MARKETING | RESEARCH ARTICLE

The model development of industrial brand loyalty: Assessing the rational and emotional aspects as antecedents of loyalty

Andreas Samudro¹* and Vonny Susanti¹

Abstract: The purpose of the study is to develop a brand loyalty model with perspectives from rational and emotional aspects. The research investigates the relevant antecedents of the brand loyalty model with the respondents from various industries in the chemical emulsion market. The research is a quantitative approach with SEM-PLS employed to run the data, whereas the data is conducted and collected from the field survey. The study demonstrates the robustness of the model with direct relationships between the constructs in the model. Moreover, it confirms that rational brand quality influences brand loyalty stronger than emotional brand associations; further perceived value has the weakest influence on satisfaction. Authors encourage replicated research with a broader range of product categories to validate the results. The ideal model should be able to be

ABOUT THE AUTHORS

Andreas Samudro is a Doctor of Management and Business from IPB University, Bogor, Indonesia. He has also been experienced in the business practice for more than 20 years, with the last position as Chief Marketing Officer. His long tenure with the chemical manufacture and bulk services industry leads him to industrial relationship and branding study. He can be reached via unang1968@gmail.com

Vonny Susanti is a Doctor of Management and Business from IPB University, Bogor, Indonesia. She has a long experience in the consulting firm and the world-wide multi-level marketing company. During her business practice tenure, she plays the role as a training and consulting manager and call and data center head. Her experience in the business practice leads her to an interest in marketing and branding study. She can be reached via vonnysus168@gmail.com

PUBLIC INTEREST STATEMENT

The biggest challenge faced by industries is how to ensure business sustainability in the industrial context. Since industrial relationship studies tend to focus on rational aspects, this paper aims to develop and explore the emotional aspects. Moreover, the paper develops a robust brand loyalty model that assesses the relevant antecedents because of commoditization pressure. The results find that brand quality’s rational aspect influences satisfaction and brand loyalty stronger than the emotional aspect of brand association. The finding contributes to the practitioner who concerns with loyalty. Companies should focus on functional quality as a priority, especially technology and services development, to enhance value. However, emotional aspects contribute to the buyer’s decision since industrial buyers tend to avoid risks.

© 2021 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.
implemented with generalization. The research has an insight into the two-sided role of rational and emotional elements during the decision process and their role in satisfaction and brand loyalty; moreover, the proposed model also adds perceived value. With the investigation of the direct and indirect effects among the constructs of the model, this model is considered new in industrial branding; therefore, the paper fulfills the research gap and contributes novelty.

**Subjects:** Brand Management; Industrial Relationship and Sales; Marketing Management

**Keywords:** Rational brand quality; emotional brand associations; perceived value; customer satisfaction; brand loyalty

1. **Introduction**

As the competition for industrial markets gets more intense because of the pressure of commoditization and globalization, industrial firms are necessarily seeking differentiation and competitive advantages by branding products (Li et al., 2011; Marquardt, 2013; Walley et al., 2007) and enhancing a firm’s brand equity (Biedenbach et al., 2011; Kumar et al., 2015; Nyadzayo et al., 2016). As a brand equity element, brand loyalty plays a fundamental role in marketing advantages, such as cost efficiency and new customer acquisition (Aaker, 1991); moreover, loyal customers continue to exert powerful impacts on a firm’s performance (Lam et al., 2004).

Brand equity is acknowledged as one of the most crucial factors to win the competition by the proceeding point of differentiation (Zhang & He, 2014); a strong brand becomes an asset and sustainable advantage to a firm (Backhaus et al., 2011). Despite the fact that organizational buyers must consider the functional value of a brand (Kemp et al., 2018), the emotional aspects have a strong influence on the industrial relationship (Borg & Johnston, 2013; Kadic-Maglajlic et al., 2016). This paper aims to develop and explore a brand loyalty model with two major aspects as the basis of customer evaluation, which is rational and emotional dimensions. Research needs to identify how industrial buyers perceive branding and the importance of functional and emotional attributes that will enable marketers to convey an appropriate message (Leek & Christodoulides, 2011, p. 835); Authors refer to the few past studies to reveal the separation analysis of rational and emotional constructs (Cassia & Magno, 2012; Elsäßer & Wirtz, 2017; Jensen & Klastrup, 2008; Kuhn et al., 2008) and integrate the model with another success factor as price perception. Therefore, the model is analyzed with the basis of rational and emotional aspects and perceived value.

The past studies do not explore the possibility of the new finding from the path correlations assessment between every latent variable and brand equity outcome, which is satisfaction and brand loyalty; the direct and indirect effects of relevant constructs on brand equity outcomes shall be the basis to have in-depth analysis; therefore this paper shall fulfill the research gap. Authors consider the necessity of having a clear understanding of how all relevant latent variables interact with each other to influence brand equity outcomes in the industrial context. Elsäßer and Wirtz (2017) examine brand equity outcomes, satisfaction, and brand loyalty, from rational and emotional aspects without the involvement of perceived value and further analysis of the quality-value relationship, and direct effect of both quality and brand association on brand loyalty.

This empirical study seeks to examine the model and identify the antecedents of brand loyalty in-depth from a broadening spectrum of rational and emotional aspects and perceived value. In contrast, the involvement of perceived value is purposely to assess the priority base of buyers’ decision processes, either rational quality aspects, emotional brand associations, or price perception. Past studies do not assess the role of price or perceived value, although it is essential in the industrial relationship (Alexander et al., 2009). The developed model of rational-emotional-value
constituents is expected to become the robust model of industrial branding; therefore, it is considered as a novelty in the industrial branding concept.

The present paper investigates the antecedents of customer satisfaction and brand loyalty based on rational and emotional aspects and exercised by perceived value involvement. Three research questions are investigated:

1. Does rational brand quality has a stronger effect on satisfaction and brand loyalty than emotional brand association?

2. Does rational brand quality has a stronger indirect effect on brand loyalty than emotional brand association?

3. Which dimension of rational brand quality or emotional brand association does influence brand loyalty stronger?

4. Does perceived value have the ability to halt the influence of both rational brand quality and emotional brand associations on satisfaction and brand loyalty?

The purpose of the study to examine the antecedents of the brand equity outcomes, customer satisfaction, and brand loyalty, with the details and in-depth analysis of all latent variables. Therefore, more specifically, the objectives of the empirical study are as follows:

-to examine the effect of rational brand quality and emotional brand association on customer satisfaction and brand loyalty, determining which has a stronger direct effect on satisfaction and brand loyalty.

