

Moderating Effect of ICT on the Relationship Between SDL and Service Innovation

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Abstract

ICT-based services in hotel industry improve strategies performance, strengthen competitiveness, boost profits revenue, decrease cost and improve service delivery reducing employees work load, making his / her job smoother and more efficient. The paper investigates moderating effect of ICT services in the relationship between service dominant logic and service innovation leading to competitive advantage in JKTDC establishments. Primary data for the study were collected through census method using interview schedule from 132 personnel working at managerial level in 23 JKTDC establishments (14 from Kashmir Division and 9 from Jammu Division) in the State of J & K. After pretesting on a sample of 50 respondents, the finalised schedule comprised 157 statements under three dimensions, namely SDL, ICT and SI. The result of moderated regression analysis revealed that except add-on services, online information & services and online promotion moderates the relationship between SDL and service innovation leading to competitive advantages. Higher the online information & services and online promotion, the stronger would be the relationship between SDL and service innovation. The moderation effect of add on service is found to be non-significant in the relationship between SDL and SI.

Key Words

Information Communication Technology (ICT), Service Dominant Logic (SDL), Service Innovation (SI)

INTRODUCTION

Subject area of tourism is undergoing profound changes due to the

collaboration of the researchers from all around the world to embed new concepts and interdisciplinary frameworks as evidenced by the recent discussions of knowledge management and knowledge transfer mechanisms (Cooper, 2006; Yang and Wan, 2004; Hallin and Marnbury, 200; Shaw and Williams, 2009). However, the emergence of technology management approach has revolutionized tourism industry by delivering locational-based services which enable ubiquitous information retrieval and access to location and context relevant information without geographical and temporal restrictions (Balasubramaniam *et al.*, 2002; and Philstorm, 2008). It builds levels of service quality, customer loyalty and competitive market advantages (Magnini, Honeycutt & Hodge, 2003; Piccoli, 2008). The tourism and hospitality sector has high growth potentials due to increased availability of leisure time with customers besides contributing to gross national product, employment, regional development etc. The sector is very information-sensitive and quick, accurate flow of information is vital for tourists, enterprises and organizations through a variety of end-user devices. In hospitality industry, computers were used for accounting for guest, data management, forecasting guest, demand for reservations, management of guest services, revenue and reservation management and yield management. Today these functions are being performed using ICT enabled systems which has enabled transformation of tourist experience by providing better service through better and timely decision/making and changes of destination marketing strategy. The way hotels are customizing customers' experience by increased involvement of DMOs is changing dramatically with every passing year. Intensive and rationalized use of centralized distributed systems has led to uniform and ubiquitous information-flow across the hotels in chain. Thus, the hotel sector needs to understand, incorporate and utilize ICT strategically in order to serve their target markets, increase their efficiency, maximize profitability, optimize their service operations and maintain sustainable profits. High ranked hotels are continually competing for IT - skilled employees to capture information about how consumers think and act through social network sites such as Trip Advisor, Trivago, LinkedIn, Facebook, Twitter etc and thereby designing innovative strategies that will spur best practices for the industry. Despite the dynamism due to influx of innovation in the tourism industry, this industry has remained neglected by the marketing management frameworks and new concept. Of particular note is the relative failure of tourism research to incorporate the new framework of service science, called Service Dominant Logic (S-D Logic) proposed by Vargo and Lusch (2004). Such omissions have also been discussed briefly in the context of S-D Logic by Li and Petrick (2008) who argue that more research is needed on the tenets proposed by Vargo and Lusch (2004). This paper evaluates the tourism industry on

the framework of SDL which focuses on individuals, partners and employees who engage into co-creation of values through reciprocal service preposition. SDL relies upon nine foundational premises of S-D logic (Vargo and Lusch, 2004; 2006) to develop nine service prepositions that inform marketers on how to compete through service.

