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Promoting university brand through student co-creation behaviors: the role of online brand posts

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Abstract

Purpose – This study investigates the role of social media brand posts on customer response and whether said impacts foster engagement in brand co-creation behaviors, especially in the higher education sector. The study further explores the moderating role of a university's reputation in strengthening the effects on student response and co-creation behaviors.

Design/methodology/approach – The authors conducted this research by using the dual processes of the heuristic–systematic model to understand the effects of brand post-characteristics on student's responses and behaviors. A dataset obtained from a survey of 755 students was employed to estimate the proposed research model.

Findings – The results illustrated two key characteristics of brand posts, namely argument quality (systematic processing) and quantity of posts (heuristic processing), positively affect cognitive and affective responses, thus encouraging students to co-create value for a university brand. Moreover, our study also found that university reputation plays a significant moderating role in strengthening the relationship between recipients' responses and co-creation behavior.

Originality/value – Online brand posts not only enable institutions to exchange brand information but also allow students to contribute their own resources to co-create brand value. Thus, the study findings can help brand managers successfully implement co-branding efforts and foster students in the co-creation process.

Keywords Online brand post, Brand co-creation behavior, Heuristic–systematic model, Higher education

Paper type Research paper

Introduction

The democratizing power of social media allows universities to disseminate information and empowers students to share their knowledge, experiences and information about a brand (Schamari and Schaefers, 2015). On social media, student interactions with online posts can create value-in-use and value-in-context with the brand, which is viewed as further resources for engaging in brand value co-creation (Sorensen *et al.*, 2017). The importance of school connectivity is highlighted in ITU/UNESCO Broadband Commission for Sustainable Development) "The Digital Transformation of Education" report aimed at achieving the

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Sustainable Development Goals (SDGs). Specifically, meaningful connectivity is defined as broadband adoption that is not just relevant, available, accessible and affordable, but also emphasizes safe, trusted, empowering users and leading to positive impact (ITU/UNESCO Broadband Commission for Sustainable Development, 2020). Thus, by successfully encouraging students' value co-creation behaviors through online brand posts on social media, universities can build effective strategies to address meaningful connectivity challenges. In addition, by allowing students and schools to connect and collaborate, the co-creation process helps reduce information asymmetries and increase school connectivity, which is critical to the provision of high-quality education, the promotion of life-long learning (SDG4) and ensuring equal access to opportunity (SDG10).

The literature has focused so far on proposing that interactions on social media depend on characteristics of brand posts which can drive different user responses and behaviors. Previous research has investigated various aspects of brand post characteristics, such as brand post type and posting time (Deng *et al.*, 2021); vividness, interactivity, content and post length (Wang, 2021; Schultz, 2017; de Vries *et al.*, 2012); types of information (Lund and Wang, 2021); and post form, relating to content, tone, language and themes (Sorensen *et al.*, 2017; Cruz and Lee, 2014), and suggested that marketers can strategically design brand posts to increase customer engagement. Among them, argument quality and quantity of posts are the two most commonly used features of online messages in the literature (Zheng, 2021). Argument quality refers to the persuasive strength of an argument embedded in a post as perceived by recipients (Bhattacherjee and Sanford, 2006), and quantity of posts can be defined as the amount of information that is available to make a decision (Park *et al.*, 2007). The current research has contradictory findings about whether a focus on posting frequency or argument quality results in better communication. Research on social media strategy highlights the importance of frequent postings to maintain customer engagement (Ashley and Tuten, 2015). Many businesses believe that posting on social media more frequently will improve performance, as social media posting is commonly mentioned in the popular press to directly impact customer intentions (Better Business Bureau, 2019). In contrast, Jones *et al.* (2021) emphasized how performance ultimately depends on the quality of social media posts, not quantity, and argued that posting less frequently might produce more valuable material. In the higher education (HE) setting, Peruta and Shields (2017) found that fewer users interact with each post when universities post more frequently. Therefore, this study seeks to extend the literature by investigating how two key features of brand posts, including argument quality and quantity of posts, impact user reactions and whether said impacts foster customer engagement in ways that potentially co-create brand value, especially in the context of the HE sector.

Moreover, individuals tend to associate their attitudes with brand reputation (Jung and Seock, 2016). Brands with a high reputation are likely to create higher levels of positive customer engagement compared to those with a low reputation (Touni *et al.*, 2022). In the context of HE, having a strong reputation can help a university stand out from competitors and draw desirable employees, students and stakeholders (Priporas and Kamenidou, 2011). Before interacting with a brand post, students usually look for information and recommendations about a university from external environments (Simiyu *et al.*, 2019). As a result, universities with good reputations boost student confidence and strengthen their bonds with the brand, making them more likely to engage in brand co-creation activities, whereas universities with poor reputations may experience backfire effects to their responses and co-creation behaviors. Previous literature tested the effect of university reputation as a moderator on students' attitudes (Simiyu *et al.*, 2019; Zhang *et al.*, 2023), but studies investigating brand reputation as a moderator on these relationships are limited. A correct understanding of university reputation as a potential moderating variable will help practitioners design effective brand posts on social media. As such, the current study addresses two key research questions:

RQ1. How do characteristics of brand posts (argument quality and quantity of posts) drive student responses, thus leading to brand co-creation behaviors?

