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Social media marketing, value creation and firm's sustainability performance: a study among young consumers

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Abstract

Purpose - Social media marketing (*SMMT*) is explored in the light of value creation (*VC*) and firms' sustainability performance. This research deals with the influence of both value co-creation (*VCCR*) and value co-destruction (*VCDE*) on *SMMT* and firm sustainability.

Design/methodology/approach - A quantitative approach is employed in this research. By means of structural equation modeling (*SEM*), specifically, *PLS* (partial least squares)-*SEM*, consumers' responses are analyzed.

Findings - The result confirms that *SMMT* influences firms' sustainability performance. Additionally, the study established a relationship between *SMMT* and *VCCR* and *SMMT* and *VCDE*. The study further showed that *VCCR* contributes to sustainability. Concerning the indirect relationships, the study indicates that *VCDE* influenced *SMMT* and sustainability performance.

Research limitations/implications - A theoretical basis for studying both *VCCR* and *VCDE* is provided. The current study especially encourages further study into *VCDE*.

Practical implications - This work informs businesses about using *SMMT* to enhance sustainability performance. This work also warns about the reality of *VCDE* when using *SMMT*.

Originality/value - This research empirically explores *SMMT* and firm sustainability performance (*SPFM*) and also has a model that includes both *VCCR* and *VCDE*.

Keywords: Social media marketing, Sustainability performance, Value creation, Value co-creation, Value co-destruction, Affect theory

1. Introduction

Social media marketing (*SMMT*) and its contributions to value creation (*VC*) are widely studied (**Padilla-Meléndez and del Aguila-Obra, 2013; Laroche et al., 2012; Brandt et al, 2017**). However, several of the studies provide a one-sided argument focusing mainly on *VCCR*. Besides, the literature provides a barrage of conceptual and qualitative arguments (**Dolan et al, 2019; Kim and Choi, 2019; Lin et al., 2018; Rashid et al., 2019; Singaraju et al., 2016**) resulting in challenges and limitations when making definite conclusions in discussing the constructs. Considering the one-sided argument, **Owusu Yeboah et al. (2020)** assert that value co-destruction (*VCDE*) has not received adequate attention in the *VC* literature; besides, firm sustainability performance (*SPFM*) has been ignored entirely in the

social media marketing (*SMMT*) and *VC* discourse. Additionally, this study explores the relationship among the variables using the affect theory of social exchange instead of the G-D logic, S-D logic and stakeholder theory (Freeman, 2015; Vargo and Lusch, 2008) which are popular with researchers.

We conceive *SMMT* activities as described by five main dimensions: entertainment, customization, interaction, Electronic word-of-mouth communication (eWom) and trendiness. We understand such a concept as a type b, second-order composite (Crocetta et al., 2021). Even though *SMMT* activities can be operationalized in different ways (Crocetta et al., 2021), because of parsimony, we shall be applying *SMMT* activities as a first-order construct (Becker et al., 2012; Crocetta et al., 2021). This approach makes it feasible to analyze the causal effects of *SMMT* on *SPFM*, as well as the mediating role of *VC* i.e. both *VCCR* and *VCDE*. To achieve this, the following specific questions were formulated:

RQ1. What is the effect of *SMMT* on firms' sustainability performance?

RQ2. How does *VC* influence the relationship between *SMMT* and firms' sustainability performance?

The study includes the following sections: **Section 2** delves into the theoretical underpinning of the study as well as the hypotheses development. **Section 3** comprises the research design, data collection strategy and analytical techniques for the study. **Section 4** provides the statistical results and analysis. The final section describes the entire research with discussions, implications, limitations and further research.

2. Theoretical background and development of hypotheses

2.1 The affect theory of social exchange

According to Lawler (2001), this theory extends the social exchange theory by accommodating emotions that arise due to social interaction among parties, firms and customers. The social exchange theory posits that rewards and punishments emerge from social interactions (Emerson, 1976). There are four assumptions in the theory, namely: that social exchange produces either negative or positive emotions, the emotions are either (self) reinforcing or punishing stimuli, that actors try to evoke positive emotions, and finally, concerning everyday tasks, actors explain their feelings concerning social units (Lawler and Thye, 2006).

Lawler (2001) explains the four assumptions as follows. First, a successful exchange results in positive emotions, while an unsuccessful exchange produces negative emotions. It implies that when the parties realize their goals, they have feelings that are generally viewed as positive. On the other hand, when the exchange does not achieve its goals, emotions that are typically considered harmful become the result. Regarding the second assumption, he explains that positive emotions also deliver self-reinforcement stimuli while negative emotions result in punishment. The third assumption shows that in the case of positive emotions, the parties become motivated since people generally value "feeling good"; on the other hand, they become demotivated when the resultant emotions are negative. The final assumption claims that parties focus on positive emotions and direct them to social units through some cognitive mode, resulting in a stronger bond between the parties and that unit (relations, networks, or groups).

These outcomes are comparable to those in the *VC* process, that is, *VCCR* (rewards) and *VCDE* (punishment). The affect theory argues that the social exchange outcomes cannot be devoid of emotions and feelings. It is a position that this study supports for the fundamental reason that such is consistent with everyday social living, and a contrary argument has not been substantiated. Additionally, social dealings result in some emotions - either negative or positive.

The positive emotions associated with the interaction process are pleasure, pride and gratitude, whereas the negative feelings are sadness, shame and anger. All these emotions are connected with the *VC* process; depending on the outcome, they produce either positive (co-creation) or negative (co-destruction) emotions. The other assumptions apply to the *VC* process in the following ways. First, *VCCR* ensures self-reinforcement while *VCDE* induces punishment stimuli. Second, *VCCR* is highly valued because of the positive outcome, which is not the case in *VCDE* (Plé and Chumpitaz Cáceres, 2010). Third, when the parties attain *VCCR*, it improves the relationship between the parties. Since the affect theory of social exchange explains both dimensions (*VCCR* and *VCDE*) of *VC*, it provides a balanced perspective for the construct and also provides the appropriate theoretical foundation for studying *VC* and all its dimensions.