REVIEW OF LITERATURE

Nyameino *et al.* (2015) examined the moderating effect of ICT utilization between relationship marketing practices and customer satisfaction in classified five star hotels in Nairobi Kenya. Data were collected on Five Point Likert Scale and administered on 375 customers using proportionate sampling technique. The results of Multiple Regression Analysis concluded that ICT utilization moderated the relationship between communication strategy and customer satisfaction with the variance of 7.8% in Customer Satisfaction. The study recommended that hotel management should strengthen the network value chain with the customers focusing on high levels of trust, information sharing and dissemination to ensure repeat purchases, customers focusing on high level of customer satisfaction. Nwakanma *et al.* (2014) examined the type of ICT infrastructure, its effective utilization its rate of diffusion and the factors affecting its adoption amongst 34 hotels in Owerri, Imo State. The results of regression model revealed that the hotels' adoption rate of ICT is 31.2% and all five factors combined namely Hotel Resources, Hotel Size, Hotel Scope of Activities, Hotel Rating and Hotel Age significantly impact the ICT infrastructure adoption and usage in hospitality industry. It is, therefore, recommended that Government should increase the economic activities in the state and set up ICT standards for the hotels so as to increase the adoption of ICT infrastructures. Abubakar and Ahmad (2013), based on extensive review of literature, conceptualized that 'technology awareness' moderates the relationships between UTAUT constructs (effort expectancy, facilitating condition, performance expectancy and social influence) and behavioral intention in Nigerian business industry. The study concluded that the resistant to change to e-payment systems by merchandise in Nigeria can be associated hesitance to adopt technology, lack of exposure to ICT, low level of technology awareness, lack of adequate infrastructure to support for system use and lack of awareness campaigns to maneuver the technology acceptance. Neuhofer *et al.* (2012) investigates the paradigm shift towards technology usage for actively engaged tourists co-creating their own experiences and co-creating with tourism customers, suppliers, tourism co-consumers and social network to reinvent Technology Enhanced Destination Experience. This paper concludes that technology needs to be adopted for

diffusion of innovation, creating strategic differentiation in hospitality industry and gaining competitive advantages. By accelerating technology adoption DMOs can foster network interactions, customization of services and co-creation among all value network partners at various levels of hierarchy. Juhee Kang (2011) investigated the conceptual model of effective community participation and association between community participation (Functional benefit, social benefit, psychological benefit, hedonic benefit and monetary benefit), brand trust and brand commitment with age and gender as moderators. This model was investigated in the contest of hotel and facebook fan's page of the restaurant by collecting data from the online research company and alumni of Iowa State University. The result of the Structure Equation Modeling of the hotel showed that functional (.31), social-psychological (.24) and hedonic factors (.23) had positive effect on community participation and community participation had positive effect on brand trust (.46). The results of the restaurant study indicated positive relation between social-psychological (.27) and hedonic factors (.18) with community participation; community participation with brand trust (.20) and brand commitment (.17) and brand trust (.25) and community participation (.17) with brand commitment. The study suggested that hotels should develop effective communication system (online chats, presentations social communities) to allow sharing of service experience and information amongst community members.

Previous studies have overlooked the ICT adoption and usage and its effect on the relationship between service dominant logic and service innovation leading to competitive advantages in the hotel industry. Moreover, limited research has been conducted in terms of ICT usage from employee perspective and identifying value-creation from consumer-centric perspective. The present study intends to bridge this gap by investigating moderating effect of ICT usage in the relationship between SDL and SI in JKTDC establishments in the State of Jammu & Kashmir.

RESEARCH METHODOLOGY THEORETICAL MODEL

Primary data for the study was collected from personnel working at managerial level using census method using interview schedule from 23 JKTDC establishments (14 from Kashmir Division and 9 from Jammu Division) in the State of J&K. After pretesting on a sample of 50 respondents selected on convenience basis, the finalized schedule was reduced to 157 statements of SDL subdivided into 54 statements (Individual Interaction Capability), 37 statements (Relational Interacted Capability), 9 statements (Ethical Interaction Capability), 44 statements (Empowered Interaction Capability), 8 statements (Development Interaction

Capability), 5 statements (Concerted Interaction Capability), 15 statements (ICT) and 8 statements (Service Innovation). The items in the schedule were self-generated and derived from the review of literature. The normality of the data was assessed through outliers, graphic method and numeric method. There were 11 outliers and deleted through box-plots by calculating Z-scores of all the constructs individually with the help of SPSS (16.0 version). Q-Q plot through SPSS was used to assess the normality of the responses and all points were found to be closer to the straight diagonal line and no point stayed outside which indicated that the data was normally distributed. The value of Skewness and Kurtosis were also found to be .287 and -.378 respectively which were within the threshold limit of -1 and +1. The value of Kolmogorov-Smirnov and Shapiro-Wilk was .071 and .961 which were found to be significant at 95% confidence interval. Secondary data was collected from various research papers, reports, journals, websites and books. Based on literature review, a theoretical model (Fig. 1) with following hypotheses have been set for the study :