RQ2. How does university reputation moderate the effect of brand post characteristics on students' responses and co-creation behaviors?

We expect that this study can provide several key contributions to research and practice. Theoretically, this study develops extent theory into marketing education literature by showing how to encourage students to co-create HE brand value from the specific characteristics of brand posts and exploring the moderating role of university reputation. Having co-creation knowledge can help HE practitioners drive actions beyond the initial scope of SDGs areas (Agusdinata, 2022).

Theoretical background

Brand post and brand co-creation on social media

The notion underlying the concept of brand co-creation is that customers are transitioning from being passive audiences to active co-creators of experiences (Prahalad and Ramaswamy, 2000; Vargo and Lush, 2004). Brand co-creation is understanding how brand meaning is created through customer responses and how branding functions (Sarkar and Banerjee, 2019; Schroeder and Morling, 2006). Sorensen *et al.* (2017) indicated social media posts as resources for engaging in value co-creation and brand posts on social media can take the form of videos, audios, posts, photos, contests, news and stories, brand-supported causes, brand reviews, brand-related online games, and brand-related virtual gifts and cards (Hamzah *et al.*, 2021; Muntinga *et al.*, 2011). Online posts not only allow institutions to disseminate brand information to customers (Lund and Wang, 2021), but they also give users the opportunity to contribute their own resources by engaging with these postings or creating user-generated content on a site (Schamari and Schaefers, 2015). As a result of these activities, customers have a continuing opportunity to take part in the co-creation process and add value to a brand. Research has illustrated that the characteristics of brand posts probably affect consumer interactions and help create consumer engagement (e.g. de Vries *et al.*, 2012; Wang, 2021), which in turn may encourage customers to invest their resources in brand value.

In the HE setting, the notion of students as co-creators of brand value has been studied in the field of education (e.g. Elsharnouby, 2015; Nguyen *et al.*, 2021). By engaging in co-creation activities, students interact and collaborate with a university, thus increasing a positive perception of university performance (de Azambuja *et al.*, 2021) and enhancing a university's brand image (Foroudi *et al.*, 2019). Student interaction with posts about a university on social media platforms demonstrate their brand commitment and sense of belonging to a university community. However, research on brand co-creation behavior of students is limited (Killian *et al.*, 2023; Celuch *et al.*, 2018), and how students contribute to the brand co-creation process remains unclear (Merz *et al.*, 2018).

Heuristic–systematic model

As the heuristic-systematic model (HSM) of Chaiken (1980) has been widely used to describe more extensive information processing and can provide a theoretical expansion (Hlee *et al.*, 2018), this research was conducted by using the HSM's dual processes in order to understand the effects of brand post characteristics on social media, especially in the HE setting. HSM hypothesizes that two different modes of information processing—heuristic and systematic processing—can influence attitude change in response to persuasive messages. Systematic processing reveals that "people consider all relevant pieces of information, elaborate on these pieces of information, and form a judgment based on these elaborations" (Todorov *et al.*, 2002,

p. 196). Therefore, systematic processing involves efforts to carefully comprehend information or evaluate the arguments in a post (Chaiken, 1980; Hlee *et al.*, 2018). In contrast, heuristic processing uses more easily comprehended cues and desires to minimize the processing effort. Heuristic processing assesses the validity of a communication through reliance on heuristics, i.e. simple rules such as post-popularity based on quantity (Zhang *et al.*, 2014; Luo and Ye, 2019) and source credibility (Chaiken and Maheswaran, 1994; Zhang *et al.*, 2014; Lee and Hong, 2021), rather than through evaluation of arguments.

By applying HSM, this study utilizes argument quality and quantity of posts to manifest two modes of information processing, systematic processing and heuristic processing, respectively. This classification is consistent with earlier studies (Park *et al.*, 2007; Zhang *et al.*, 2014; Luo and Ye, 2019) that emphasized the importance of the quantity and quality of online information as two key factors affecting customer behaviors.

Research model and hypotheses

Argument quality and recipient's responses

Online posts can impact customer attitude and generate message-related responses, including affective and cognitive responses (Chang *et al.*, 2020). The literature has demonstrated that various characteristics of online information have a strong correlation with users' responses through affective and cognitive aspects (Le *et al.*, 2023; Luo *et al.*, 2019) and will turn them into behaviors, therefore engaging with the post (Wang, 2021). Cognitive responses refer to an individual's belief about a certain object and, thus, represent benefits and drawbacks, perceived usefulness, ease of use and need for it (Li, 2013; Bhattacherjee and Sanford, 2006), while affective responses are defined as the degree of the emotional attraction towards an attitude object (Li *et al.*, 2014).