2.2 Social media marketing

SMMT involves using computer-based applications to achieve an organization's marketing goals (Kaplan and Haenlein, 2010; Li et al., 2017). By this, firms explore Internet options to achieve their marketing goals by promoting their organizations and its offerings. According to Yadav and Rahman (2017), *SMMT* occurs on platforms such as Facebook, Twitter, Instagram, WhatsApp and YouTube. On these platforms, businesses and stakeholders get the opportunity to interact and exchange information, goods and services.

The nature of *SMMT* makes it appealing for firms to engage both customers and potential customers through digital images in the form of photos and pictures, etc. Moreover, social media platforms are created with audio or sounds, videos and texts which lure people and customers in general to visit a particular social media platform. Again, these social media platforms assist and encourage site visitors to actively explore firms at their convenience (Whiting and Williams, 2013). Also, a prominent feature of *SMMT* sites is mechanisms that enable feedback from visitors. All these features ensure that both firms and customers create value for each other (Verhagen et al, 2015). Studies in *SMMT* indicate that it provides opportunities for entertainment, customization, interaction, eWOM and trendiness so that both businesses and stakeholders, in particular customers, can receive added value (Cheung et al., 2021; Yu et al., 2020). These attributes make it a powerful marketing tool able to reach diverse and large audiences. For example, Arrigo et al. (2021) report that in September 2019, there were more than 2.45 billion people on Facebook worldwide; an indication of the power of *SMMT*.

Several studies indicate that *SMMT* enhance business performance (Syaifullah et al., 2021; Tarsakoo and Charoensukmongkol, 2019). Some of these reports claim that it ensures excellent and better communication between firms and their customers by providing firms with the opportunity to provide relevant and adequate information while giving customers avenues to provide feedback. Besides, it enables customers to make inquiries about businesses and products. Another positive outcome of *SMMT* is the electronic word-of-mouth. This may provide positive reviews to several thousands of people spread across large geographic areas. Finally, it is argued that social media offers firms significant amounts of data about their market hence giving them the information they need to serve

their customers well (Arrigo et al., 2021; Geissinger et al., 2021). As an example, empirical evidence suggests that *SMMT* is a valuable business tool that can enhance a firm's marketing performance (Chawla and Chodak, 2021; Tajvidi and Karami, 2021).

2.2.1 Social media marketing and sustainability performance

Researchers are currently showing a lot of interest in *SMMT* (Dolan et al., 2019; Kong et al., 2020; Nijssen and Ordanini, 2020), as well as sustainability performance (Brehmer et al., 2018; Dhahri and Omri, 2018; He et al., 2020; Hojnik et al., 2020). Several studies through empirical evidence or conceptual arguments explain these concepts using several different settings and variables (Lee et al., 2021; Liu et al., 2021). However, very few works currently connect both *SMMT* and sustainability performance. This situation is unfortunate because literature suggests that *SMMT* influences business' performance (Ainin et al., 2015) which currently includes sustainability performance.

Sustainability performance requires that businesses harmonize economic, social and environmental goals and incorporate all three into their strategic business goals (Bae and Smardon, 2011). Sustainability is a proactive strategy which requires developing business goals that have economic, social and environmental implications. The argument for sustainability performance shares similar traits with corporate social responsibility where businesses contribute to, or support social and environmental programs even as they work towards their economic goals (Boachie-Mensa and Owusu, 2015). Sustainability goals when guided by the sustainable development goals ensure that social and environmental goals are prioritized as core business activities just like economic goals (Stubbs and Cocklin, 2008) and are embedded into the strategic goals of the firms.

Considering that sustainability performance has become a key performance indicator, the expectation is that a "natural connection" should exist between the two variables. Even though some authors have attempted to establish some relationships, the focus has only been on environmental sustainability (Martínez-Navalón et al., 2019; Sogari et al., 2017). As already indicated, sustainability goes beyond caring for the environment. Besides, the other dimensions of sustainability performance connect well with *SMMT*. For example, Owusu Yeboah et al. (2020) assert that *SMMT* by its nature grants organizations access to their stakeholders, thereby creating better value for the stakeholders. By responding to stakeholders' needs promptly and providing suitable offerings, they work towards achieving the social pillar of sustainability. Which entails that firms must support their various stakeholders i.e. individuals, groups and communities that are either within or outside the firm and are affected by the actions of firms or vice versa (Freeman, 1984). Similarly, Kong et al (2020) insist that firms can use *SMMT* to promote consumer acceptance of green products and adverts instead of the conventional marketing tools like television, radio, newspapers, magazines and trade shows which involve enormous physical resources resulting in waste and environmental pollution - a situation that makes it environmentally unsustainable, especially considering its limited coverage. The economic pillar of sustainability (Calik and Bardudeen, 2016; Hojnik et al., 2020; Lee et al., 2021) can also be catered for when firms use *SMMT*. This may be achieved through budget cuts for conventional marketing programs (Owusu Yeboah et al., 2020). Finally, Kong et al. (2020) show that customers' perceptions about firms' commitment to sustainability through *SMMT* positively affect trust and brand attitude, resulting in future financial implications. These assertions provide a basis for determining a relationship between *SMMT* and firms' sustainability performance. The paper therefore hypothesizes that:

H1. SMMT positively influence firms' sustainability performance

2.3 Value creation theory

Value focuses on benefits (or otherwise) that arise from using a product and/(or) the monetary measure of payment made for a good and service (Clulow et al., 2007; Owusu Yeboah et al., 2020). This definition combines the basic ideas that researchers use when discussing the value of goods and services (Echeverri and Skalen, 2011; Woodruff, 1997). Even though some other authors question this by insisting that it limits the concept, their contributions do not introduce genuinely novel ideas. For example, the argument for "value in experience" in the service-marketing domain (Helkkula et al., 2012) highlights creativity. However, it is a logical extension or inherent expectation when value is being discussed in marketing.

