

Big Data Management: Building Visitor Citizenship Behavior through value co-creation

Abstract

Purpose – This paper investigates the relationship between value co-creation and visitor citizenship behavior.

Design/methodology/approach – A convenience sampling technique was used in the selection of 367 visitors who used electronic payment platforms at restaurants and fast food firms in Cape Coast metropolis- Ghana, who answered questions relating to value co-creation and visitor citizenship behavior. Hierarchical regression was used to test the effects of the hypothesized paths.

Findings – The findings show that value co-creation was positively related to visitor citizenship behavior.

Research limitations – This study was restricted to the use of e-payments by visitors, however big data analytics is a broad concept, hence future studies could explore other functionalities of the phenomenon.

Originality/value – In this research, the academic scope of VCC (DART model) was expanded from the perspective of big data management within the domain of tourism literature.

Keywords – Value co-creation, DART model, Citizenship behavior, Ghana

Introduction

Globally, there has been an increase in scholarly and practitioner attention on big data management in the tourism and hospitality industry (THI) (Jabeen et al., 2022; Yallop & Seraphin, 2020). This may partly be explained by increasing adoption of ICT and artificial intelligence in routine service operations within the industry (Ogbeide et al., 2020). Big data connotes data generated through mobile transactions, social media and business transactions. The use of big data analytics in THI spans from the gathering of business intelligence (Mayer-Schönberger & Cukier, 2013), strategy development (Liu et al., 2022) to customer attitudes towards green service delivery (Arici et al., 2022). Notwithstanding these enormous benefits of big data usage, some scholars opine that ethical and privacy concerns remain a major challenge (Ahmad et al., 2022; Ogbuke et al., 2022). Further, evidence of negative developments in the digital space; such as cyber-attacks and alarming rates of data breaches across several industries, with the THI identified as one of the worse affected remains a major concern for stakeholders (Morosan & DeFranco, 2019; Thomaidis, 2022). Therefore, there is a need for key stakeholders such as service providers and visitors within the THI to co-create value through shared responsibilities. On these bases

RQ1: What is the effect of VCC (Dialogue) on visitor citizenship behavior?

RQ2: What is the effect of VCC (Access) on visitor citizenship behavior?

RQ3: What is the effect of VCC (Risk Assessment) on visitor citizenship behavior?

RQ4: What is the effect of VCC (Transparency) on visitor citizenship behavior?

The contributions of the study to THI literature is highlighted as follows; first, the study extends literature on VCC in general and DART model in particularly by exploring it from the perspective of big data management. Second, the study is multi-disciplinary and adds to knowledge within tourism, marketing and innovation fields of study by exploring big data analytics through use of smart technologies.

Literature review

Theory grounding the study

A notable theory that projects the philosophical underpinnings of value co-creation is the DART model propounded by Prahalad and Ramaswamy (2000). DART model draws its foundation from the concept of service-dominant logic (SDL), which states that derivation of value is not entrenched in product offerings and/or distribution processes, but rather co-created with customers (Vargo & Lush, 2008). Accordingly, Prahalad and Ramaswamy (2004) posits that DART model provides in-depth insight into understanding customer cognitive and behavioral dynamics in the VCC process. The DART model has been established in the last 2 decades as a good framework to understand and implement value co-creation (Mazur & Zaborek, 2014). VCC can be described as a firm's strategic function that promote interactions among parties whose interests is to jointly and severally contribute to building an inimitable experience (Payne et al., 2008). The 'building blocks' of the DART model for value creation include; "Dialogue, Access, Risk assessment and Transparency" (Prahalad & Ramaswamy, 2004).

Tentatively, the study posits that elements of DART model is a cognitive tool to explain firm-customer value-creation. Context-wise, the study projects VCC as an antecedent of visitor citizenship behavior.