-to examine the indirect effect of rational brand quality and emotional brand association on brand loyalty; the results are used to further path analysis between direct and indirect effects on brand loyalty.

-to investigate the role of perceived value and whether perceived value influences satisfaction stronger than quality and brand association do; the result of this investigation indicates whether superior quality, brand association, or price is the priority of buyers in a purchase decision.

-to explore how emotional brand association influences value and quality. These results shall indicate a buyer's appreciation of brand association and price sensitivity.

-to examine the direct effect of perceived brand quality on value and investigate the indirect effect of perceived brand quality on brand loyalty through the mediator variable of perceived value and customer satisfaction.

-to examine the direct effect of emotional brand associations on value and investigate the indirect effect of emotional brand association on brand loyalty, through the mediator variables of perceived value and customer satisfaction.

-to explore further about rational brand quality dimensions, which dimension does contribute more influential to the brand equity outcomes of satisfaction and brand loyalty, either products or services.

-to explore further about emotional brand association dimensions, which dimension does contribute more influential to the brand equity outcomes of satisfaction and brand loyalty, either company reputation-brand image or sales competency.
2. Theoretical background and literature review

Aaker (1991, p. 16) describes five categories of liabilities and assets as brand equity elements: brand loyalty, perceived quality, brand associations, brand awareness, and other proprietary brand assets. With the basis of relationship marketing theory, which is the proven fundamental relationship between satisfaction and loyalty (Chandrashekaran et al., 2007; Dong et al., 2011; Samudro & Susanti, 2021), this study assesses antecedents of brand equity outcomes, customer satisfaction, and brand loyalty, such as perceived quality and brand associations, combined with perceived value. The following sections describe the conceptual background of every construct, whereas the conceptualization of model examination refers to the brand equity researches, which is built with the basis of customer-based brand equity.

Basically, in B2B relationships, psychological and social benefits are generated through personal associations, while other emotional aspects get involved in the process (Samudro et al., 2019; Selnes & Sallis, 2003; Sweeney & Webb, 2007; Sweeney & Webb, 2002). In the past studies, scholars analyzed and evaluated brands by separating emotional aspects and rational aspects (Cassia & Magno, 2012; Elsäßer & Wirtz, 2017; Jensen & Klastrup, 2008; Kuhn et al., 2008). This study evaluates brands based on emotional aspects and rational aspects from the customer's standpoint.

2.1. Rational brand quality

Askariazad and Babakhani (2015) define perceived quality as the customer's evaluation of recent consumption experience. In the industrial dyadic view of relationship exchange; ultimately, the relationship is driven by economic factors or profits (Hastings & Soren, 2003). The past substantial research confirms the importance of functional benefits, as monetary, strategic competitive advantage and expertise (Sheth & Sharma, 1997; Susanti, 2019a; Susanti et al., 2019b; Sweeney & Webb, 2007); in this research, the functional benefits are the result of three main dimensions: product quality, reliability, and responsiveness, whereas the last two dimensions are the manifestation of services. Spreng et al. (2009, p. 544) argue that industrial customers make decisions with a more cognitive process basis than an emotional process; in other words, the industrial decision tends to be more rational. The quality performance is driven by the cognitive process, whereas perceived performance is compared by expectation; therefore, customer satisfaction is aroused from a rational aspect evaluation (Parasuraman et al., 1988). Moreover, a rational aspect evaluation is based on fundamental customer requirements (customization) that are free from deficiencies (Fornell et al., 1996). Consistent with the concept, this paper proposes the hypothesis as follows.

**Hypothesis 1.** Rational brand quality is a latent variable of second order with the three dimensions of product quality, reliability, and responsiveness, and has a positive direct effect on customer satisfaction.

In industrial branding, customers’ positive perception of brand quality shall influence brand value, and to a large extent, influence brand loyalty (Taylor et al., 2007). Past studies demonstrate that buyers' judgment about perceived brand quality indicates the most relevant factor in the industrial branding (Michell et al., 2001); buyers are reluctant to switch to alternative products if buyers perceive that current brand quality is adequate; therefore, a positive brand quality perception shapes buyers’ brand loyalty. Some past studies show that perceived quality has a positive effect on loyalty (Molinari et al., 2008; Spreng et al., 2009); hence, we test that hypothesis as follows.

**Hypothesis 2.** Rational brand quality is a latent variable of second order with three dimensions of product quality, reliability, and responsiveness, and has a positive direct effect on brand loyalty.
Perceived quality is the customer’s evaluation of the recent consumption, and industrial buyers evaluate custom products and services (Turkyilmaz et al., 2013); if the customer’s perceptions toward quality aspects of products and services are positive, then brand quality shall shape the buyer’s evaluation of brand value (Michell et al., 2001; Taylor et al., 2007). In the industrial relationship, the buyer’s expectations about brand quality are often used as a basis for the perceived value assessment (Gordon et al., 1993; Jalkala & Keränen, 2014; Susanti et al., 2020b). Therefore, rational brand quality is expected to have a positive direct effect on the value, as stated in the following hypothesis.

**Hypothesis 3.** Rational brand quality is a latent variable of second order with three dimensions of product quality, reliability, and responsiveness and has a positive direct effect on perceived value.

### 2.2. Emotional brand associations

Brand association is image dimensions unique to a brand (Aaker, 1996, p. 111) and has four dimensions: consistent advertising style, brand image, country of manufacture, and salesman competency (Elsäßer & Wirtz, 2017). Nevertheless, a consistent advertising style is an inappropriate activity in the chemical market’s respondent (Jensen & Jepsen, 2007), as well as the country of manufacture, and authors disregard both dimensions. This paper refers to the corporate image since every chemical company is associated with specific technology leaderships (Wiedmann, 2002). Moreover, the relationship with salesman underlies a personal judgment toward salesman competency; therefore, salesman competency is a relevant factor to be explored in depth.

The corporate brand image serves as a crucial factor influencing a customer’s perception of quality (Wallin Andreassen & Lindestad, 1998). Positive images of corporate brands create a higher probability of a brand choice from a customer’s point of view and increase brand loyalty (Keller, 1993). In industrial relationships, the interaction between sales and buyers creates positive feelings and attitudes, such as satisfaction (Baumgarth et al., 2011; Baxter & Matear, 2004; Susanti et al., 2019c, 2020a). In this study, the authors test the hypothesis as follows.

**Hypothesis 4.** Emotional brand associations are a latent second-order variable with two dimensions of company reputation—image and salesman competency have a positive direct effect on customer satisfaction.