Through information processing, argument quality is frequently employed as a systematic information cue in empirical studies (Zhang *et al.*, 2014). Argument quality is defined as the receiver's subjective perception of the arguments in the persuasive message as strong and convincing (Bhattacherjee and Sanford, 2006) and influencing recipients' attention (Coulter and Punj, 2004). Stephenson *et al.* (2001) demonstrated that a persuasive message with strong arguments stimulates individuals' cognitive responses. Brand posts with persuasive arguments make customers form a strong attitude toward the brand and encourage them to participate in information activities with cognitive efforts, such as carefully scrutinizing and assessing information (Li, 2013). Moreover, the quality of online posts also makes customers find entertainment motives or affective reactions (Hur *et al.*, 2017). Chang *et al.* (2020) indicated that customers are more likely to feel positively about a post when they believe it to be complete and accurate. Based on these arguments, we formed the following hypotheses:

H1. Quality significantly and positively influences the recipient's cognitive response.

H2. Quality significantly and positively influences the recipient's affective response.

Quantity of posts and recipient's responses

While asserting the influence of argument quality on social media, heuristic cues may have a significant impact on customer behavior. Following the work of Zhang *et al.* (2014), we postulate the perceived quantity of posts as a heuristic factor that represents a type of non-content-related perception. Quantity of posts is defined as customer perceptions regarding the volume of reviews needed to make a decision (Park *et al.*, 2007). In social media marketing, Sheth and Kim (2017) found a strong, favorable impact of the quantity of information shared on how brands are perceived. In fact, the greater amount of information about a HE brand available on social media

is associated with a greater likelihood that students can find the type of information they are seeking. Because a high quantity of posts may prove more beneficial to customers than a limited quantity of information for familiarizing them with a brand and better understanding its performance and quality (Filieri, 2015). Thus, the following hypotheses are provided:

H3. Quantity of posts significantly and positively influences the recipient's cognitive response.

H4. Quantity of posts significantly and positively influences the recipient's affective response.

Recipient response and brand co-creation behavior

The theory of consumer behavior states that customer motivation and behavioral intention are based on their cognition and affect (Smollan, 2006). Previous studies support the notion that perceived usefulness (which is a dimension of cognitive response) and affective consideration are considered significant predictors and key determinants of customer behavior (Li *et al.*, 2014; Chang *et al.*, 2015). When customers exert the cognitive effort to carefully examine the information in posts on social media, they get more knowledge about a brand and become more engaged with the posts (Matute *et al.*, 2019). Customers who are well-informed will be more confident to share their knowledge and interact with other members to satisfy demands for achievement, power and affiliation within the online community (Wu and Sukoco, 2010). In addition, if customers feel a strong sense of joy and satisfaction with a brand post (i.e. affective response), they will generate a positive attitude toward the brand and share the post with friends, receive information and participate in other brand page activities in the future, such as becoming followers or fans of this brand page (Chang *et al.*, 2015). These activities all co-create value for the brand. In sum, we posit the following hypotheses:

H5. Cognitive response significantly and positively influences brand co-creation behavior.

H6. Affective response significantly and positively influences brand co-creation behavior.

Moderating effect of university reputation

Reputation refers to a stakeholder's level of esteem towards a firm or organization (Fombrun and Shanley, 1990) and can be determined by their perception of its external image and internal identity (Dahlén *et al.*, 2009). In the context of higher education, university reputation refers to the university's popularity, image strength and quality (Pitan and Muller, 2019), which help universities attract prospective students by influencing their attitudes toward a brand and much prior literature has examined university reputation as a potential moderator (e.g. Zhang *et al.*, 2023; Saleem *et al.*, 2017). Students always seek information and recommendations about a university from external environments before interacting with a brand post, thus building a strong reputation increases student confidence and improves student-brand relationships (Simiyu *et al.*, 2019). Compared to those with a low reputation, universities with a high reputation are likely to create higher levels of positive student engagement by influencing their perceptions about the value they can receive from the brand posts. University reputation is therefore expected to strengthen the effects of brand posts on students' responses and behaviors. Based on these arguments, we formed the following hypotheses:

H7. University reputation moderates the proposed relationships:

H7a1. between argument quality and cognitive response.

H7a2. between argument quality and affective response.

H7b1. between quantity of posts and cognitive response.

H7b2. between quantity of posts and affective response.

H7c1. between cognitive response and brand co-creation behavior.

H7c2. between affective response and brand co-creation behavior.

To sum up, Figure 1 below displays the conceptual framework.

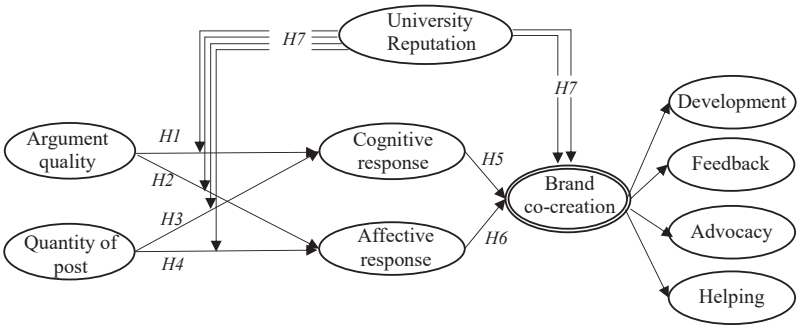
Methodology

Research context

This study focuses on the HE sectors of Vietnam for the following reasons. First, Vietnam has a high Internet penetration rate, with over 77% of the population being active users, and ranks 6th in Asia, 12th worldwide, and 3rd in Southeast Asia (Statistica, 2023). Nearly 80% of Vietnamese users visited or used a social network or messaging service (We Are Social, 2022). Second, relatively few empirical studies have attempted to examine the brand equity development process in HE settings in the Asian market (Perera *et al.*, 2022). Le *et al.* (2020) demonstrated that the Vietnamese sample is relevant and applicable to other Asian markets where there are similar cultural educational values. Considering the popularity of social media and the demand for HE branding in emerging countries, Vietnam represents an appropriate and timely research context for the current study.