The modern trend in *VC* is *VCCR*, which argues that stakeholders should contribute to the *VC* process since it yields better outcomes (Ranjan and Read, 2016; Casper Ferm and Thaichon, 2021; Franklin and Marshall, 2019; Vargo and Lusch, 2016). The concept of co-creation relies heavily on the service-dominant logic, which puts customers in an integral position in service delivery, arguing that customers derive additional value when they are part of the *VC* process (Vargo and Lusch, 2008).

To better appreciate *VCCR*, indicators such as knowledge, equity, experience and relationship have been suggested to help researchers to understand it and its applications. According to Ranjan and Read (2016), learning involves using knowledge, ideas and creativity that belongs to customers. They support their claims using references like Maglio and Spohrer (2008) and Zhang and Chen (2008). Concerning equity, they explain that firms give up some control to accept consumers' preferences (Fisher and Smith, 2011). They refer to Ballantyne and Varey (2006) and explain experience as "an empathetic, emotional and memorable interaction that has intrinsic value." Finally, they explain relationship as a connection, that is; "reciprocal and iterative" collaboration between firms and customers in the *VC* process (Bonsu and Darmody, 2008; Ranjan and Read, 2016).

The other end of the *VC* scale is *VCDE*, which suggests that *VC* can sometimes turn sour (Dolan et al., 2019; Järvi et al., 2018). It simply describes a situation when the parties that is, firms and customers, do not realize the value intended in the *VC* process. This highlights the detrimental effects of a negative consequence in the *VC* process. It can happen either directly or indirectly and at any stage of the *VC* process from production to consumption (Hoyer et al., 2010; Roggeveen et al., 2012). Owusu Yeboah et al. (2020) explain that *vCdE* "affects both parties ... at least in the long run."

VCDE is relatively novel in the *VC* discussion, and so very few conceptual and empirical studies are available on it (Echeverri and Skälén, 2021). However, through conceptual arguments and extensive literature review, Owusu Yeboah et al. (2020) suggests some indicators that other researchers may use measuring it. These are in two categories: 1. customer-related measures: customer exploitation, abuse of customers' resources, miscommunication and customer abuse. 2. Producer-related measures, namely: power insecurity, abuse of producers' resources, miscommunication and customer complaints. Using both measures provide researchers with a balanced and objective view of the construct. The study argues that *VC* represented by *VCCR* and *VCDE* influences the relation that may exist between *SMMT* and firms' sustainability. From the preceding, it is hypothesized that:

H2. VCCE mediates the relationship between SMMT and firms' sustainability performance

H2a. SMMT influences VCCE

H2b. VCCE influences firms' sustainability performance

H3. VCDE mediates the relationship between SMMT and firms' sustainability performance

H3a. VCDE influences firms' sustainability performance

H3b. SMMT influences VCDE

2.4 Research framework and hypotheses

The research model shows the direct relationship between *SMMT* and firms' sustainability performance with *VCCR* and *VCDE* acting as interacting variables. These are depicted in **Figure 1**.

3. Research methods

3.1 Study measures

Most of the scales for the constructs in this work are in existing literature. However, they were adapted to make them suitable for this work. In the case of constructs without existing scales, the authors proposed appropriate measures based on related literature. To further ensure the instruments' validity, opinions from three experts in the study area were also sought i.e.

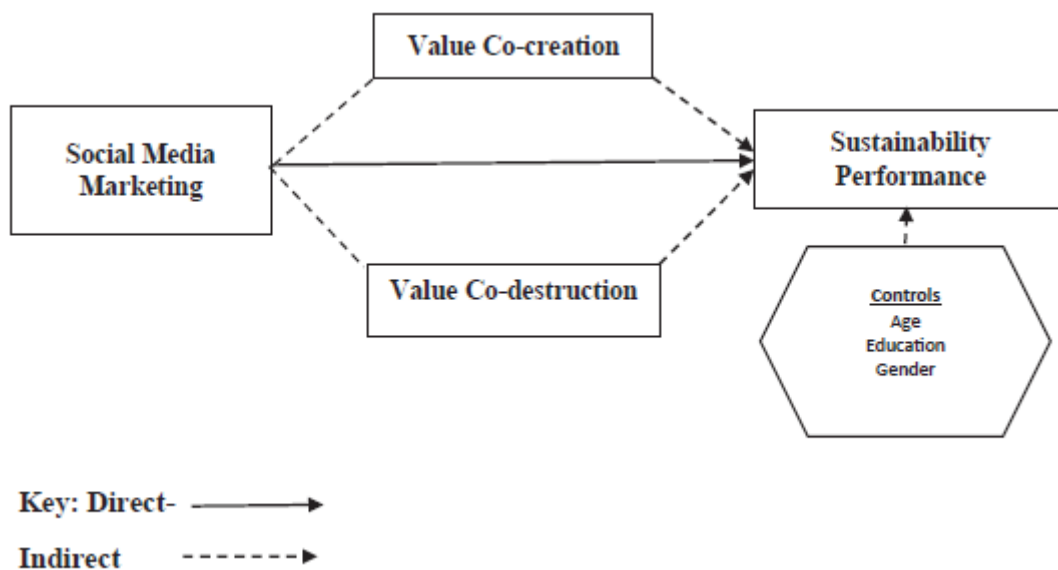


Figure 1. Conceptual model

Information Systems and Marketing. This ensured clarity and consistency of the items. Finally, to determine the instrument's reliability and understandability, the researchers undertook a pretest with ten (10) students each from the Bachelor's and Master's level at the first author's University to ascertain whether the instrument was clear and without ambiguities. The final instrument contained a total of 39 items grouped into five categories. These are demographic items (4), SMMT items (5), VCCR items (12), VCDE items (8) and sustainability performance items (10). SMMT items were from Kim and Ko (2012) whilst the scales for VCCR were adapted from a number of authors (Chatterjee et

al., 2021; Grover and Kohli, 2012; Hoyer et al., 2010; Neuhofer et al., 2015; Rahman et al., 2019; van Noort et al., 2012; Wei et al., 2015; Zhang and Chen, 2008). The scales for VCDE were from Owusu Yeboah et al. (2020) based on works such as: Cova et al. (2011), Echeverri and Skjøtt-Larsen (2011), Fisher and Smith (2011), Pongsakornrungrungsilp and Schroeder (2011) and Xu et al. (2016). Regarding sustainability performance, the authors adapted scales from Calik and Bardudeen (2016), Hojnik et al. (2020) and Lee et al. (2021). Except for demographics, all the other constructs were measured on the five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The complete description of the scale items is presented in Table 1.