In the industrial relationship context, Cretu and Brodie (2007) find that the company’s reputation has a broader impact on customer loyalty; meanwhile, the supplier’s reputation is a significant antecedent of loyalty (Suh & Houston, 2010). As with the findings of past studies, there are positive relationships between corporate brand image and brand loyalty (Hussain et al., 2015; Jani & Han, 2014; Papadimitriou et al., 2015). Meanwhile, past studies have confirmed the influence of salesperson competency on brand-equity outcomes of satisfaction and brand loyalty (Baumgarth et al., 2011; Van Riel et al., 2005).

**Hypothesis 5.** Emotional brand associations are a latent second-order variable with two dimensions of company reputation—image and salesman competency have a positive direct effect on customer brand loyalty.

In the industrial relationship, firms are more concerned with company reputation, brand identity, and brand images than the consumer market (Zablah et al., 2010). Cretu and Brodie
(2007) find that company reputation influences buyer’s perceptions of value, products, and services in the industrial relationships; therefore brand association is a basis for industrial buyer to determine purchase decision and also pay a premium price for a favorable brand image (Blombäck et al., 2007; Persson, 2010). The following hypotheses (H6 and H7) are formulated to examine the consistency of the proposed model’s concept.

**Hypothesis 6.** Emotional brand associations are as a latent variable of second-order with two dimensions of company reputation-image and salesman competency have a positive direct effect on perceived value.

In the industrial relationship, the brand associations are shaped by buyers’ earlier experiences with the provider’s performance; therefore, brand associations are expected to affect the perceived quality (Biedenbach & Marell, 2010). Although customers have perceptions towards a specific brand, the brand associations are expected to influence the buyer’s perception towards the quality performance of a specific brand; therefore, authors test the hypothesis as follows.

**Hypothesis 7.** Emotional brand associations are as a latent variable of second-order with two dimensions of company reputation-image and salesman competency have a positive direct effect on rational brand quality.

### 2.3. Perceived value

Perceived value is a trade-off between total benefits received and total sacrifice by considering a supplier’s offering and price (Lam et al., 2004; Samudro et al., 2020, 2018b). Although sacrifice can be in either monetary or non-monetary terms (Mayr et al., 2012), Patterson and Spreng et al., 1997, p. 424) claim that emotional elements may not be relevant in an industrial relationship. Therefore, the paper considers price as the sacrifice component in perceived value evaluation; thus, it uses a single-item measure of price in the evaluation process. From the conceptual basis, we test the hypothesis as follows.

**Hypothesis 8.** Perceived value has a positive direct effect on customer satisfaction.

### 2.4. Customer satisfaction and brand loyalty

Customer satisfaction is an emotional response to a product and/or service consumption experience, which translates into attitudinal loyalty (Babin & Griffin, 1998; Ringham et al., 1994). The evaluation of the affective aspects leads to the formation of attitudinal brand loyalty (Rebekah Bennett, 2001; Carpenter, 2008). Some past studies confirm the positive relationship between customer satisfaction and loyalty, wherein loyalty is a consequence of customer satisfaction (Lam et al., 2004; Raunyuen & Miller, 2007; Ulaga et al., 2006). Thus, the positive relationships between customer satisfaction and loyalty have been widely acknowledged in the past by scholars, researchers, and business practitioners (Jani & Han, 2014; Kaur & Soch, 2018; Samudro et al., 2018a; Sharma, 2017; Watson et al., 2015).

Customer loyalty is a customer’s overall commitment to a preferred product, service, brand, or organization (Oliver, 1999); therefore, a loyal customer commits to a specific brand, despite the possible alternative products. Dick and Basu (1994) identify loyalty as a multi-faceted concept with attitudinal and behavioral dimensions. This paper explores behavioral and attitudinal elements of loyalty (Jayawardhena et al., 2007); behavior loyalty is indicated by repurchase as the first choice, whereas attitudinal loyalty acts beyond repeat purchase, the customer even recommends, encourages and circulates positive word of mouth (Askariazad & Babakhani, 2015). In this paper, authors comply with the composite approach of behavior and attitudinal loyalty; the decision
considers that such a behavioral loyalty is not sufficient and cannot anticipate spurious loyalty (R Bennett & Rundle-Thiele, 2002). The following hypothesis is formulated to ensure satisfaction's effect on brand loyalty.

**Hypothesis 9.** Customer satisfaction has a direct and positive influence on brand loyalty.

### 3. Research Methodology and Conceptual model

In this research, authors estimate a variance-based structural equation model with partial least square (PLS) than covariance-based structural equation model (CBSEM) in Lisrel, AMOS, EOS, SEPATH and RAMONA (Hair et al., 2017), with two main reasons: First, this paper tries to explore the complex model, a few particular path correlations have a relatively low and weak conceptual background (Urbach & Ahlemann, 2010), such as the path of emotional brand associations and rational perceived quality; the paper refers to the research finding in the services industry (Biedenbach & Marell, 2010). Meanwhile this empirical study is in the manufacturing product. The positive relationship between emotional brand association and customer satisfaction is also a challenge to be examined. It considers that the evaluation process of satisfaction is driven by the cognitive process (Parasuraman et al., 1988). Another crucial correlation path is the relationship between an emotional brand association and perceived value; although a successful branding can reduce the level of uncertainty and risks (Mudambi, 2002; Ohnemus, 2009), however, there is very little research investigating how risks and uncertainty influence the perceived value of the brand (Leek & Christodoulides, 2012). Thus, while covariance-based structural equation modeling (CB-SEM) is theory and conceptual background oriented to confirm the proposed model (Jöreskog & Sörbom, 1993), partial least square (PLS) is primarily aimed to predict the causal relationship in the complex model but low or weak theoretical background (Urbach & Ahlemann, 2010). That is the background the paper uses PLS to explore and analyze predictive causal relationships; authors run Smart PLS software version 3.0. The second reason is that the PLS algorithm minimizes the variance of the dependent variables in the model; therefore PLS-SEM works efficiently with small sizes (Hair et al., 2016, p. 16). This field research collects 140 responses from respondents in the chemical emulsion market. In this paper, the authors propose the model as follows (Figure 1).