- H₁ : ICT moderates the relationship between SDL and service innovation leading to competitive advantage.
- H_{1a} : Online information and services moderates the relationship between SDL and service innovation leading to competitive advantage.
- H_{1b} : Online promotion moderates the relationship between SDL and service innovation leading to competitive advantage.
- H_{1c} : Add on services moderates the relationship between SDL and service innovation leading to competitive advantage.
- H₂ : Higher the ICT usage, the stronger would be the relationship between SDL and service innovation leading to competitive advantage and vice-versa.
- H_{2a} : Higher the online information and services, the stronger would be the relationship between SDL and service innovation leading to competitive advantage and vice versa.
- H_{2b} : Higher the online promotion, the stronger would be the relationship between SDL and service innovation leading to competitive advantage and vice versa.
- H_{2c} : Higher the add on services, the stronger would be the relationship between SDL and service innovation leading to competitive advantage and vice versa.

DIMENSION – WISE DESCRIPTION AND FACTORIAL DESIGN OF SDL, ICT MODERATORS AND SI

Service Dominant Logic (SDL)

It comprises six constructs namely, Individuated Interaction Capability (HC), Relational Interacted Capability (RIC), Ethical Interaction Capability (EIC), Empowered Interaction Capability (EIC), Development Interaction Capability (DIC) and Concerted Interaction Capability (CIC). The process of EFA was performed through PCA with Varimax Rotation on each construct, resulting into 5 factors (Individuated Interaction Capability), 4 factors (Relational Interacted Capability), 2 factors (Ethical Interaction Capability), 3 factors (Empowered Interaction Capability), 2 factors (Development Interaction Capability), and 1 factor (Concerted Interaction Capability). The statement under each factor met the criteria of Eigen Value (>1). Communality ($>.50$) and factor loading ($>.50$). The KMO was above the threshold limit of 0.50 for each factor.

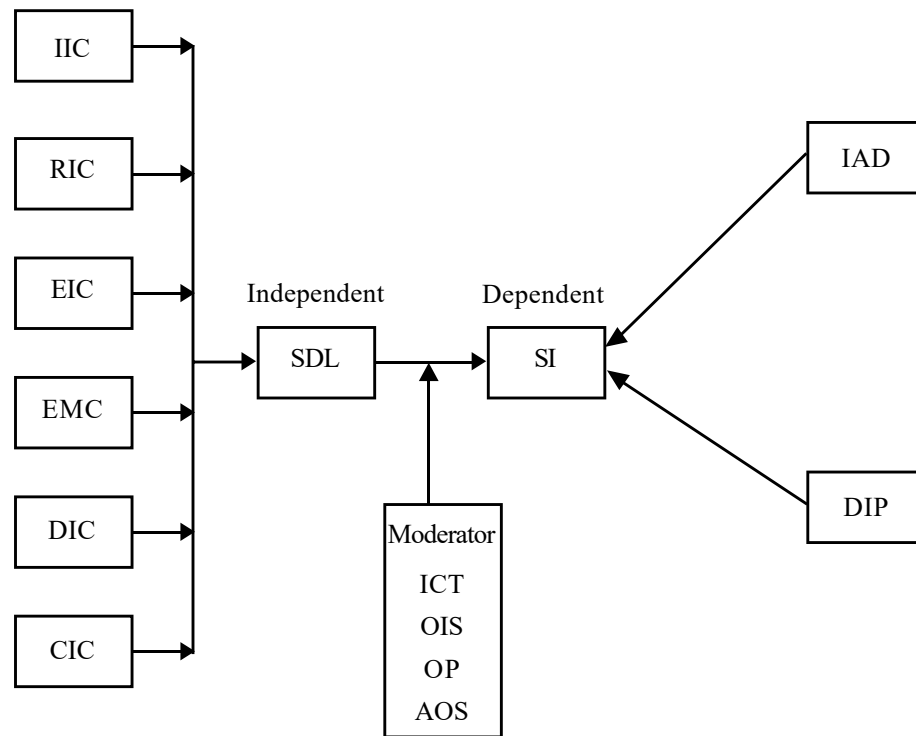
ICT Moderator

The process of EFA performed through PCA with Varimax Rotation on ICT construct resulted into three factors namely, online information and services (F1 : OIS). Online promotion (F2 : OP) and Add-on services (F3 : AS). Each factor comprises 6 statements (OIS), 4 statements (OP) and 3 statements (AS). The eigen valued for each statement was >1 , Communality $>.50$ and factor loadings $>.50$. The factor wise variance explained was 36.135 (F1), 28.324 (F2) and 13.621 (F3) and cronbach alpha value .952 (F1), .942 (F2) and .512 (F3). The KMO value of each factor was above the threshold limit.