3.2 Study setting and data collection strategy

The sample for this research was drawn from a student population in The Czech Republic. University students were deemed suitable for this study because of the following reasons. First, the focus of the research was on consumer perception which is consistent with past research (**Baudier et al., 2020; Nosi et al., 2017**). Students as a group of consumers are also familiar with social media usage and can evaluate its merits and demerits. Second, the student sample is more likely to have experience with social media as they fall within the millennial category, which forms part of the basis of this study. Third, students can be classified as analogous in terms of their demographics and consequently controlling for their age and education level reinforces a practical test of our hypotheses. The research adopted the convenience sampling technique, with participation being voluntary; this is consistent with works on *SMMT* (**Hajli, 2015**). Again, whilst we acknowledge that the use of a convenience sample has its own limitations as research findings may not be generalizable to the larger population, it must be understood that our current investigations are not aimed at making generalization to the larger population. Rather the emphasis regarding this study is geared towards analytic generalization (**Polit and Beck, 2010**).

The study relied on web-based surveys. The questionnaire was distributed via the help of the study department in the first author's University. A general email was sent across with request to partake in the study. In the end, 523 returned the entire questionnaire, yet 414 responses were accurate for the final analyses. The breakdown of the characteristics of the respondents is shown in **Table 2**.

Table 1. Constructs and underlying items

Construct	Indicator	Description
Social Media Marketing	SMMT 1	I believe that dealing with businesses through social media provides opportunities for customized goods and services
	SMMT 2	I believe that dealing with businesses through social media helps me to interact better with them
	SMMT 3	I believe that through social media, I can get genuine reviews about firms' goods and services
	SMMT 4	I believe that social media marketing provides current information about firms and their activities
Value Co-creation	VCCR 1	I believe that when customers and firms interact, they create more value for each other
	VCCR 2	I believe that there should be opportunities for customers and firms to interact to create value
	VCCR 3	I believe that there should be motivation for customers to interact with firms in creating value
	VCCR 4	I feel that interacting with firms is an excellent opportunity for me to engage with the producers
	VCCR 5	I feel that interacting with firms allows me to get customized goods and services
	VCCR 6	I feel that firms that interact with customers to create value are more customer-focused
	VCCR 7	I feel that interacting with firms helps to develop goods and services in a better way
	VCCR 8	I feel that interacting with firms encourage direct communication which improves better relationship
	VCCR 9	I feel that interacting with firms makes me loyal to them
	VCCR 10	I feel I get better value when I interact with firms to create their goods and services
	VCCR 11	I feel that contributing my knowledge to co-creation activities provides satisfaction for me
	VCCR 12	I feel that contributing my knowledge to co-creation activities ensures that I test the goods and services before entering the market
Value Co-destruction	VCDE 1	When firms use customers' time for free, it destroys value for customers and businesses
	VCDE 2	I think that it is unfair for producers to use customers' ideas without acknowledging them
	VCDE 3	I think that poor communication from firms results in value co-destruction
	VCDE 4	I think that mistreating customers even in the slightest way results in value co-destruction
	VCDE 5	I feel that when firms become overly conscious about having control, it results in co-value destruction
	VCDE 6	I think It is unfair when customers use firms' information without patronizing their goods and services
	VCDE 7	I believe that poor communication from customers results in value co-destruction
	VCDE 8	I believe that inaccurate or untrue claims about producers from customers result in value co-destruction
Sustainability performance	SPFM 1	I think that social media marketing results in lower business costs
	SPFM 2	I think that social media marketing increases profits for firms
	SPFM 3	I believe that social media marketing provides more customers for firms
	SPFM 4	I believe that firms involved in social media marketing are more innovative
	SPFM 5	I perceive that firms involved in social media marketing provide better customer service
	SPFM 6	I perceive that firms involved in social media marketing provide products that are more suitable for their customers
	SPFM 7	I perceive that firms involved in social media marketing interact better with their customers
	SPFM 8	I believe that firms involved in social media marketing produce less waste
	SPFM 9	I believe that firms that use social media marketing create fewer emissions and pollution
	SPFM 10	I think that firms involved in social media marketing use fewer resources in their activities

3.3 Common method bias

To mitigate the likelihood of common method bias (*CMB*) in the study (Podsakoff et al., 2003), respondents were assured of confidentiality and anonymity in the dissemination of the online questionnaire. Also, details involving the variables measured and the relationships being examined were not disclosed. Additionally, respondents were told that there were no right or wrong answers to the questions, so they were free to choose their responses. A full collinearity technique was used in assessing the significance of *CMB* in the study, and the results indicate that none of the variance inflation factor (*VIF*) values was above the minimum threshold of 3.3 (Kock's, 2015). Finally, the study relied on Harman's single-factor test to observe for *CMB*. The results generated from this test revealed that the most dominant factor merely accounted for 25.425% which is far below the 50% baseline of the shared variance in the data.

4. Results

4.1 Exploratory factor analysis

Congruent with previous research works (Nadiri and Turner, 2009; Osakwe, 2019), all the evaluative measures of the study were subjected to principal component analysis using the varimax rotation technique. The results indicate that the items loaded significantly on their reflective latent factors except for few items which were consequently dropped (see Table 3).