### 3.1. Sample and data collection

Based on the theory of sampling method, contrary to the covariance-based structural equation modeling, which requires a minimum sample of 100, PLS offers an advantage for accommodating a small sample (Gefen et al., 2000; Joseph F. Hair et al., 2012). Our sample size meets the requirement, which is 140. Every chemical industry uses a multi-supplier policy that has between two to four suppliers; therefore, the research team can get more than one response from every respondent. Market data is collected from secondary data, such as the association member list and the chemical market’s informants such as APCI (Indonesia Paint Producers Association: [https://www.apci.info/](https://www.apci.info/)),

---

**Figure 1. Conceptual framework.**
Table 1. Respondents’ industry

| Industries        | Companies  | Samples   |
|-------------------|------------|-----------|
|                   | Number     | Percentage (%) | Number | Percentage (%) |
| Coating           | 20         | 37.0       | 52     | 37.1          |
| Paper             | 11         | 20.4       | 31     | 22.1          |
| Textile           | 4          | 7.4        | 11     | 7.9           |
| Wood panel        | 6          | 11.1       | 12     | 8.6           |
| Putty             | 3          | 5.6        | 6      | 4.3           |
| Printing          | 4          | 7.4        | 8      | 5.7           |
| Furniture         | 6          | 11.1       | 20     | 14.3          |
| Total             | 54         | 100.0      | 140    | 100.0         |

APKI (Indonesia Pulp and Paper Association: http://apki.net), API (Indonesia Textiles Association: http://www.indonesiatextile.id/), IBCA (Indonesian Barecore Association), PPGI (Indonesian Publishing Companies Association: https://ppgi.or.id/), and HIMKI (Indonesia Furniture and Craft Association: https://www.himki-indonesia.com/). Based on this secondary data and interviews with the chemical market and sales manager of the leading chemical emulsion manufacture in Indonesia, the chemical emulsion market is comprised of 190 companies. In this research, authors disregard home industries and trading companies but focus on the medium and larger companies, both domestic and multinational. Using the purposive sampling method, authors and research teams have contacted those 190 companies by phone and/or e-mail, but only 54 companies replied and agreed to conduct an interview (Table 1). Therefore, the response rate is only 28.42%. Data is obtained from field survey from 7 January 2019 to 30 April 2019 and 18 November 2019 to 15 January 2020.

3.2. Measurement scales

The questionnaire is designed based on a five-point Likert scale. The scale ranges from “1,” which represents “strongly disagree,” and “5,” which represents “strongly agree.” The questionnaire comprises 36 questions with details as below.

- Product quality is indicated by three items adapted from Askariazad and Babakhani (2015); Turkyilmaz et al. (2013)
- Reliability is indicated by five items adapted from Alexander et al. (2009); Elsäßer and Wirtz (2017).
- Responsiveness is indicated by four items adapted from Alexander et al. (2009); Elsäßer and Wirtz (2017).
- Brand image is indicated by four items adapted from Askariazad and Babakhani (2015); Juntunen et al. (2015).
- Salesman competency is indicated by four items adapted from Chen and Su (2011); Elsäßer and Wirtz (2017).
- Perceived value is indicated by four items adapted from Fornell et al. (1996); Turkyilmaz et al. (2013)
- Customer satisfaction is indicated by seven items adapted from Askariazad and Babakhani (2015).
- Customer loyalty is indicated by five items adapted from Lam et al. (2004).

Before the field survey, the questionnaire is pretested to 30 industrial buyers to judge understanding and readability (Dillman, 2007). The questionnaire is attached as appendix 1.

4. Data analysis

4.1. Participant’s profiles

The respondents’ profiles are shown in Table 2. Most respondents are male (61.10 percent), with a majority holding a bachelor’s degree (87 percent). The respondents are above 25 years old, with
Table 2. Demographic profile of respondents

|                      | Quantity | Percentage (%) |
|----------------------|----------|----------------|
| **Education**        |          |                |
| Diploma graduate     | 3        | 56            |
| Bachelor’s degree    | 47       | 87.0          |
| Master’s degree      | 3        | 56            |
| Doctorate degree     | 1        | 19            |
| **Gender**           |          |                |
| Male                 | 33       | 61.1          |
| Female               | 21       | 38.9          |
| **Age**              |          |                |
| 25–35 years old      | 6        | 11.1          |
| 36–45 years old      | 26       | 48.1          |
| 46–55 years old      | 13       | 24.1          |
| > 55 years old       | 9        | 16.7          |
| **Working experience**|         |                |
| < 3 years            | 5        | 9.3           |
| 5–10 years           | 20       | 37.0          |
| 11–15 years          | 8        | 14.8          |
| > 15 years           | 21       | 38.9          |
| **Position**         |          |                |
| Director/GM/Owner    | 21       | 38.9          |
| Purchasing Manager   | 16       | 29.6          |
| Production Manager   | 10       | 18.5          |
| R&D Manager          | 7        | 13.0          |

Source: authors’ own research results

83.30 percent between 25 and 55 years old; the majority of respondents have been serving the company for more than five years (90.70 percent). Respondents come from various positions such as GM/director/owner level (38.90 percent), purchasing manager (29.60 percent), production manager (18.50 percent), and R&D manager (13.00 percent).

4.2. The partial least square-based approach

The obtained data from the field survey is analyzed by PLS 3.0 version software, and it considers the complex model with many latent variables (Henseler et al., 2009; Hutchinson et al., 2011). The first step of PLS analysis is to assess the measurement model, including validity and reliability (Ramayah et al., 2011). The validity test measures how accurately an instrument measures a particular concept it is designed to measure. Meanwhile, the reliability test measures stability and consistency of the measuring instrument (Hair et al., 2019; Sekaran & Bougie, 2016).

4.3. Assessment of validity and reliability

Two types of validity tests are measured to achieve validity standards: convergent and discriminant validity (Sekaran & Bougie, 2016). Convergent validity is the extent to which a measure correlates positively with an alternative measurement in the same construct; the measurements employ the average variance extracted (AVE) and item loadings (Joseph F. Hair et al., 2013). The AVE value ≥ 0.50 (Joseph F. Hair et al., 2013) and factor loading or item loading ≥ 0.50 or ideally ≥ 0.70 with t-value ≥ 1.96 (Hair et al., 2019). The result confirms all the item loading value > 0.70 at a t-value above 1.96 and AVE > 0.5; therefore, the validity standard is achieved (Table 3). Discriminant validity is the uniqueness of a construct, whereas the phenomenon captured by a construct is unique; therefore, it is not represented by other constructs in the model (Joseph F. Hair et al., 2013). Discriminant validity is evaluated by assessing the cross-loadings, whereas the loadings of the constructs must be high on itself and low on other constructs (Vinzi et al., 2010). The paper meets the discriminant validity standard, as shown in appendix 2.
Table 3. Properties of a measurement model

