC[b]   Regression coefficient for the relationship between mediator variable and dependent variable
SE[a]   Standard error of the relationship between independent variable and mediator

SE^b	Standard error of the relationship between mediator and dependent variable

The mediating variable, perceived usefulness is meditating for four paths, and each of these paths is statistically significant. It acts as a mediating variable between compatibility and attitude towards using through the path C→PU→ATU (t value = 2.666, p value = .007). It mediates between upper management support and attitude towards using through the path UMS→PU→ATU (t value = 11.894, p value = .000). On the thirdinstance, it mediating between training and education and attitude towards using through the path TE→PU→ATU (t value = 6.146, p value = .000). Further, on the fourthinstance, it mediates between technological competence and attitude towards using through the path TC→PU→ATU (t value = 6.161, p value = .000).

It is observed that perceived ease of use in the modified conceptual model is meditating for ten paths and each of these paths is statistically significant. Perceived ease of use is mediating between five exogenous variables, namely relative advantage; complexity; compatibility; training and education; and technological competence with the other mediating variable perceived usefulness. Perceived ease of use acts as a mediating variable between relative advantage and perceived usefulness through the path RA→PEU→PU (t value = 6.664, p value = .000). Perceived ease of use acts as a mediating variable between complexity and attitude perceived usefulness through the path CXR→PEU→PU (t value = 2.699, p value = .000). Perceived ease of use acts as a mediating variable between compatibility and perceived usefulness through the path C→PEU→PU (t value = 5.472, p value = .000). Perceived ease of use acts as a mediating variable between training and education and perceived usefulness through the path TE→PEU→PU (t value = 5.828, p value = .007). Perceived ease of use acts as a mediating variable between technological competence and perceived usefulness through the path TC→PEU→PU (t value = 7.476, p value = .000).

Further, perceived ease of use is mediating between the same five exogenous variables, namely relative advantage; complexity; compatibility; training and education; and technological competence with the only endogenous variable attitude towards use. Perceived ease of use acts as a mediating variable between relative advantage and attitude towards use through the path RA→PEU→ATU (t value = 7.56, p value = .000). Perceived ease of use acts as a mediating variable between complexity and attitude towards use through the path CXR→PEU→ATU (t value = 3.628, p value = .000). Perceived ease of use acts as a mediating variable between compatibility and attitude towards use through the path C→PEU→ATU (t value = 7.971, p value = .000). Perceived ease of use acts as a mediating variable between training and education, and attitude towards use through the path TE→PEU→ATU (t value = 8.311, p value = .000). Perceived ease of use acts as a mediating variable between technological competency and attitude towards use through the path TC→PEU→ATU (t value = 9.526, p value = .000).

It is evident that all these fourteen mediating effects in the model are statistically significant. Some of the useful inferences may be drawn from these mediating variables.

6. Inferences and discussion

This research identified relative advantage, complexity, compatibility, upper management support, training and education, and technological competence as important variables for affecting attitude towards electronic distribution system adoption using perceived usefulness, and perceived ease of use as mediating variables.

It is observed that the technology has become very dynamic in hospitality sector. The hotel operator need not maintain the property management system hardware and software in the hotel premises with the advancement of cloud computing. Most importantly cloud computing gives the flexibility of changing and updating of hardware and software in real-time to the hotel operators. It is observed that small and medium hotel operators are concerned over their data security and not much assured of reliability the cloud computing technology. Dependency on third party is another major concern for hotel operators. High licensing and maintenance fees by some third party vendors are a discouraging factor for some hotel operators.

7. Conclusions and future research

Various marketing strategies, applications and marketing supports available through could computing shall be a major driver and differentiator among hotel for their visibility, customer interaction and positive reviews in various user generated contents in another few years. The standalone independent hotel operators or small chins shall opt for cloud computing for their economy on the total cost of ownership of purchasing and maintaining hardware and software. As hotel operators do not need to maintain hardware on their premises, they also do not need to have skilled personnel to maintain the same where they save money on payrolls. This research work gives a birds-eye view on the present and future status of cloud computing in hotel industry in India. Independent hotel operators need to overcome adoption challenges to take advantage of the technology. The vendors of could computing targeting hospitality industry must match their service offering to the common expectations of the hotel industry in general which eventually open more business avenues and volume for them.

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