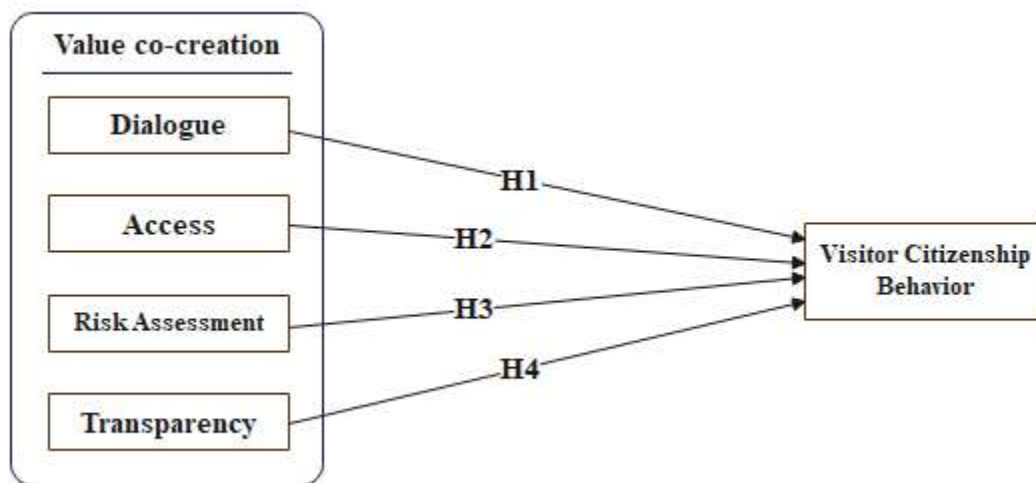
Hypothetical development

Value co-creation and Visitor Citizenship Behavior

The primary function of most service organizations is to deliver benefits to customers through an exchange relationship (Xie et al., 2017). These exchange relationships are meant to offer deeper insights into the operations of a firm with the intention of building mutual value for both service providers and customers. Customer citizenship behavior (CCB) comprise extra-role behaviors by customers, which is intended to willingly offer feedbacks through suggestions and recommendations to service providers for the purposes of service enhancement (Qiu et al., 2021). It is imperative to state that the greater the interaction between service providers and visitors, the greater visitor involvement in firm related growth pursuits such as new service development (Mugambwa et al., 2016). These assertion is entrenched in resource integration and value-in-use leading to shift towards value co-creation (VCC) within the service industry (Chen et al., 2018).

Zhang et al. (2020) asserts that VCC is an opportune medium through which visitors can contribute to firm success via indicators such as product and market developments, which in turn optimize their own utility. Customers are major contributors to firms' profitability and growth, hence, firms must continuously engage them in the VCC process (Solakis et al., 2022). In context, the study conceptualize that use of technology-based payment applications will enhance service provider-visitor value co-creation. This assertion is corroborated by Schiavone et al. (2014) who demonstrate that technology is a vital add-on to the DART model because technology creates medium of exchanges that enrich dialogue, access to information, trust, and transparency within the VCC process.

Fig 1 Author's own Hypothesized Model



Dialogue entails continuous interactions between visitors and service providers in an easy-going content-rich way (Zaborek & Mazur, 2019). Rather and Sharma (2017) asserts that access relates to the availability of relevant and timely information to customers in a reliable way. Risk assessment (RA) is the degree to which customers are able to make informed decisions among alternatives on the basis of cost-benefit analysis of a service (Ojiaku et al., 2020). Thus, RA encapsulates all potential firm-customer risks that may be encountered during value co-creation. Transparency is the description of a firm's openness to its customers; it entails provision of information on product offerings of a firm to its stakeholders (Schiavone et al., 2014). Kotler and Keller (2012) posits that transparency provides the avenue to "easily understand how the supplier calculates the differential value between its offering and next best alternative" (p. 400). There is empirical evidence of the positive relationship between VCC and visitor citizenship behavior (Assiouras et al., 2019; Nájera-Sánchez et al., 2022). Based on the arguments advanced, the following hypotheses were formulated;

H1. VCC (Dialogue) has a positive effect on visitor citizenship behavior,

H2. VCC (Access) has a positive effect on visitor citizenship behavior,

H3. VCC (Risk Assessment) has a positive effect on visitor citizenship behavior,

H4. VCC (Transparency) has a positive effect on visitor citizenship behavior.

Methodology

Data collection and sampling

This study aims to empirically test a hypothesized model linking value co-creation and visitor citizen behavior among tourists in Cape Coast- Ghana. Cape Coast is one of the most preferred destinations for tourists in Ghana (Hiamey et al., 2020). Cape Coast is largely regarded as the most historical city in Ghana (Mensah, 2022). It is home to a number of colonial heritage sites, artifacts, as well as beaches, hotels and restaurants.