| Construct and Indicators | Factor Loading | t-value | Cronbach’s Alpha | CR   | AVE  |
|--------------------------|----------------|---------|------------------|------|------|
| Rational Brand Quality (RBQ) |                |         |                  |      |      |
| PQ                       |                |         |                  |      |      |
| Rel                      |                |         |                  |      |      |
| Res                      |                |         |                  |      |      |
| Product Quality          |                |         |                  |      |      |
| PQ1                      | 0.834          | 21.851  |                  |      |      |
| PQ2                      | 0.911          | 48.232  |                  |      |      |
| PQ3                      | 0.921          | 45.637  |                  |      |      |
| Reliability              |                |         |                  |      |      |
| Rel1                     | 0.846          | 28.027  |                  |      |      |
| Rel2                     | 0.837          | 28.657  |                  |      |      |
| Rel3                     | 0.844          | 31.222  |                  |      |      |
| Rel4                     | 0.867          | 33.697  |                  |      |      |
| Rel5                     | 0.736          | 14.726  |                  |      |      |
| Responsiveness           |                |         |                  |      |      |
| Res1                     | 0.778          | 18.653  |                  |      |      |
| Res2                     | 0.875          | 37.885  |                  |      |      |
| Res3                     | 0.908          | 49.060  |                  |      |      |
| Res4                     | 0.859          | 29.949  |                  |      |      |

(Continued)
| Construct and Indicators | Factor Loading | t-value | Cronbach’s Alpha | CR   | AVE  |
|--------------------------|----------------|---------|------------------|------|------|
| Emotional Brand Association |                |         |                  |      |      |
| BI | Brand Image | 0.923 | 0.938 | 0.686 | |
| SP | Salesman Competency | 0.937 | 0.955 | 0.758 | |
| Brand Image | 0.856 | 33.080 | |
| BI1 | Brand familiarity | 0.911 | 52.716 | |
| BI2 | Positive image | 0.915 | 58.131 | |
| BI3 | Good reputation | 0.796 | 22.109 | |
| BI4 | Good brand impression | |
| Salesman Competency | 0.899 | 34.999 | |
| SP1 | Expertise person | 0.943 | 72.691 | |
| SP2 | Knowledgeable person | 0.935 | 64.013 | |
| SP3 | Empathy person | 0.891 | 38.642 | |
| SP4 | A good communicator | |
| Perceived Value | 0.891 | 38.861 | |
| PV1 | Product performance/price ratio | 0.865 | 32.021 | |
| PV2 | Competitive value | 0.897 | 37.192 | |
| PV3 | Economic value | |
| PV4 | Overall performance/price ratio | 0.930 | 64.908 | |
| Customer Satisfaction | 0.944 | 0.955 | 0.751 | |

(Continued)
| Construct and Indicators | Factor Loading | t-value | Cronbach's Alpha | CR | AVE |
|--------------------------|----------------|---------|------------------|----|-----|
| R²: 0.95 | CS1 | Satisfied with the quality and solution | 0.829 | 19.374 | |
| | CS2 | Satisfied with the service | 0.877 | 38.395 | |
| | CS3 | Satisfied with the fairness business relationship | 0.875 | 33.199 | |
| | CS4 | Satisfied with overall performance of company | 0.886 | 37.636 | |
| | CS5 | Satisfied with the integrity of the corporate brand | 0.930 | 64.983 | |
| | CS6 | Satisfied with being close with the company | 0.820 | 21.556 | |
| | CS7 | Satisfied with the smooth communication | 0.845 | 25.663 | |
| Brand Loyalty | | | 0.908 | 0.931 | 0.730 |
| R²: 0.94 | BL1 | Repeat purchase product | 0.897 | 57.698 | |
| | BL2 | Repeat it with more quantity | 0.758 | 19.137 | |
| | BL3 | Purchase other products | 0.902 | 44.459 | |
| | BL4 | Prioritize the company | 0.924 | 62.339 | |
| | BL5 | Recommend to others | 0.779 | 12.811 | |
There are two tests of reliability measurement, the internal reliability of a construct is achieved when the Cronbach’s alpha ≥ 0.70 (Nunnally & Bernstein, 1994; Pallant, 2001) and composite reliability ≥ 0.70 (Henseler & Sarstedt, 2013). The respective measures of all constructs accept the reliability standard with Cronbach’s alpha and composite reliability scores >0.70 (Table 3).

4.4. Assessing structural model

To be statistically significant, the path coefficient between constructs should be > 0.05, with a t-value > 1.96 (Hair et al., 2014). As shown in Table 4, all nine hypotheses are supported. Rational brand quality influences satisfaction stronger (H1: 0.570, 6.791) than emotional brand association does (H4: 0.241, 3.186). Moreover, rational brand quality influences brand loyalty stronger (H2: 0.290, 3.261) than emotional brand association does (H5: 0.217, 3.521). In its relationship with perceived value, rational brand quality influences perceived value (H3: 0.437, 3.247) more strongly than emotional brand associations (H6: 0.357, 3.561). Emotional brand associations influence rational brand quality the most (H7: 0.789, 31.207); the opposite result is that the weakest relationship is found between perceived value and customer satisfaction (H8: 0.131, 3.889). Meanwhile, as the past studies have shown, customer satisfaction influences brand loyalty (H9: 0.405, 3.410).

The paper analyzes the indirect effect of antecedents on brand loyalty (Table 4). Rational brand quality influences brand loyalty indirectly through satisfaction (0.231, 3.092); it is a stronger path than emotional brand associations (0.098, 3.682). Meanwhile, both rational brand quality (0.023, 3.352) and emotional brand association (0.019, 1.263) do not have indirect effects on brand loyalty through perceived value, nor indirect perceived value path on loyalty (0.053, 1.588). Emotional brand associations influence brand loyalty indirectly through quality (0.229, 3.104); the indirect effect is stronger than the emotional brand associations-quality-satisfaction-loyalty path (0.182, 3.924); meanwhile, the brand associations-quality-value-satisfaction-loyalty path is rejected (0.018, 1.337).

4.5. Discussion and limitations

The paper’s initial starting point is to verify an integrative model containing rational and emotional dimensions of brand loyalty, and moreover, to verify the role of perceived value. The research investigates the effect of rational brand quality, emotional brand association, and perceived quality on customer satisfaction, brand loyalty, and moreover, the relationship among the constructs regarding their direct and indirect effect on brand loyalty.

The results confirm that rational brand quality influences satisfaction stronger (0.570, 6.791) than emotional brand associations do (0.241, 3.186). Moreover, this paper investigates the direct and indirect effects of both rational brand quality and emotional brand association on brand loyalty. The results confirm that rational brand quality has stronger direct (H2:0.290, 3.261) and indirect effect (0.231, 4.092) on brand loyalty than emotional brand associations, do (H5:0.217, 2.521; indirect effect: 0.098, 2.682). The first finding answers the first and the second research questions, confirming the dominant role of rational aspects of customer satisfaction and brand loyalty. The finding confirms that the buyer’s decision is influenced more by functional elements (product and services performance) than by emotional aspects.