Service Innovation (SI)

It comprises two factors namely, Innovation Adaptability and Delivery (F1 : 1AD) and Distinctive Image and Positioning (F2 : DIP) which emerged after the process of EFA through PCA with Varimax Rotation. Items in factors were three each with factor loading above 0.50. The Eigen value for each statement was >1 and communality $>.50$. The variance explained and Cronbach Alpha was 38.452 and .850 and 32.138 and .709 for F1 and F2 respectively. The KMO value of each factor was above the threshold limit.

Fig. 1 : Theoretical Model Showing Moderating Effect of ICT on the Relationship Between SDL and Service Innovation Leading to Competitive Advantage



Note : ICT Moderators, Online Information and Services (OIS), Online Promotion (OP) and Add-on Services (AOS)

DATA ANALYSIS AND INTERPRETATION

A combination of moderated regression and sub-group analysis was used to characterize and investigate the effects of the moderators namely, Online Information and Services (OIS), Online Promotion (OP) and Add on Services (AOS). Moderated Regression Analysis was used to determine whether there was a significant interaction between the hypothesized moderator variable .Z and the predictor variable .X. Moderated regression analysis involves testing whether the regression coefficient from the three following regression equations are significantly greater than zero (0).

- (a) $Y = a + b_1 X;$
- (b) $Y = a + b_1 X + b_2 Z;$
- (c) $Y = a + b_1 X + b_2 Z + b_3 XZ$

Prior to go for analysis, all the independent variables are mean centered

to reduce multi co-linearity. Therefore, regression analysis techniques in SPSS (version 21) were used to determine values of b_1 , b_2 and b_3 in equation (c) and the output is shown in Table 1, represented by b_3 in equation (c) is indicative of the degree of interaction between the hypothesized moderator variable and the predictor variable. The value represented by b_2 indicates the degree of interaction between the moderator variable and the criterion. As represented by the Table 1, interaction by the two factors of ICT moderators namely, online information and services and online promotion & are significant, thereby indicating moderating effect on the relationship between SDL and service innovation leading to competitive advantage. For add-on service, the interaction value is non-significant, indicating that it does moderate in the said relationship. Thus, the hypothesis, *ICT moderates the relationship between SDL and service innovation leading to competitive advantage* holds true only for two moderators. Factor-wise, ICT moderators reveal that R^2 changes from 17.3% and 26.3% when interaction of SDL with moderators namely, OIC and OP are added in the relationship between SDL and service innovation leading to competitive advantage. In case of AS, R^2 change is 16.1% but the value is non-significant. Based on these results, the hypotheses H_{1a} ($b = .262$, $p < .05$) and H_{1b} ($b = .419$, $p < .05$) accepted and H_{1c} ($b = .001$, $p > .05$) is not accepted.