The study's target population was visitors at restaurants and fast food firms within the Cape Coast Metropolis between the months of July and August 2022. A convenience sampling technique was used in administering a total of 480 questionnaires, and 367 valid responses were retrieved, representing a 76.5% response rate. The study adapted validated questionnaires for the purpose of response gathering. Altogether, 18 well trained enumerators were taken through potential ethical concerns. Probable ethical issues such as confidentiality of responses and willingness to participate were properly communicated to all study respondents. The expected time of completion of the adapted questionnaire was approximately 20 to 30 minutes.

In the preliminary analysis, 30 tourists were sampled for a pre-test as suggested by Preneger et al. (2014). The scholars argue that a minimum sample of 30 participants for pre-testing a questionnaire has the propensity to deliver a high power of 80%, while revealing challenges connected with the responses received. Lastly, the scaled-items on the pre-test questionnaire had Cronbach's alpha values exceeding of 0.70; thus, the items on the questionnaire were deemed suitable for further analysis.

Measures

A five-point Likert-type scale with anchors (1) strongly disagree to (5) strongly agree was used to gather responses on all the constructs. Description of the scales are given below.

- Value co-creation was measured by a twelve-item scale adapted from González-Mansilla et al. (2019),
- Visitor citizenship behavior was assessed a six-item scale adapted from Bartikowski and Walsh (2011).

The study employed a survey, and it encapsulates three demographic characteristics. First is gender; with females constituting the majority, with 58.8%. Second is age; with the dominant age bracket being 28-37, representing 39.7%. Finally, educational level; the dominant academic qualification is graduate degree, with a majority representation of 33.7%. Further, descriptive statistics of the mean and standard deviations of the constructs were assessed (see: Table I). Test of normality was assessed using Kolmogorov-Smirnov and Shapiro-Wilk's tests in quest

to mitigate or eradicate challenges of sample data distribution (Pallant, 2007). The p -values recorded for each construct was above α -value of 0.05 (Pallant, 2007); the values obtained illustrates normally distributed data.

Data analysis

Factor analysis

In furtherance, an exploratory factor analysis was conducted to assess scaled items which met the eigenvalue (greater than 1) threshold. With regards to VCC, 3 items were excluded from the 12 adapted items because of poor loading. The remaining 9 items explained 68.229% of total variance. Further exploration of the constructs revealed that 5 out of 6 items loaded adequately for 'visitor citizenship behavior'. The 5 items that met the adequacy threshold explained 59.983 total variance.

Other preliminary measures include; Kaiser-Meyer-Olkin (KMO) index of 0.826 and 0.831 for VCC and VCB respectively. The KMOs for both constructs were deemed satisfactory as they exceed the 0.5 threshold. The significant of Bartlett's test for both constructs were satisfactory at the level of 0.00. Both constructs recorded reliability and composite reliability scores which exceeded the 0.7 adequacy threshold (Nunnally & Bernstein, 1994).

Convergent validity in the study was proven as all the average variance extracted (AVE) values recorded were greater than the tolerable AVE threshold of 0.5. Consequently, discriminant validity was proven as square root of the constructs' AVE were greater than the correlations between the various constructs in the model (Fornell & Larcker, 1981).

Measurement and structural model

The forth model explains greater variance than the first three models, hence statistics measurement of model 4 was employed to check goodness of fit. The individual statistics measures are illustrated as follows ($\chi^2 = 316.447$, $df = 197$, $p = 0.001$); RMSEA = 0.013; CFI = 0.998; TLI = 0.996 and SRMR = 0.014, indicating good fit of the model.

Hierarchical regression

The study employed hierarchical regression analysis to test hypotheses formulated. Each element in the VCC-DART model was entered into the regression model. The first element entered was dialogue. In the second entry dialogue and access were added, in the third entry dialogue, access and risk assessment were added. Finally, dialogue, access, risk assessment and transparency were added in the forth entry. In adding these 4 independent variables to explain visitor citizenship behavior, the following R^2 changes were recorded. Dialogue explained 12.9% of total variations in VCB; addition of Access caused a positive change of 3.5% (16.4). The third model includes Risk assessment, and had a positive change of 4.7% (21.1%) on the outcome variable. Finally, in the forth model, transparency caused a positive change of 3.7% (24.8) on visitor citizenship behavior. Further, the Durbin Watson test revealed that there is no autocorrelation in the model. The forth model explains greater variance than models 1, 2 and 3. Thus, the forth model was employed in analyzing the hypotheses.