4.2 Empirical strategy

The study adopted partial least squares structural equation modeling (*PLS – SEM*) as the primary analytical tool because the investigation was exploratory and involved mediation analysis (Hair et al., 2020). The analyses of the data were based on the conventional *PLS* algorithm with bootstrapping set to 5,000 sub-samples and no sign amended. The work relied on Smart *PLS* 3.3.2 for most of the analyses (Ringle et al., 2015).

4.3 Measurement model assessment

To determine the quality and the fitness of the model (Hair et al., 2020; Henseler et al., 2015), the factor loadings of the latent variables were measured. The results showed that all factor loadings met the basic assumptions and were within the acceptable range from 0.7 except for some few items in the newly developed scales (co-destruction and *VCCR*) which were below the minimum baseline.

Table 2. Demographic information on respondents N (414)

Attribute	Categorization	Frequency
Gender	Female	239
	Male	175
Age	18–25	316
	26–30	71
	31–39	27
Educational attainment	Undergraduate	255
	Bachelor's Degree	85
	Postgraduate Degree	74

Table 3. Exploratory factor analysis output for constructs

Items	Components			
	1	2	3	4
<i>Social Media Marketing</i>				
SMMT2			0.677	
SMMT3			0.759	
SMMT4			0.619	
<i>Value Co-creation</i>				
VCCR1	0.596			
VCCR3	0.644			
VCCR4	0.651			
VCCR5	0.690			
VCCR6	0.754			
VCCR11	0.723			
VCCR12	0.700			
<i>Value Co-destruction</i>				
VCDE 1				0.564
VCDE 2				0.633
VCDE 3				0.764
VCDE4				0.663
<i>Sustainability Performance</i>				
SPFM5		0.797		
SPFM6		0.853		
SPFM7		0.741		
Eigenvalue	5.421	1.879	1.43	1.162
Variance (%)	31.889	11.051	8.411	6.833
Cumulative (%)	31.889	42.94	51.35	58.184
Extraction Method: Principal Component Analysis				
Rotation Method: Varimax with Kaiser Normalization				
a Rotation converged in 7 iterations				
KMO and Bartlett's test				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy				0.879
Bartlett's test of Sphericity		Approx. Chi-Square		2254.932
		Df		136
		Sig		0.000
Note(s): Items below the threshold of 0.5 were eliminated due to low loadings; the analysis was performed using IBM SPSS software (v.25)				

According to **Hulland (1999)**, in cases of newly developed scales, a lower figure as reported in our case is acceptable (0.619; 0.693; 0.669; 0.645). Additionally, the values for Cronbach's alpha (*CA*), composite reliability (*CR*) and average variance extracted (*AVE*), were also calculated. These were found to lie within the acceptable range (**Hair et al., 2012**). This confirmed convergent validity for the model (**Table 4**).

Finally, the data was tested for discriminant validity with findings shown in Panel A, **Table 5 (Fornell and Lacker, 1981; Henseler et al., 2015)**. This was corroborated using

the heterotrait-monotrait (*HTMT*) correlational measure (Henseler et al., 2015). A threshold ratio of <0.85 (Kline, 2011) indicates that the respondents understood that the constructs in the model were distinct as earlier stipulated. Given this, it can be concluded that, there is evidence of discriminant validity (Panel B, Table 5).

Table 4. Measurement Model's descriptive statistics and convergent validity assessment criteria

Construct	SD	Mean	FL	CA	CR	AVE
<i>Social Media Marketing (SMMT)</i>				0.662	0.814	0.594
<i>SMMT 2:</i> I believe that dealing with businesses through social media helps me to interact better with them	0.953	3.737	0.751			
<i>SMMT 3:</i> I believe that through social media, I can get genuine reviews about firms' goods and services	0.978	3.717	0.753			
<i>SMMT 4:</i> I believe that social media marketing provides current information about firms and their activities	0.850	3.961	0.808			
<i>Sustainability Performance (SPFM)</i>				0.799	0.882	0.714
<i>SPFM 5:</i> I perceive that firms involved in social media marketing provide better customer service	0.970	3.437	0.860			
<i>SPFM 6:</i> I perceive that firms involved in social media marketing provide products more suitable for their customers	0.965	3.500	0.860			
<i>SPFM 7:</i> I perceive that firms involved in social media marketing interact better with their customers	0.986	3.614	0.813			
<i>Value Co-creation (VCCR)</i>				0.853	0.887	0.531
<i>VCCR 1:</i> I believe that when customers and firms interact, they create more value for each other	0.858	4.007	0.725			
<i>VCCR 3:</i> I believe that there should be motivation for customers to interact with firms in creating value	0.874	4.104	0.764			
<i>VCCR 4:</i> I feel that interacting with firms is an excellent opportunity for me to engage with the producers	0.886	3.771	0.768			
<i>VCCR 5:</i> I feel that interacting with firms allows me to get customized goods and services	0.833	3.870	0.693			
<i>VCCR 6:</i> I feel that firms that interact with customers to create value are more customer-focused	0.864	3.732	0.708			
<i>VCCR 11:</i> I feel that contributing my knowledge to co-creation activities provides satisfaction for me	0.851	4.087	0.809			
<i>VCCR 12:</i> I feel that contributing my knowledge to co-creation activities ensures that I test the goods and services before entering the market	1.009	3.490	0.619			
<i>Value Co-destruction (VCDE)</i>				0.645	0.789	0.501
<i>VCDE 1:</i> When firms use customers' time for free, it destroys value for customers and businesses	0.883	3.604	0.669			
<i>VCDE 2:</i> I think that it is unfair for producers to use customers' ideas without acknowledging them	1.021	3.669	0.746			
<i>VCDE 3:</i> I think that poor communication from firms results in value co-destruction	0.906	3.824	0.718			
<i>VCDE 4:</i> I think that mistreating customers even in the slightest way results in value co-destruction	0.899	3.836	0.645			

Note(s): Var. = Variance, CA = Cronbach's alpha, CR = composite reliability and AVE = average variance extracted

4.4 Structural model assessment

Consistent with the recommendations by **Benitez et al. (2020)**, the fit statistics for the estimated and saturated model were initially assessed and the results represent a good model fit (**Table 6**). Specifically, the standardized root-mean-squared residual (*SRMR*), unweighted least squares (*Euclidean*) distance (d_{ULS}), and the geodesic distance (d_G) values were within stated acceptable limits in the literature. Altogether, **Table 6** indicates that our model cannot be rejected and further demonstrates that the proposed theoretical model is hypothetically useful for accounting for the relationship among *SMMT*, *SPFM*, *VCCR* and *VCdE*.