Questionnaire design and measures

In total, 35 items measuring six constructs were adapted from existing scales and modified to fit the research context of Vietnam (see Table 1). Specifically, four measurement items and three measurement items were adapted from Sussman and Siegal (2003) to measure argument quality (AQ) and cognitive response (CR), respectively. Four observed variables for quantity of posts (PQ) were adapted from Park *et al.* (2007) and Xu and Yao (2015). Four items that capture affective response (AR) were adapted from Li *et al.* (2014). Four items to assess university reputation (UR) were adapted from Foroudi *et al.* (2019). Finally, brand co-creation behavior (BCB) is a second-order construct developed by France *et al.* (2018), with four dimensions (i.e. development, feedback, advocacy and helping). Specifically, development



Note(s): Second-order construct

Source(s): Figure by authors

Figure 1.
Research model and proposed hypotheses

Construct	Items
Argument quality (adapted from Sussman and Siegal, 2003)	
AQ1	The posts about the University on social media provide accurate information
AQ2	The posts about the University on social media provide relevant information
AQ3	The posts about the University on social media provide comprehensive information
AQ4	The posts about the University on social media provide timely information
Post-quantity (adapted from Park *et al.*, 2007; Xu and Yao, 2015)	
PQ1	Many people interact with the posts about the University on social media
PQ2	There is a variety of topic about the University on social media
PQ3	There is a multitude of information about the University on social media
PQ4	The number of posts about the University on social media is very high
PQ5	The number of posts about the University on social media is sufficient
Cognitive response (adapted from Sussman and Siegal, 2003)	
CR1	The information about the University on social media is helpful to me
CR2	The information about the University on social media is informative
CR3	The information about the University on social media is important to me
CR4	The information about the University on social media is valuable to me
Affective response (adapted from Li *et al.*, 2014)	
AR1	It makes me very pleasant after reading the posts about the University on social media
AR2	I feel very enjoyable after reading the posts about the University on social media
AR3	I couldn't restrain excitement when I saw the recommendation about the University on social media
Brand co-creation behavior (second-order construct) (adapted from France *et al.*, 2018)	
Development	
COD1	I create content the posts about the University on social media
COD2	I create advertising and share it with others on social media
COD3	I take photos of myself with the University and share them with others on social media
COD4	I develop ideas for the University on social media*
Feedback	
COF1	When I have a positive experience about the University on social media, I provided them feedback
COF2	I provide useful ideas on how to improve the brand of the University on social media
COF3	When I noticed a problem with the University, I told to the manager
COF4	I share my ideas for brand improvement*
Advocacy	
COA1	I recommend the University to others
COA2	I say positive things about the University to others
COA3	I spread the good word about the University
COA4	I encourage my friends and relatives to study at the University
Helping	
COH1	I help others when they had problems with the University
COH2	I give advice to others about the University
COH3	I tell others about new things with the University
University reputation (adapted from Foroudi *et al.*, 2019)	
UR1	I have a good feeling about the University
UR2	I admire and respect the University
UR3	The University offers products and services that are good value for money
UR4	The University is well-managed

Table 1.
Measurement items

Note(s): * Item removed during assessment of the measurement model
Source(s): Table by authors

behavior refers to customer participation in development of new ideas and resources for the brand (Hoyer *et al.*, 2010). Feedback behavior involves customers providing feedback to the brand (Yi and Gong, 2013). Advocacy is defined as the voluntary customer behavior of recommending the brand to others (Yi and Gong, 2013) and the helping dimension includes voluntary customer participation in supporting other customers to enhance their experience of the brand (Yi and Gong, 2013).

All latent variables were reflectively examined on a Likert scale from 1 (totally disagree) to 5 (totally agree). To prevent any biases from Vietnamese respondents when completing the survey, we employed the English-Vietnamese translation and back-translation method of two bilingual speakers. The face validity and content validity of the measures are pre-tested by five academic staff and five students, who confirmed the appropriateness of the items in measuring the constructs. Further, to ensure readability and clarity, as well as ease of questionnaire completion, a pilot study of 30 undergraduate students was conducted. Based on the pre-test and pilot study, the final questionnaire was administered.