Table 1
Output from Moderated Regression Analysis

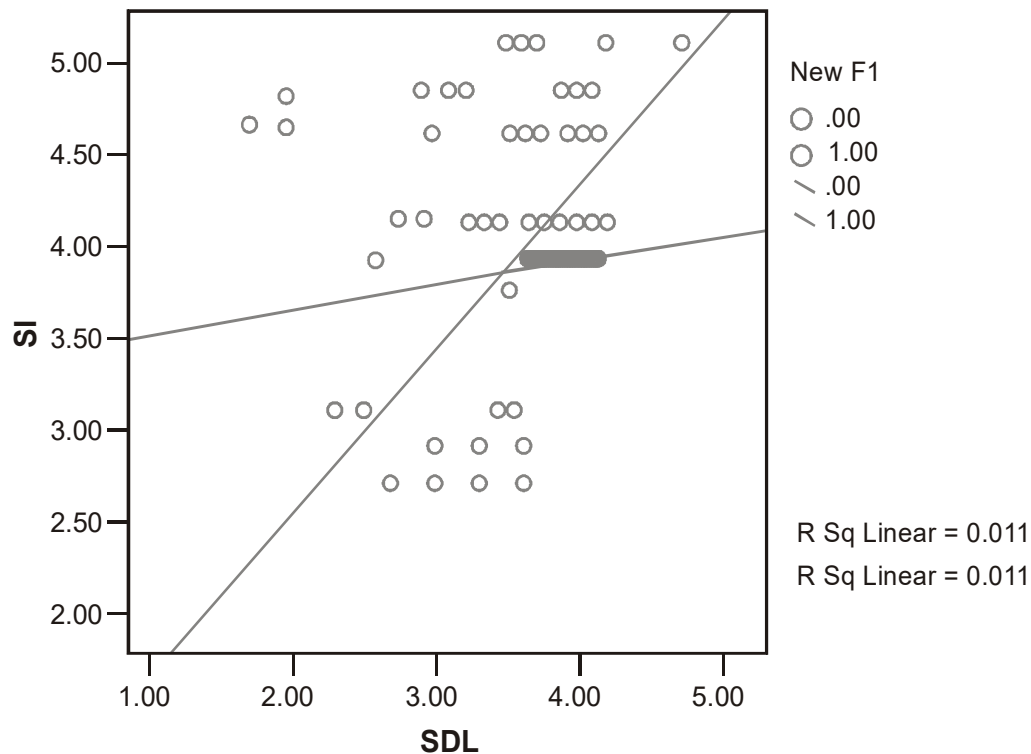
Dimensions	OIC	OP	AS
Service Dominant Logic (SDL)	.444	.714	.311
Online Information and Services (OIC)	.131	–	–
Online Promotion (OP)	–	-.136	–
Add-on Services (AS)	–	–	.180
SDL *OIC	.262*	–	–
SDL *OP	–	.419*	–
SDL *AS	–	–	.001(NS)
Adjusted R Square	.173	.263	.161

* $p < .05$, NS (Non-significant)

A sub-group analysis was conducted to find out the strength of the relationship through scatter plot in SPSS (version 21). The mean of the moderating variable is calculated and then they are spitted on the basis on values above and

below mean and coded as 1 (high values) and 0 (low values) respectively. The result of the scatter plot (Fig. 2) of the Online Information and Services shows an upward slope along with the high value of SDL at high values of Online Information and Services where $R^2 = .184$ which means 18.4% variation in service innovation can be traced to cumulative effect of SDL and high values of Online Information and Services. Similarly, in Fig. 3 and Fig. 4, the slope goes upward which high values of service innovation at higher value of online promotion and add-on services categorized as 1 which indicates that the cumulative effect of SDL with high level of online promotion and add on services contributes 26.6% and 15.4%, of variance in service innovation respectively. Thus, the hypotheses H_{2a} , H_{2b} and H_{2c} holds true.

Fig. 2 : Moderating Impact of High and Low Online Information and Services on SDL-SI Relationship