Table 1: Mean, SD, Reliability Measures and Inter-correlation for constructs

Items	CR	AVE	1	2	3	4	5
Visitor CB	0.927	0.553	0.741				
Dialogue	0.951	0.775	0.360**	0.881			
Access	0.911	0.735	0.085	-0.262**	0.857		
R. Assessment	0.823	0.572	0.378**	0.465**	-0.022	0.756	
Transparency	0.922	0.760	-0.045	0.028	0.406**	0.197**	0.872
Mean			2.987	3.445	3.442	2.832	3.169
SD			0.735	0.777	0.915	0.832	0.954

Table 2: Regression (hierarchical) model summary

Model	R	R-Square	Adj. R-Square	R-Square Change	df	df2	Sig. F-chang e	Durbin-Watson
Step 1: Dialogue	0.360	0.129	0.127	0.129	1	365	0.000	
Step 2: Dialogue, Access	0.405	0.164	0.159	0.035	1	364	0.000	
Step 3: Dialogue, Access, Risk Assessment	0.460	0.211	0.205	0.047	1	363	0.000	
Step 4: Dialogue, Access, Risk Assessment, Transparency	0.498	0.248	0.239	0.037	1	362	0.000	

1.859

Table 3: Multicollinearity

Model		Tolerance	VIF
1	(Constant)		
	Dialogue	1	1
2	(Constant)		
	Dialogue	0.931	1.074
	Access	0.931	1.074
3	(Constant)		
	Dialogue	0.720	1.388
	Access	0.918	1.089
	Risk Assessment	0.773	1.293
4	(Constant)		
	Dialogue	0.718	1.392
	Access	0.759	1.317
	Risk Assessment	0.750	1.334
	Transparency	0.791	1.265

The regression model shows that Dialogue, Access and Risk Assessment have significant and positive effect on VCB ($\beta = 0.300$); ($\beta = 0.257$); and ($\beta = 0.286$) respectively. However, Transparency had a significant and negative effect on VCB ($\beta = -0.214$). Another preliminary analysis conducted in the study is multicollinearity. The study adopted the variance inflation factor (VIF) approach. Hair et al. (2010) established that multicollinearity is evident in a dataset when VIF value exceeds 4.0. In table 4, it can be observed that all VIF figures are less than 4, hence multicollinearity not a problem in this study.

Discussion and Conclusion of findings

The study investigates links between VCC dimensions and visitor citizenship behavior. In providing a vivid understanding of the study outcomes, first, the findings confirm that 3 dimensions of VCC (Dialogue, Access and Risk assessment) had a positive effect on visitor citizenship behavior. However, the study recorded a negative effect of Transparency on VCB. It could be inferred that value co-creation is dyadic process of interaction between service providers and visitors. However visitors' extra-role involvement is premised on the degree of open conversations, information availability, perception of risks associated and general transparency of the data management process. This finding resonates with those conducted by (Assiouras et al., 2019) and (Nájera-Sánchez et al., 2022).

This research has academic importance in corroborating the effects of visitor citizenship behavior and value co-creation. Based on the results obtained, it was realized that VCC influences visitor citizenship behavior. Also, the outcomes of the study reveal that effective management of big data obtained from technology based payment platforms can yield visitor citizenship behavior towards the service provider and other customers. Based on the

findings of the study, visitor citizenship behavior was established as a consequence of all dimensions of value co-creation.

The study made some theoretical and practical recommendations. First, the study theoretically highlights the importance of visitor citizenship behavior and value co-creation through the DART model theoretical lens. Second, the study makes significant contribution to the tourism literature by examining the process through which visitors can build strong bonds with firms through big data management. In the context of practical contribution, result of this study is expected to be used as a blueprint for analyses and considerations on factors that promote VCC and factors that could yield value co-destruction such as transparency in this study. Owners and managers within the THI should devote resources into visitor data security initiatives.

Limitations and areas for future study

In spite of the implications of the study, it notes some limitations paving way for suggestions on possible directions for future research. First, this study was only undertaken in context of visitors who used electronic payments at restaurants within the Cape Coast metropolis, thus may potentially constrain generalization of the study outcomes. Future research on the subject matter could enlarge the sampling frame to cover wide-range of contexts, for instance e-banking and e-shopping, to optimize the validation of the instruments employed in the study. Second, the current study employed a quantitative research approach; and adapted DART scale developed by González-Mansilla et al. (2019). In advancing knowledge on the VCC, other studies could investigate the phenomenon by employing other VCC models.

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