Furthermore, rational brand quality is reflected stronger by the services dimension (Reliability: 0.970 and Responsiveness: 0.962) than by a tangible product (Product: 0.834); this is the second finding of the paper. The justification is that chemical emulsion tends to be tailor-made, whereas the strong interaction and discussion between sellers and buyers lead to the best chemical formulations. Therefore, the services dimension plays a role a little more dominantly than the tangible product itself, despite both dimensions being essential; the second finding answer the third research question.
The third finding is the weakest effect of perceived value-customer satisfaction path (H8: 0.131, 1.889) that indicates customer satisfaction and loyalty are influenced by rational and emotional aspects, not perceived value. Therefore, price penetration will not be able to halt the influence of functional elements and emotional aspects. This third finding answers the fourth research question, which indicates that chemical emulsion is not a commodity-like product (Reimann et al., 2010).

The fourth finding is the stronger relationship between rational brand quality and perceived value (H3: 0.437, 3.247) than the one between emotional brand quality and perceived value (H6: 0.357, 2.561). The finding confirms that value enhancement comes from functional quality rather than emotional aspects; it is rooted in service dimensions, reliability, and responsiveness. Nevertheless, both direct effects on perceived value do not influence brand loyalty indirectly. In contrast, the quality-value-satisfaction-loyalty path is rejected (0.023, 1.352) and the brand association-value-satisfaction-loyalty path is rejected (0.019, 1.263), (Table 4). The rejection of an indirect effect on brand loyalty is due to the weakest effect of value-satisfaction.

The fifth finding is the strongest relationship between the emotional brand association and rational brand quality (0.789, 21.207). Emotional brand associations are reflected more strongly by brand image (0.932, 67.252) than by salesman competency (0.907, 62.374). Chemical companies are associated with technology companies (Wiedmann, 2002); therefore, brand associations contribute a substantial effect to brand quality. In this chemical emulsion context, brand image contributes to stronger effects on quality perceptions than salesman competency does. Emotional brand associations indirectly influence brand loyalty through quality (0.229, 3.104) more strongly than the brand associations-quality-satisfaction-loyalty path (0.182, 3.924). The finding confirms that rational quality is the crucial mediator, with a strong indirect effect on loyalty, then satisfaction and value.

This paper concludes that both factors, rational brand quality and emotional brand associations, are important when it comes to the final purchase decision in the industrial relationship, while perceived value is less so. In general, both rational brand quality and emotional brand associations lead to satisfaction and brand loyalty directly and indirectly; moreover, both factors lead to brand loyalty indirectly through satisfaction. Meanwhile, perceived value influences satisfaction directly but does not influence brand loyalty indirectly. Drawing a more specific conclusion, rational aspects influence brand loyalty stronger than emotional aspects do; moreover, rational brand quality is reflected in the services dimension stronger than in tangible products, indicating product character as a tailor-made product. Meanwhile, the emotional brand association is reflected by brand image stronger than salesman competency. In a more specific conclusion, the emotional brand association influences rational brand quality in complex products, such as chemical emulsion.

Although the model is relatively complex, as it integrates rational and emotional aspects with perceived value involvement, the results are subject to limitations. First of all, the study is limited to the chemical emulsion industry; therefore, authors recommend empirical replication studies in other industries to ensure applicability in other industries. Future research should focus on various contexts, such as industrial services, manufacturer-distributor relationships, company-personal agents (insurance company, credit card, and multi-level marketing).

Considering the loyalty model and branding in the industrial context, authors recommend putting other crucial constructs into consideration, such as switching costs. Industrial customers stay in the relationship for a reason; therefore, it is necessary to investigate the root of loyalty because of lock-in conditions set up by the seller or valuable factors, such as rational quality, emotional brand associations, or price. Finally, the paper is based on a field survey of the market in
| No | Path line | Hypothesis | Coefficient | t-value | Conclusion |
|----|-----------|------------|-------------|---------|------------|
| 1  | Rational Brand Quality → Customer Satisfaction | H1 | 0.570* | 6.791 | Supported |
| 2  | Rational Brand Quality → Brand Loyalty | H2 | 0.290* | 3.261 | Supported |
| 3  | Rational Brand Quality → Perceived Value | H3 | 0.437* | 3.247 | Supported |
| 4  | Emotional Brand Association → Customer Satisfaction | H4 | 0.241* | 3.186 | Supported |
| 5  | Emotional Brand Association → Brand Loyalty | H5 | 0.217* | 2.521 | Supported |
| 6  | Emotional Brand Association → Perceived Value | H6 | 0.357* | 2.561 | Supported |
| 7  | Emotional Brand Association → Rational Brand Quality | H7 | 0.789* | 21.207 | Supported |
| 8  | Perceived Value → Customer Satisfaction | H8 | 0.131p | 1.889 | Supported |
| 9  | Customer Satisfaction → Brand Loyalty | H9 | 0.405* | 4.410 | Supported |
| 10 | Rational Brand Quality → Perceived Value → Customer Satisfaction → Brand Loyalty | | 0.023 | 1.352 | Rejected |
| 11 | Rational Brand Quality → Customer Satisfaction → Brand Loyalty | | 0.231* | 4.092 | Supported |
| 12 | Emotional Brand Association → Perceived Value → Customer Satisfaction → Brand Loyalty | | 0.019 | 1.263 | Rejected |
| 13 | Emotional Brand Association → Customer Satisfaction → Brand Loyalty | | 0.098* | 2.682 | Supported |

(Continued)
| Table 4. (Continued) |   |   |   |
|----------------------|--|------------------------------|
|                      | 14 | Perceived Value → Customer Satisfaction → Brand Loyalty |   |
|                      | 15 | Emotional Brand Association + Rational Brand Quality → Brand Loyalty | Rejected |
|                      | 16 | Emotional Brand Association + Rational Brand Quality → Customer Satisfaction → Brand Loyalty | Supported |
|                      | 17 | Emotional Brand Association + Rational Brand Quality → Perceived Value + Customer Satisfaction → Brand Loyalty | Rejected |

*p < 0.05; †p < 0.10

Source: Authors' own research results

Samudro & Susanti, Cogent Business & Management (2021), 8: 1896871
https://doi.org/10.1080/23311975.2021.1896871
Indonesia; authors recommend replications of empirical studies in other countries to generalize the results.