Next, we addressed issues of multicollinearity. There were no issues on collinearity as the inner model's *VIF* values recorded far less than 3.3 which is the rule of thumb (**Kock, 2015**).

Table 5. Discriminant validity results

Construct	1	2	3	4	5	6	7	8		
<i>Panel A: Fornell-Larcker criterion</i>										
1. Age	1.000									
2. Aware	0.077	1.000								
3. Education	0.344	0.093	1.000							
4. Gender	-0.130	0.145	0.063	1.000						
5. Soc. Media Mkt	-0.025	0.074	0.025	-0.001	0.771					
6. Sustainability Perf	-0.064	0.050	0.082	0.011	0.373	0.845				
7. Value Co-Creation	-0.049	0.022	0.002	-0.061	0.499	0.313	0.729			
8. Value Co-Destruction	-0.056	0.102	0.031	0.018	0.275	0.317	0.453	0.696		
Construct	1	2	3	4	5	6	7	8	9	10
<i>Panel B: HTMT criterion</i>										
1. Age										
2. Aware	0.077									
3. Education	0.344	0.093								
4. Gender	0.130	0.145	0.063							
5. Soc. Media Mkt	0.082	0.118	0.111	0.094						
6. Sustainability Perf	0.077	0.096	0.109	0.030	0.521					
7. Value Co-Creation	0.053	0.047	0.034	0.070	0.624	0.373				
8. Value Co-Destruction	0.112	0.124	0.050	0.063	0.414	0.433	0.616			

Note(s): HTMT inference criterion <1.00 based on 5,000 subsamples

Table 6. Results of overall model fit statistics

Discrepancy	Saturated model			Estimated model			Conclusion
	Value	HI ₉₅	HI ₉₉	Value	HI ₉₅	HI ₉₉	
SRMR	0.064	0.050	0.052	0.087	0.058	0.062	Supported
d_{ULS}	0.948	0.579	0.625	1.749	0.777	0.891	Supported
d_G	0.251	0.208	0.221	0.282	0.212	0.224	Supported

Note(s): Standardized root-mean-squared residual (SRMR); Euclidean distance (d_{ULS}) and the Geodesic distance (d_G)

Thus, the explained variance, R^2 , for sustainability performance accounted for 20%, while it was 24% and 7% for both $VCCR$ and $VCDE$, respectively. We also assessed the magnitude of the effect size (Cohen's effect size) $-f^2$; the predictor variables accounted for a functional contribution to the explained variance of the outcome variable (Hair et al., 2013). Finally, the blindfolding procedure was used to test the predictive relevance of our research model i.e. Stone-Geisser's Q^2 value. The Q^2 values for the three endogenous constructs were positive and above zero. As a follow-up, all the relationships were tested simultaneously including the four control variables. The results from the hypotheses showed that $SMMT$ affects $SPFM$ ($\beta = 0.277, \rho < 0.05$), thereby confirming **H1**. Similarly, **H2a**, **H3b** and **H3a** were supported as depicted by their respective statistics ($\beta = 0.499, \rho < 0.05$), ($\beta = 0.275, \rho < 0.05$); ($\beta = 0.204, \rho < 0.05$). However, **H2b** was not supported ($\beta = 0.082, \rho < 0.05$). This also means that $SMMT$ influenced both $VCCR$ and $VCDE$. However, while $VCDE$ influenced $SPFM$, as expected, $VCCR$ did not influence $SPFM$. Finally, all the control variables were insignificantly correlated to $SPFM$ with the exception of Education. This implies that the level of customers' education influences their perception on the relationship between $SMMT$ and $SPFM$ (see Table 7 and Figure 2).

Table 7. Hypothesis testing results

Hypotheses	Path	Beta coefficient (β)	VIF	t -values	p -values	Decision	F^2	
H1	$SMMT \rightarrow SPFM$	0.277	1.344	4.385	0.000	Accept	0.072	
H2a	$SMMT \rightarrow VCCR$	0.499	1.000	9.343	0.000	Accept	0.331	
H3b	$SMMT \rightarrow VCDE$	0.275	1.000	4.091	0.000	Accept	0.082	
H2b	$VCCR \rightarrow SPFM$	0.082	1.569	1.038	0.150	Reject	0.005	
H3a	$VCDE \rightarrow SPFM$	0.204	1.282	3.040	0.001	Accept	0.041	
CV1	Age \rightarrow SPFM	-0.010	1.163	0.213	0.416	n.s	0.000	
CV2	Aware \rightarrow SPFM	0.016	1.052	0.335	0.369	n.s	0.000	
CV3	Educ \rightarrow SPFM	-0.093	1.145	1.873	0.031	Significant	0.010	
CV4	Gender \rightarrow SPFM	0.003	1.051	0.062	0.475	n.s	0.000	
		R^2						Q^2
SPFM		0.203						0.134
VCCR		0.249						0.122
VCDE		0.076						0.034

Note(s): $SPFM$ = sustainability performance, $SMMT$ = social media marketing, $VCCR$ = value co-creation, $VCDE$ = value co-destruction and n's = non-significant, $\rho < 0.05$