Data collection procedure

For the official survey, respondents were chosen from various university brand communities on Facebook, Vietnam's most successful social media site, and recruited via personal message invitations from early September 2022 until mid-October 2022. The online survey via Microsoft Forms was sent to undergraduate students who were fanpage members of the ten most popular universities in Ho Chi Minh City, the largest metropolitan area of Vietnam, and appeared in the Ranking Web of Vietnamese Universities 2022 (Webometrics). The questionnaire includes screening questions to ensure respondents have engaged with a HE brand post by liking, commenting, sharing feedback, recommending the brand to others and investing resources (e.g. time, knowledge and skill) to develop university brand value (France *et al.*, 2018). If a respondent selects "never", the survey will stop automatically. A total of 879 respondents participated in our survey and incomplete questionnaires and identical scores on most questions were removed. Finally, 755 valid responses were collected for subsequent quantitative analysis. In total, 58.4% of respondents were female (n = 441). Regarding education, 63.2% of respondents studied at public universities, and the remaining were from private universities, with status segments distributed as follows: 15.4% freshmen, 20.3% sophomores, 33.9% juniors, 21.5% seniors and 9% graduates. In terms of social media usage, most respondents spend their time on Facebook and indicated they engage with the brand post at least once per week (43.7%, n = 330), followed by at least once a day (24.8%), at least once per month (23.6%), and at least once per year (7.9%).

Data analysis methods

Partial least squares (PLS) structural equation modeling (SEM) was performed with the SmartPLS 4 software (Ringle *et al.*, 2022) to test both the measurement and structural models. PLS is suitable for the analysis and testing of more comprehensive models that involve moderating and mediating effects simultaneously (Henseler *et al.*, 2009).

Results

Common method bias

As a self-designated technique was used to collect data from the respondents, it was necessary to test common method bias (CMB) via the following statistical investigations. First, Harman's single-factor test showed that the largest factor explained 35.524% of the total variance, less than the 50% threshold for detecting CMB concern (Podsakoff *et al.*, 2003). Next, the PLS model was the second approach to examine the potential for common method

bias (Liang *et al.*, 2007). The result demonstrated that 72.72% of the method factor loadings were insignificant, with an average-method-factor variance of 0.000 (see Table 2). Moreover, all items had significant substantive loadings on their corresponding constructs. Moreover, the average-method-factor variance (R2) was much lower than the average-substantively-explained variance (R1) (0.000 vs 0.864). Overall, it was thus concluded that CMB was not a serious issue in this study.

Assessment of measurement model

Based on France *et al.* (2018), brand co-creation behavior was operationalized as a reflective-reflective second-order construct with four first-order dimensions (development, feedback, advocacy and helping). For specifying higher-order constructs, this study employed the disjoint two-stage approach and followed the guidelines proposed by Sarstedt *et al.* (2019).

To evaluate the measurement model in both stages, reliability, item loadings, convergent and discriminant validity criteria were performed. As can be seen in Table 3, two items failed

Construct	Item	Substantive factor loading (R1)	$R1^2$	Method factor loading (R2)	$R2^2$
Argument quality (AQ)	AQ1	0.911***	0.830	−0.040	0.002
	AQ2	0.858***	0.736	0.036	0.001
	AQ3	0.813***	0.661	0.015	0.000
	AQ4	0.853***	0.728	−0.012	0.000
Information quantity (IQ)	IQ1	0.861***	0.741	−0.057*	0.003
	IQ2	0.855***	0.731	−0.06*	0.004
	IQ3	0.756***	0.572	0.057	0.003
	IQ4	0.824***	0.679	−0.017	0.000
	IQ5	0.730***	0.533	0.079*	0.006
Cognitive response (CR)	CR1	0.914***	0.835	−0.082**	0.007
	CR2	0.844***	0.712	0.024	0.001
	CR3	0.854***	0.729	0.030	0.001
	CR4	0.864***	0.746	0.024	0.001
Affective response (AR)	AR1	0.900***	0.810	−0.018	0.000
	AR2	0.861***	0.741	0.035	0.001
	AR3	0.896***	0.803	−0.017	0.000
University reputation (UR)	UR1	0.913***	0.834	−0.050	0.003
	UR2	0.915***	0.837	−0.056	0.003
	UR3	0.866***	0.750	−0.019	0.000
	UR4	0.750***	0.563	0.124**	0.015
Development (COD)	COD1	0.865***	0.748	0.039	0.002
	COD2	0.852***	0.726	0.056*	0.003
	COD3	0.935***	0.874	−0.098***	0.010
Feedback (COF)	COF1	0.943***	0.889	−0.077***	0.006
	COF2	0.874***	0.764	0.032	0.001
	COF3	0.872***	0.760	0.042*	0.002
Advocacy (COA)	COA1	0.851***	0.724	0.006	0.000
	COA2	0.868***	0.753	0.022	0.000
	COA3	0.863***	0.745	−0.021	0.000
	COA4	0.876***	0.767	−0.008	0.000
Helping (COH)	COH1	0.893***	0.797	0.001	0.000
	COH2	0.894***	0.799	−0.004	0.000
	COH3	0.887***	0.787	0.003	0.000
Average		*0.864*		*0.000*	

Note(s): *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$
Source(s): Table by authors