4.6. Theoretical and managerial implications

The first and second findings contribute to the industrial branding theory, which is that the rational aspects have a stronger influence on brand loyalty than the emotional aspect does. The finding is not in line with a past study that shows that emotional aspects strongly influence loyalty (Elsäßer & Wirtz, 2017); however, this paper is in line with Elsäßer and Wirtz (2017) that both factors are at least the same importance in the process of a purchase decision. Therefore, the paper confirms that both factors of rational and emotional aspects are essential for brand loyalty in industrial relationships, which factor does have a stronger effect depends on the industry.

The second finding also indicates that service dimensions are necessarily critical at an industrial relationship; therefore, both hard facts, such as product and services quality, and soft facts, such as salesman competency, are important since service performance relates to salesman competency. This finding supports past studies, whereas customers consider salesman competency in the industrial relationships (Elsäßer & Wirtz, 2017) and the customer’s perceptions of working with a salesman, whose superior skills have a direct positive effect on satisfaction and loyalty in the chemical industry (Van Riel et al., 2005). The finding contributes to the industrial branding concept that excellent services and salesman competency are the roots of successful branding in the complex products; an employee’s performance leads to the positive effects on brand associations, brand quality, and brand loyalty.

The fourth finding supports past study that quality would become an essential element to encourage a higher price; moreover, it fits high-quality/high-performance brand associations (Ulaga & Chacour, 2001). The quality-value connection approach is applicable at B2B and B2C relationships. Nevertheless, some past B2C studies suggest the idea of using price as a signal of quality (Vera, 2015); this idea is the opposite of the quality-value approach in the B2B relationship, whereas quality comes first and is followed by a disposition to pay a high price from the buyer.

The fifth finding confirms the relationship between emotional brand associations and rational brand quality path; it confirms the relationship between the emotional aspect and rational aspect in the manufacturing industry. Past research tends to confirm the relationship in the context of the services (Biedenbach et al., 2019). Therefore, the fifth finding contributes to the branding theory that the relationship between emotional and rational aspect applies to the industrial relationships.

The first, third, and fifth findings lead firms to develop functional quality and technology leadership necessarily, considering the chemical industry is classified as technology companies (Wiedmann, 2002). Technology performances and leaderships are an indicator of the company’s accomplishment with regards to the R&D capabilities (Hagedoorn & Cloots, 2003, p. 1367); therefore, management should put the proper research budget in place.

Moreover, the second finding applies to the need for proper talent recruitment, placement, and development, since service dimensions contribute stronger effects than a tangible product in the research. Services are interpreted in terms of the interaction quality between a seller and buyer (Biedenbach & Marell, 2010); therefore, firms should put the best employee in place. The finding implies the necessity of management to address the consistent and established buyer-seller relationship rapport on employees’ evaluation program. This implication is in line with the past study, whereas the consistent evaluation and rapport demonstrate the positive effects on brand quality, brand associations, and brand loyalty (Biedenbach et al., 2011). Therefore, firms must invest in training and development programs purposely to ensure that employees meet the expected standards.
The fourth finding applies to the pricing strategy with respect to the inelasticity price trend. Firms should focus more on functional quality and emotional aspects as the basis of competition; nevertheless, pricing strategy should not be underestimated. Firms are not suggested to address low prices as the basis for entering the market nor for gaining a higher market share, but using a high-cost/performance strategy instead (Uлага & Chacour, 2001).

Funding
The authors received no direct funding for this research.

Author details
Andreas Samudro
E-mail: unang1968@gmail.com
ORCID ID: http://orcid.org/0000-0002-1467-3084
Vanny Susanti
ORCID ID: http://orcid.org/0000-0003-0082-6745
1 Doctor of Management and Business, School of Business, IPB University, Bogor, Indonesia, Bogor, West Java, 16151, Indonesia.

Citation
Cite this article as: The model development of industrial brand loyalty: Assessing the rational and emotional aspects as antecedents of loyalty, Andreas Samudro & Vanny Susanti, Cogent Business & Management (2021), 8: 1896871.