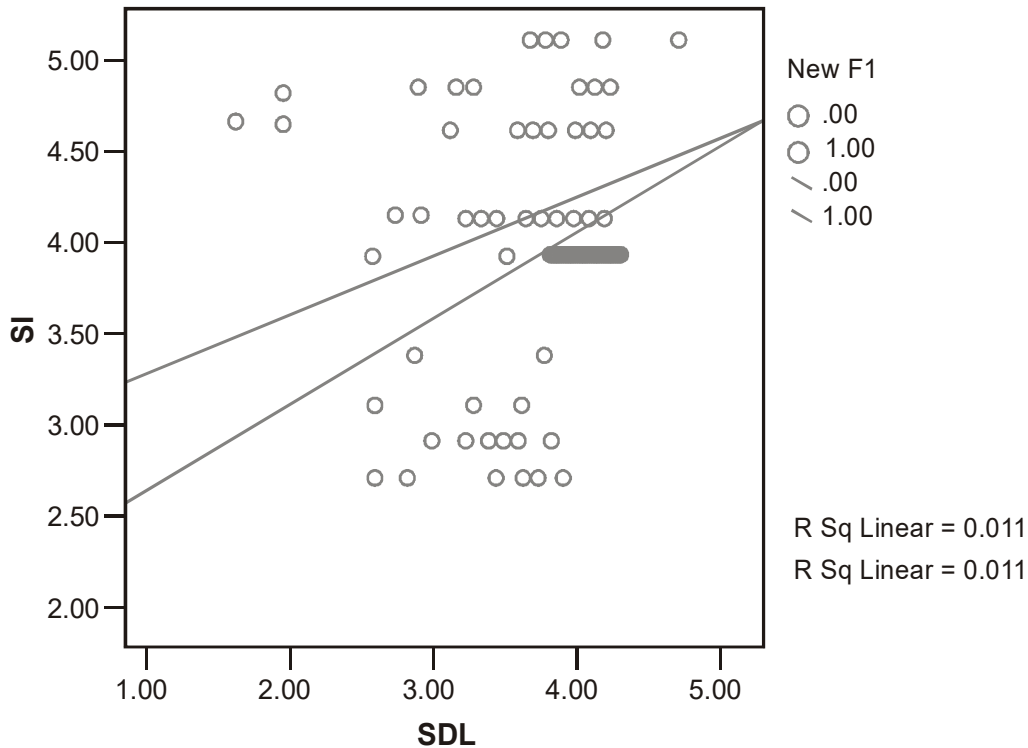


Moderating effect of online information and services (1 = High online information and services values above mean, 00 = Low online information and services values below mean. X_{axis} = Centralized values of SDL, Y_{axis} = Service innovation, R^2 = Variance explained).

Fig. 3 : Moderating Impact of High and Low Online Promotion on SDL-SI Relationship

Moderating effect of online promotion (1 = High online promotion values above mean, 00 = Low online promotion values below mean. X_{axis} = Centralized values of SDL, Y_{axis} = Service innovation, R^2 = Variance explained).

Fig. 4 : Moderating Impact of High and Low Add-on Services on SDL-SI Relationship



CONCLUSION AND MANAGERIAL IMPLICATION

The paper concluded that except for add-on services, the other two ICT moderators namely, online information & services and online promotion exerted impact on the relationship between SDL and service innovation leading to competitive advantages. Higher the online information & services and online promotion, the stronger would be the relationship between SDL and service innovation. The moderation effect of add-on service is found to be insignificant on the relationship between SDL-SI improves only marginally. This is due to the fact that add-on service caters to the needs of potential tourists who are high tech-savvy and are looking for differentiated services while the managers who are catering to these customers are in the age-group of below 35 (18.9%), age group of 35 to 45 years (56.1%) and 45 and above (25%) respectively and further, do not have any formalized training on ICT platforms. Only 20.5% of the managers have professional qualification in reference to the tourism industry and only 3.8 percent have diploma in tourism studies, as the result they often fail to understand the need of the customers and fail in redesigning of the hotel

services on the ICT platforms. Most of the innovation done by these managers is based on their experience in the industry and their creative insight. It is recommended that DMOs should pay attention on efficient delivery of service quality through ICT and regularly review the perceptions of hotel managers on usage of information communication technology. The hotel managers should be customer centric and need to understand what customers want, how they access hotel service means to ensure customer interaction and participation to achieve customer loyalty. With the interaction with stakeholders like taxi owners, restaurant owners, artisans, tour operators' etc. useful information about tourists could be elicited and online services could be designed for interacting, attracting and retaining high end customers. Given the increasing proliferation of location-based services through mobile, it becomes imperative for hotel staff to respond to customer queries spontaneously. This demands an attitudinal change among the hotel employees and effective utilization of available ICT infrastructure in order to get a grip of the relationship existing, between technological advancement and economical development trend. The hotel management should identify the areas where ICT tools and applications could be adopted, such as hotel room bookings, inventory management, human resource division, customer relation management etc. Since, the State of Jammu and Kashmir has huge potentials for attracting tourists due to its diverse topography and climate. Hence, JKTDC being the only public sector Corporation catering to the hospitality needs of tourists, has huge potential to grow. ICT infrastructure and its utilization could attract more tourist traffic, economies in house operation, improve profitability and create interlinkages with other sectors to ensure overall economic development. There is a need for a well-designed ICT strategic framework and its continuous monitoring at all levels of JKTDC operations. From this study, ICT emerges as an important pertinent factor for the hotel industry and DMOs. It also analyzes managers' perceptions towards their internal systems and how they should respond to the requirements imposed by ICT systems and standards. In future, internal elements of the hotels, such as corporate culture and working processes, could be considered in holistic way in response to the presence of ICT infrastructure and standards.

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