Table 2.
Common method bias (CMB) analysis with PLS

Constructs	Number of items		Alpha	Stage I (reflective scale)			Alpha	Stage II (reflective scale)		
	Initial	Final		CR	AVE	Item loading		CR	AVE	Item loading
AQ	4	4	0.882	0.919	0.738	0.822–0.884	0.882	0.919	0.738	0.822–0.884
PQ	5	5	0.865	0.902	0.694	0.789–0.824	0.865	0.902	0.694	0.789–0.824
CR	4	4	0.891	0.925	0.754	0.844–0.884	0.891	0.925	0.754	0.844–0.884
AR	3	3	0.862	0.916	0.784	0.882–0.888	0.862	0.916	0.784	0.882–0.888
UR	4	4	0.884	0.920	0.741	0.850–0.872	0.884	0.920	0.741	0.850–0.872
Brand co-creation behavior (reflective-reflective second-order construct)							*0.773*	*0.854*	*0.594*	
Development (COD)	4	3	0.859	0.914	0.779	0.854–0.895				0.785
Feedback (COF)	4	3	0.877	0.924	0.803	0.887–0.902				0.736
Advocacy (COA)	4	4	0.887	0.922	0.747	0.849–0.884				0.821
Helping (COH)	3	3	0.870	0.921	0.794	0.887–0.896				0.738

Source(s): Table by authors

Table 3.
Assessing reliability and convergent validity

to pass the assessments (as their loadings were lower than 0.6) and were dropped. The results showed that all the Cronbach's α and composite reliability values of the remaining items were above the commonly suggested threshold (0.70). Moreover, average variance extracted (AVE) (0.594 – 0.802) was greater than the suggested value (0.50) for both lower- and higher-order construct types (Hair *et al.*, 2020). These provided the evidence for acceptable and satisfactory reliability and convergent validity for all dimensions and constructs.

For discriminant validity, the square root of the AVE values for each construct (0.771–0.896) were greater than their largest correlations with other constructs (see Table 4), which fulfill Fornell-Larcker's criterion. In addition, the HTMT values of all constructs were smaller than 0.85 (Henseler *et al.*, 2015). Together, these findings demonstrated that the criteria for discriminant validity had been satisfied.

Hypotheses testing

To examine the structural model, the coefficient of determination (R^2), predictive relevance (Q^2 value by PLSpredict) and model fit (SRMR) were estimated (Sarstedt *et al.*, 2019; Hair *et al.*, 2020). The results showed that the R^2 values of three endogenous constructs (cognitive response, affective response and brand co-creation behavior) ranged from 0.276 to 0.522, respectively; all were higher than 0.26, indicating that the variance explained of these endogenous variables was relatively high and significant. It was found that Q^2 predict values ranged from 0.266 to 0.481, larger than zero for endogenous variables, which supports the satisfactory predictive power (Shmueli *et al.*, 2019). Further, the estimated model's fit index (SRMR) was 0.057, significantly below the recommended cut-off point of 0.08, indicating that the model's fit was satisfactory (Henseler *et al.*, 2016).

						Brand co-creation behavior*			
Constructs/Dimensions	AQ	PQ	CR	AR	UR	COD	COF	COA	COH
Panel A: Fornell – Larcker criterion									
Argument quality (AQ)	0.859								
Information quantity (IQ)	0.543	0.806							
Cognitive response (CR)	0.562	0.570	0.868						
Affective response (AR)	0.490	0.382	0.494	0.885					
University reputation (UR)	0.513	0.359	0.508	0.367	0.861				
*Brand co-creation behavior**	0.477	0.425	0.519	0.443	0.665	0.771			
Development (COD)	0.369	0.314	0.392	0.436	0.514	0.883			
Feedback (COF)	0.344	0.350	0.400	0.341	0.406	0.501	0.896		
Advocacy (COA)	0.441	0.400	0.425	0.358	0.633	0.491	0.437	0.864	
Helping (COH)	0.299	0.232	0.386	0.214	0.466	0.409	0.409	0.515	0.891
Panel B: Heterotrait-Monotrait (HTMT)									
Argument quality (AQ)									
Information quantity (IQ)	0.621								
Cognitive response (CR)	0.632	0.646							
Affective response (AR)	0.561	0.441	0.562						
University reputation (UR)	0.579	0.409	0.570	0.417					
*Brand co-creation behavior**	0.570	0.512	0.624	0.535	0.791				
Development (COD)	0.418	0.358	0.440	0.503	0.587				
Feedback (COF)	0.390	0.401	0.451	0.389	0.459	0.572			
Advocacy (COA)	0.498	0.457	0.477	0.408	0.715	0.561	0.492		
Helping (COH)	0.342	0.266	0.437	0.247	0.531	0.471	0.467	0.586	

Note(s): *values for second-order constructs obtained from Step II
Source(s): Table by authors

Table 4. Assessing discriminant validity of measurement model

Next, the significance of the hypotheses was assessed by a bootstrapping re-sampling procedure (5,000 samples), while Cohen's (1988) indicator (f^2) was applied to evaluate the effect sizes of the studied relationships. In the current study, all the relationships have acceptable levels of effect sizes, which is crucial for determining how an independent variable affects a specific dependent variable (Hair *et al.*, 2020). Table 5 shows the results of the structural model test.