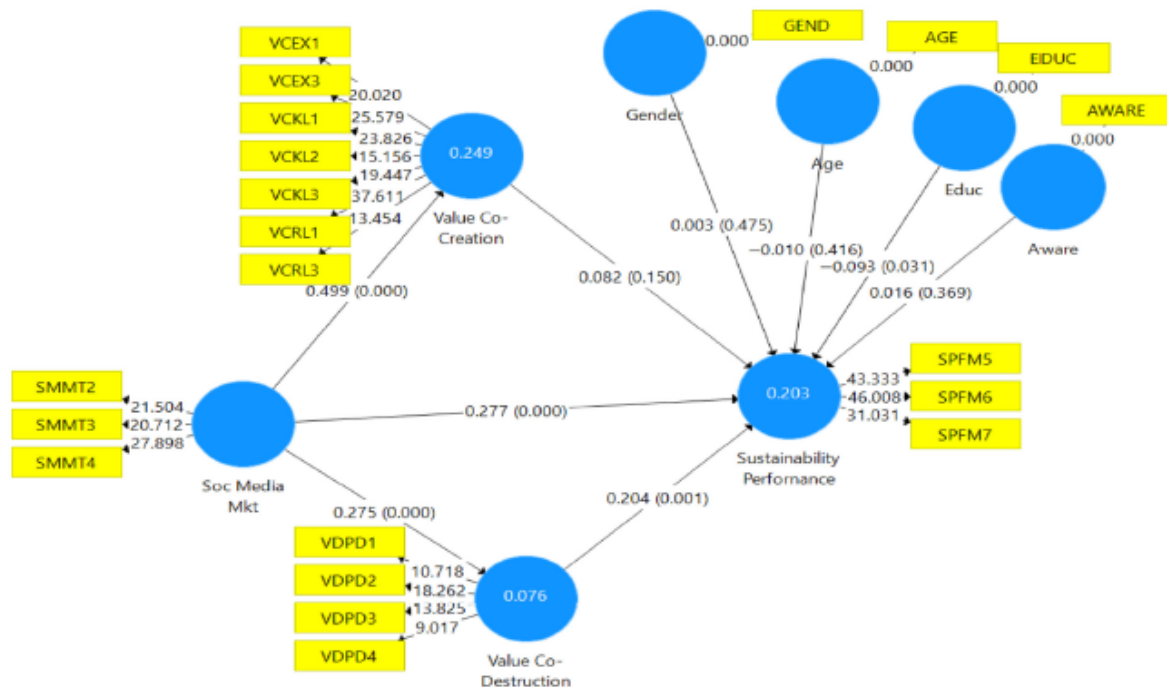


Figure 2. Output model

4.5 Supplementary analyses: evidence of mediation

The paper adopted the technique suggested by **Preacher and Hayes (2008)** and tested the mediating effect of *VCCR* and *VCDE* in the model. Even though the work predicted that both *VCCR* and *VCDE* would positively mediate the link between *SMMT* and *SPFM* this did not happen. Contrary to our expectations, the results of the indirect effect testing using bootstrapping technique do not support that *VCCR*-($\beta = 0.041, \rho < 0.05$) will mediate *SMMT* and *SPFM*, hence we failed to accept **H2**. However, there was mediation effect between *SMMT* and *SPFM* via *VCDE*-($\beta = 0.056, \rho < 0.05$) Taken together, the conceptual research model has been validated (**Table 8**).

Table 8. Mediation analyses

Hypotheses	Total effect		Direct effect		Mediation path	Indirect effect		t-value	p-value	Confident interval BI (2.5%, 97.5%)	Interpretation
	β	p-value	β	p-value		β	SD				
SMMT → SPFM H2	0.374	0.000	0.277	0.000	SMMT → VCCR → SPFM	0.041	0.039	1.032	0.151	-0.025, 0.106	No mediation
SMMT → SPFM H3	0.374	0.000	0.277	0.000	SMMT → VCDE → SPFM	0.056	0.023	2.493	0.006	0.024, 0.097	Mediation

5. Discussion

Consistent with assertions in the existing literature and the study's position, customers perceive that there is a relationship between *SMMT* and *SPFM*. Furthermore, *SMMT* influenced *SPFM* as indicated by accepting **H1**. Such a finding explains the direct relationship between the two constructs in the study and further reinforces the existing theory. Unlike previous works that focused on environmental sustainability (**Martínez-**

Navalón et al., 2019; Sogari et al., 2017), this one has provided additional insights on the subject by including all three aspects of sustainability. The advantage is that, it can guide firms in attaining sustainability more completely by achieving environmental, social and economic goals.

An attempt was also made to ascertain the perception of customers on the relationship between *SMMT* and *VCCR*. The findings led to accepting **H2a** as *SMMT* contributed to *VCCR*. Even though several studies have commented on this relationship, much of such works are conceptual or, at most, qualitative (**Dolan et al., 2019; Kim and Choi, 2019; Lin et al., 2018; Rashid et al., 2019; Singaraju et al., 2016**). Nevertheless, this work contributes to theory from an empirical perspective, giving credence to earlier propositions and the limited findings that some of the studies have already established. Such a result informs firms that *SMMT* is an opportunity for creating value for their stakeholders. Hence, firms may take at advantage of it to reach their stakeholders faster and resolve their issues; it can also help to disseminate information about the firm and its products in order to keep stakeholders informed.

Similarly, the relationship between *SMMT* and *VCDE* has been established in the current work. The result led to accepting **H3b** hence, showing that in the context of this study, *SMMT* contributed to *VCDE*. It supports current works on the relationship between the variables (**Dolan et al, 2019; Jarvi et al, 2018; Quach and Thaichon, 2017; Zhang et al., 2018**). Beyond that, it offers newer and broader explanation on the role of *VCDE* in the social media discourse. By using a much larger sample size, introducing measurement scales for the variable and incorporating issues from both consumers and producers in the study; there is now additional empirical evidence for further studies. The outcome here, throws caution to businesses to manage and take charge of their social media activities and institute measures that will alleviate or minimize unnecessary negative consequences in their interactions with their stakeholders since this is an actual risk when using social media tools.