First, argument quality significantly affects both cognitive and affective responses, but to varying degrees, supporting H1 and H2. Specifically, the impact of argument quality on affective response (ß = 0.350; $p < 0.01$) is higher than on the cognitive aspect (ß = 0.233; $p < 0.01$). In addition, the indirect effect between argument quality and brand co-creation behavior through affective response (ß = 0.062; $p < 0.01$) is much higher than through cognitive response (ß = 0.039; $p < 0.01$). In contrast, quantity of posts has a stronger impact on cognitive response (ß = 0.345; $p < 0.01$) than affective response (ß = 0.156; $p < 0.01$), although both relationships are statistically significant (H3 and H4 are accepted). In terms of indirect effects, the relationship between quantity of posts and brand co-creation behavior via cognitive response (ß = 0.057; $p < 0.01$) is nearly doubled via affective response (ß = 0.028; $p < 0.01$). Based on these results, the more important driver of cognitive response is the quantity of posts, while argument quality is the stronger predictor of affective response.

Second, cognitive response and affective response have roughly equivalent effects on brand co-creation behavior (ß1 = 0.167; $p < 0.01$ and ß = 0.178; $p < 0.01$, respectively), thus H5

Hypotheses	Path relationships	Std Beta	Std. error	*t*-value	*p*-value	Bias Corrected c onfidence i nterval (CI)	VIF	f^2
Direct effect								
H1: supported	AQ → CR	0.233	0.041	5.651	0.000	[0.154; 0.319]	1.785	0.057
H2: supported	AQ → AR	0.350	0.038	9.222	0.000	[0.277; 0.424]	1.785	0.095
H3: supported	PQ → CR	0.345	0.040	8.614	0.000	[0.265; 0.421]	1.467	0.152
H4: supported	PQ → AR	0.156	0.037	4.286	0.000	[0.083; 0.228]	1.467	0.023
H5: supported	CR → BCB	0.167	0.035	4.734	0.000	[0.096; 0.234]	1.627	0.036
H6: supported	AR → BCB	0.178	0.029	6.111	0.000	[0.123; 0.237]	1.370	0.048
Indirect effect								
	AQ → CR → BCB	0.039	0.010	3.745	0.000	[0.020; 0.061]	40%	
	AQ → AR → BCB	0.062	0.012	4.994	0.000	[0.040; 0.088]	52%	
	PQ → CR → BCB	0.057	0.015	3.803	0.000	[0.029; 0.089]	30%	
	PQ → AR → BCB	0.028	0.008	3.288	0.001	[0.013; 0.046]	14%	
Moderating effects								
H7a1: not supported	UR*AQ → CR	−0.029	0.037	0.801	0.423	[−0.102; 0.040]		0.002
H7a2: not supported	UR*AQ → AR	0.026	0.031	0.845	0.398	[−0.034; 0.087]		0.001
H7b1: not supported	UR*PQ → CR	0.017	0.034	0.506	0.613	[−0.045; 0.089]		0.001
H7b2: not supported	UR*PQ → AR	0.016	0.028	0.580	0.562	[−0.038; 0.070]		0.000
H7c1: supported	UR*CR → BCB	0.103	0.023	4.409	0.000	[0.056; 0.148]		0.025
H7c2: supported	UR*AR → BCB	0.122	0.025	4.873	0.000	[0.073; 0.171]		0.024

Endogenous construct	Coefficient of determination (R^2)	Q^2predict
Cognitive response	0.466	0.453
Affective response	0.276	0.266
Brand co-creation behavior	0.522	0.481
Model fit		
SRMR	0.057	

Source(s): Table by authors

Table 5. Assessment of direct, indirect and moderating effects

and H6 are supported. Moreover, the multiple mediation analysis was performed to assess the mediating role of students' responses (i.e. cognitive and affective responses) in the relationship between brand post characteristics and brand co-creation behavior. First, the results (see Table 5) revealed that the bootstrap confidence intervals (CIs) for the four indirect effects did not include zero value; thus, based on Preacher and Hayes (2004), we could conclude that cognitive and affective responses were mediators in our model. Further, according to Vinzi *et al.* (2010), the sum Variance-Accounted-For (VAF) values of two paths (AQ→CR→BCB and AQ→AR→BCB) were 92% (greater than 80%), thus student response fully mediated the association between argument quality and brand co-creation behavior. In addition, the sum VAF values of two paths (PQ→CR→BCB and PQ→AR→BCB) were 44%, thus student response partially mediated the link from quantity of post to brand co-creation behavior.

Finally, moderation results (H7) show that only university reputation significantly moderates the effect of recipients' responses (both cognitive and affective aspects) on brand co-creation behavior, while the others have no significant effect. Specifically, university reputation does not moderate the relationship between brand post characteristics and student responses ($p > 0.05$). It can be explained that, although a university with a good reputation engenders trust and favorable attitudes, it does not always mean that their posts are evaluated as having better argument quality and quantity than the lower-reputation university. In contrast, university reputation strengthens the effect between students' responses and co-creation behavior (H7c1: ß = 0.103; $p < 0.01$ and H7c2: ß = 0.122; $p < 0.01$), which means that a university with a good reputation has a higher level of post responses and co-creation activities among students.

Discussion and conclusion

Discussion of findings and theoretical implications

The post has widely been recognized as an imperative factor in driving value co-creation on social media (Sorensen *et al.*, 2017). Based on the HSM (Chaiken, 1980), this study develops and empirically tests two important characteristics of an online brand post that drive recipient response and brand co-creation behavior in the context of HE. The findings of this study could provide several valuable contributions to the existing knowledge.

First, although the literature on brand co-creation is substantial (Le *et al.*, 2022), the role of students in co-creating value for the HE brand is still limited. This study captures the students' co-creation with the brand post as its key outcome by focusing on various dimensions suggested by France *et al.* (2018). Thus, the comprehensive measurement provides further empirical evidence for the application of this concept in a higher education context.

Second, drawing upon the Heuristic-Systematic Model, the body of brand co-creation literature is enriched by this investigation, which provides the potential relevance of the HSM in understanding the impact of online posts on student co-creation behaviors. By extending previous studies that explore the factors related to two modes (i.e. the systematic and heuristic modes) of information processing, the current study found that two key characteristics of a brand post, namely argument quality (systematic processing) and quantity of posts (heuristic processing), have positive and significant effects on brand co-creation behavior through cognitive and affective responses. The result is consistent with the findings of Zhang *et al.* (2014) and Luo and Ye (2019), who also found that argument quality and quantity of posts play an essential role in persuading users through both heuristics and systematic processing. Furthermore, this research also explains the difference in the mechanisms of these two factors on co-creation behavior through recipient response. Specifically, high-quality posts will promote a higher affective response than a cognitive response. Conversely, more frequent posts are likely to foster a more cognitive response than an affective one.

This study also confirmed the importance of cognitive and affective responses and declared that both are significant drivers of brand co-creation behavior. Past studies about how cognitive and affective responses directly influence customers' behaviors support this finding (Li *et al.*, 2014; Chang *et al.*, 2015). Moreover, the multiple mediation analysis sheds new insight into the centrality of the increasingly emphasized different roles of two modes of student response in information processing.

More importantly, the second question in this study sought to determine the moderation impact of university reputation in our model. The results of this study indicate that university reputation plays a significant moderating role in strengthening the relationship between recipient response and brand co-creation behavior. This can be explained by the fact that a school with a good reputation engenders trust and favorable attitudes toward the specific brand (Touni *et al.*, 2022), which in turn generates a higher level of co-creating participation than schools with a lower reputation, although there may not be a difference in quality and quantity of online brand posts between them. Moreover, compared to the role of customers in business enterprises, student brands are significantly impacted by their university reputation. Thus, a high reputation university evokes higher student pride and satisfaction and strengthens student-brand relationships than a less prestigious one, and fosters brand value creation. This supports the work of Zhang *et al.* (2023) and Simiyu *et al.* (2019) who emphasized the moderating role of university reputation in investigating student attitude towards brands.

Managerial implications

From a practical perspective, HE marketing managers may leverage the impacts of brand posts through the lens of our research model.

First, it is important to understand various dimensions of brand co-creation behavior when informing co-creation strategies on social media. For example, marketers need to implement online practices such as: establishing interactive two-way communication with students; empowering students to develop ideas for the brand through interviews, discussions, live chats, online reviews, comments and voting (Shulga *et al.*, 2021); making students feel as if the school is an individual who genuinely cares about them and their needs by promptly responding to their comments and inquiries (Touni *et al.*, 2022); encouraging members to recommend the HE brand to friends; and supporting other members to enhance their experience of the brand (France *et al.*, 2020). In addition, our findings show that advocacy co-creation is the most important dimension of the brand co-creation behavior construct; thus, encouraging or rewarding students who are actively sharing brand information with others, generating a positive and pleasant university culture, and participating in university activities on their online platforms are valuable guidance for HE brand managers when informing co-creation strategy.

To improve the impact of argument quality, designers should be careful with the content of posts by focusing on the relevance, timeliness, completeness and accuracy of messages. To increase the perceived quantity of brand posts, HE marketers may clearly display and constantly update university news on their online communities to enhance brand awareness among prospective students. Finally, in addition to making efforts in designing brand-posts, HE marketers may also focus on the importance of developing and maintaining a positive reputation as the level of co-creation among students will be strengthened when the university reputation is strong.

Limitations and future research

We must note this study has some limitations that opens opportunities for future research. First, as introduced and implicitly noted above, this study only focused on two main

characteristics of brand posts based on heuristic and systematic processing; thus, our model did not provide a comprehensive list of all potential antecedents. Future research should explore additional influential factors from several perspectives. For example, several factors can be used specifically to assess systematic processing, such as information depth, breadth, factuality, relevance, credibility, objectivity, clarity and logic. In comparison, some potential factors of heuristic processing, such as post format, writing style, emotional intensity and temporal distance, may offer research opportunities. Second, the moderating effect of university reputation in the relationship between post characteristics and recipient response is not supported in this research, which warrants further investigation. Based on the non-significant effect, future research may use a qualitative inquiry into this issue to offer more detailed insights and make valuable contributions to the researched subject.

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