Contrary to the hypothesis **H2b**, *VCCR* did not directly influence *SPFM*. The hypothesis was therefore, rejected. The finding contributes to the existing literature but contradicts the assertions of other researchers on the subject (**Casali et al., 2018; Lacoste, 2016; Ma et al., 2019**). The outcome updates or better still, provides another perspective on the relationship between the constructs thereby, creating room for further investigations. Concerning the reason for this finding, it is probably because most *VCCR* activities were not sustainability related. Studies that concluded that *VCCR* could result in sustainability were probably focused on the social benefits that are related to such opportunities. However, it is still possible to attain sustainability goals if such *VCCR* activities purposely target sustainability issues.

The study further tested the indirect relationship between *SMMT* and *SPFM* using *VCCR* and *VCDE* as mediators. These revealed that in the context of the current work, an indirect relationship exists. Whiles *VCDE* impacted on the relationship between *SMMT* and *SPFM* as speculated by **Owusu Yeboah et al. (2020)** *VCCR* did not. Therefore, hypothesis **H2** was not supported however, **H3** was accepted. It is yet another indication of the potential powerful impact of *VCDE* in the proposed framework. Undoubtedly, the influence of negative experiences has far reaching consequences and hence, must be guard against in the *VC* process (**Echeverri and Skålén, 2021**).

The authors conclude that the study's model has been validated since the direct relationships and a part of the indirect relationship have been proven. A more precise and deeper understanding of the variables have been provided with potential research gaps being exposed especially involving the indirect relationship. The authors further argue that the complex nature of the model could have contributed to the findings in the case of *VCCR*. The anticipation is that in simpler models, the variables and their measurement items would predict effectively. This expectation makes that aspect of the study quite useful as it has contributed to developing relevant measurement scales for future studies.

6. Conclusion

6.1 Implications for research

This is one of the few works that have attempted to empirically provide a balanced perspective on *VC* by including *VCDE* in the model and testing its relevance in the *VC* discussion. The results affirm the need to consider *VCDE* in similar studies so that a better assessment of *VC* can be made. Furthermore, the findings of this work contribute extensively to existing theory and provide valid empirical evidence for *VCDE* hence, providing researchers with additional opportunities to study *VC*.

Another significant contribution is the development of measurable scales for *VCDE*. This aspect of the work contributes immensely to the value of co-destruction literature by providing an instrument that other researchers can rely on for future studies. In addition, this instrument makes it possible for researchers to measure *VCDE*, considering both consumer and producer-related items.

Also, the fact that the interacting influence of *VCCR* in the relationship was not supported provides an additional gap in the literature. Researchers should conduct further studies to enhance the scales. The authors assert that the outcome of the indirect effect was probably because of the complex nature of the model. There is the possibility that when the scale is used on other relationships, other outcomes will be realized. Additional research is needed to either confirm or disconfirm this.

The direct relationships between *VCDE* and *SMMT* and *SPFM* are helpful in future studies. They can aid researchers in formulating better research hypotheses based on empirical works instead of relying on conceptual arguments that may not reflect the actual conditions.

This work also contributes to *VCCR* by confirming existing arguments on its relationship with *SMMT* and firms' sustainability performance. That makes it a viable research area that other researchers can contribute to since minimal studies exist in this regard. Researchers have the options to treat *VCCR* as an independent, a moderating, a mediating, or a dependent variable for further analysis.

The current work discussed sustainability performance from a holistic perspective by including all its constructs that is, social, environmental and economic. This approach contributes to the existing literature in a novel manner as current sustainability works on this relationship consider only the environmental issues. From this work, it can be concluded that sustainability (not only the environment) is relevant in the social media discussion. Other researchers can take lessons from this and deal with it as a whole when undertaking such studies.

Again, a key theoretical implication of the present study centers on integrating a different theoretical perspective (The affect theory of social exchange) to gauge customers' perception of *SMMT* and *SPFM* in the light of *VC*. By virtue of axiomatizing this theoretical perspective provides a logical and an interesting perspective of the relationship among the variables of study. It further provides a solid theoretical basis for the study considering the fact that this work has very little empirical basis since

most of the arguments are mainly conceptual and at best qualitative. Researchers can use this strategy to expand knowledge by identifying theories that have not been used but are related to their constructs of interest and explore their research interests.

6.2 Implications for practice

Firms must create effective digital platforms to connect with their customers while equally equipping prompt feedback from their customers. For instance, the use of chatbots and other communication tools might create value for both firms and the customer. Hence, investments in retraining or upgrading of Information systems and technology at the firm level is of immense importance to help respond to grievances churned out from customers.

Moreover, as *VCDE* was found to have a mediation effect on *SMMT* and firm's sustainability performance, both producer and consumer-related issues should be addressed concurrently to curb any unforeseen issue between the two parties as this practice might have dire consequences for the firm in the long run.

Finally, the significant association between education and *SPFM* is a wake-up call for firms. Since level of education impacts the perception of *SMMT* and firms' sustainability performance, providing more detailed information via any of the social media outlets by the firms will inure to providing adequate feedback from customers to re-shape the company.

6.3 Limitations and future research

The likelihood of a research model not addressing all the dynamics of a relationship is certainly present. We are not oblivious that additional factors can influence the perception of *SMMT* and *SPFM*. Therefore, we encourage future studies to consider other pertinent factors which may influence the perception of *SMMT* and *SPFM* in other geographical contexts by possibly comparing a developed country context to a developing country context. Also, given that the respondents are students and were selected based on convenience sampling, we cannot claim that our results are generalizable. Future studies may use probability sampling techniques while focusing on other segments such as owner-managers or other stakeholders. All these efforts can expand and enrich the *SMMT*, *VC* and *SPFM* literature.

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