References
Aaker, D. A. (1991). Managing Brand Equity: Capitalizing on the Value of a Brand Name. The Free Press, A Division of Simon & Schuster Inc.
Aaker, D. A. (1996). Building Strong Brands. The Free Press, A Division of Simon & Schuster Inc.
Alexander, N. S., Bick, G., Abratt, R., & Bendixen, M. (2009). Impact of branding and product augmentation on decision making in the B2B market. South African Journal of Business Management, 40(1), 1–21. https://doi.org/10.4102/sajbm.v40i1.531
Askariiazad, M. H., & Babokhani, N. (2015). An application of European Customer Satisfaction Index (ECSI) in Business to Business (B2B) context. Journal of Business and Industrial Marketing, 30(1), 17–31. https://doi.org/10.1108/JBIM-07-2011-0093
Babin, B. J., & Griffin, M. (1998). The nature of satisfaction: An updated examination and analysis. Journal of Business Research, 41(2), 127–136. https://doi.org/10.1016/S0148-2963(97)00001-5
Backhaus, K., Steiner, M., & Lügger, K. (2011). To invest, or not to invest, in brands? Drivers of brand relevance in B2B markets. Industrial Marketing Management, 40(7), 1082–1092. https://doi.org/10.1016/j.indmarman.2011.09.002
Baumgarth, C., Binckebank, L., & Iglesias, O. (2011). Sales force impact on B-to-B brand equity: Conceptual framework and empirical test. Journal of Product and Brand Management, 20(6), 487–498. https://doi.org/10.1108/10610421111166630
Baxter, R., & Mateo, S. (2004). Measuring intangible value in business-to-business buyer-seller relationships: An intellectual capital perspective. Industrial Marketing Management, 33(6), 691–700. https://doi.org/10.1016/j.indmarman.2004.06.008
Bennett, R. (2001). A study of brand loyalty in the business-to-business services sector [University of Queensland]. http://eprints.qut.edu.au/14533/1/Bennett.pdf
Bennett, R., & Rundle-Thiele, S. (2002). A comparison of attitudinal loyalty measurement approaches. Journal of Brand Management, 9(3), 193–209. https://doi.org/10.1057/palgrave.bm.2540069
Biedenbach, G., Bengtsson, M., & Wincent, J. (2011). Brand equity in the professional service context: Analyzing the impact of employee role behavior and customer–employee rapport. Industrial Marketing Management, 40(7), 1093–1102. https://doi.org/10.1016/j.indmarman.2011.09.007
Biedenbach, G., Hultén, P., & Tarnovskaya, V. (2019). B2B brand equity: investigating the effects of human capital and relational trust. Journal of Business & Industrial Marketing, 34(1), 1–11. https://doi.org/10.1108/JBIM-01-2018-0003
Biedenbach, G., & Marell, A. (2010). The impact of customer experience on brand equity in a business-to-business services setting. Journal of Brand Management, 17(6), 446–458. https://doi.org/10.1057/jbm.2009.37
Blombäck, A., Axellson, B., & Beverland, M. (2007). The role of corporate brand image in the selection of new subcontractors. Journal of Business and Industrial Marketing, 22(6), 418–430. https://doi.org/10.1111/j.1540-4115.2008.00856.x
Borg, S. W., & Johnston, W. J. (2013). The IPS-EQ Model: Interpersonal skills and emotional intelligence in a sales process. Journal of Personal Selling & Sales Management, 33(1), 39–52. https://doi.org/10.2753/PSS0885-3134330104
Carpenter, J. M. (2008). Consumer shopping value, satisfaction and loyalty in discount retailing. Journal of Retailing and Consumer Services, 15(5), 358–363. https://doi.org/10.1016/j.jretconser.2007.08.003
Cassio, F., & Magna, F. (2012). Business-to-Business Branding: A Review and Assessment of the Impact of Non-Attribute-Based Brand Beliefs on Buyer’s Attitudinal Loyalty. Canadian Journal Of Administrative Sciences / Revue Canadienne des Sciences de l’Administration, 29(3), 242–254. https://doi.org/10.1002/cjas.235
Chandrashekaran, M., Rotte, K., Tax, S. S., & Grewal, R. (2007). Satisfaction strength and customer loyalty. Journal of Marketing Research, 44(1), 153–163. https://doi.org/10.1509/jmkr.44.4.1.1153
Chen, Y.-M., & Su, Y.-F. (2011). Do country-of-manufacture and country-of-design matter to industrial brand equity? Journal of Business and Industrial Marketing, 27(1), 57–68. https://doi.org/10.1080/08858621211188966
Cretu, A. E., & Brodie, R. J. (2007). The influence of brand image and company reputation where manufacturers market to small firms: A customer value perspective. Industrial Marketing Management, 36(2), 230–240. https://doi.org/10.1016/j.indmarman.2005.08.013
Dick, A. S., & Basu, K. (1994). Customer loyalty: Toward an integrated conceptual framework. Journal of the Academy of Marketing Science, 22(2), 99–113. https://doi.org/10.1177/0092046593022002
Dillman, D. A. (2007). Mail and Internet Surveys: The Tailored Design Method (2nd ed.). John Wiley and Sons, Inc.
Dong, S., Ding, M., Grewal, R., & Zhao, P. (2011). Functional forms of the satisfaction–loyalty relationship. International Journal of Research in Marketing, 28(1), 38–50. https://doi.org/10.1016/j.ijresmar.2010.09.002
Elder, M., & Wirtz, B. W. (2017). Rational and emotional factors of customer satisfaction and brand loyalty in...
a business-to-business setting. *Journal of Business and Industrial Marketing*, 32(1), 138–152. https://doi.org/10.1108/JBIM-05-2015-0101

Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J., & Bryant, B. E. (1996). The American Customer Satisfaction Index: Nature, purpose, and findings. *Journal of Marketing*, 60(4), 7–18. https://doi.org/10.1177/002224969600000403

Gefen, D., Straub, D., & Boudreau, M.-C. (2000). Structural Equation Modeling and Regression: Guidelines for Research Practice. *Communications of the Association for Information Systems*, 4(7), 1–77. https://doi.org/10.17705/1CAIS.00407

Gordon, G. L., Calantone, R. J., Di Benedetto, C. A., Gordon, G. L., Calantone, R. J., & Di Benedetto, C. A. (1993). Brand Equity in the Business-to-Business Sector: An Exploratory Study. *Journal of Product & Brand Management*, 2(3), 4–16. https://doi.org/10.1080/1061042910046689

Hagedoorn, J., & Cloodt, M. (2003). Measuring innovative performance: Is there an advantage in using multiple indicators? *Research Policy*, 32(8), 1365–1379. https://doi.org/10.1016/S0048-7333(02)00137-3

Hair, J. F., Jr, Black, W. C., & Anderson, R. E. (2019). *Multivariate Data Analysis* (8th ed.). Cengage Learning.

Hair, J. F., Jr, Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (2nd ed.). SAGE Publications Inc.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance. *Long Range Planning*, 46(1–2), 1–12. https://doi.org/10.1016/j.lrp.2013.01.001

Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*, 26(2), 106–121. https://doi.org/10.1108/EBR-10-2013-0128

Hair, J. F., Sarstedt, M., Pieper, T. M., & Ringle, C. M. (2012). The Use of Partial Least Squares Structural Equation Modeling in Strategic Management Research: A Review of Past Practices and Recommendations for Future Applications. *Long Range Planning*, 45(5–6), 320–340. https://doi.org/10.1016/j.lrp.2012.09.008

Hair, J., J. F., Sarstedt, M., Matthews, L. M., & Ringle, C. M. (2016). Identifying and treating unobserved heterogeneity with FIMIX-PLS: Part I – Method. *European Business Review*, 28(1), 63–76. https://doi.org/10.1108/EBR-09-2015-0094

Hastings, G., & Saren, M. (2003). The critical contribution of social marketing: Theory and application. *Marketing Theory*, 3(3), 305–322. https://doi.org/10.1177/147059330300300301

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. *Advances in International Marketing*, 20, 277–319. https://doi.org/10.1080/10429999.2009.1056977

Henseler, J., & Sarstedt, M. (2013). Goodness-of-fit indices for partial least squares path modeling. *Computational Statistics*, 28(2), 565–580. https://doi.org/10.1007/s00180-012-0317-1

Hussain, R., Al Nasser, A., & Hussain, Y. K. (2015). Service quality and customer satisfaction of a UAE-based airline: An empirical investigation. *Journal of Air Transport Management*, 42(1), 167–175. https://doi.org/10.1016/j.jairtraman.2014.10.001

Hutchinson, D., Wellington, W. J., Saed, M., & Cox, P. (2011). Refining value-based differentiation in business relationships: A study of the higher order relationship building blocks that influence behavioural intentions. *Industrial Marketing Management*, 40(3), 465–478. https://doi.org/10.1016/j.indmarman.2010.08.010

Jain, A., & Han, H. (2014). Personality, satisfaction, image, ambience, and loyalty: Testing their relationships in the hotel industry. *International Journal of Hospitality Management*, 37, 11–20. https://doi.org/10.1016/j.ijhm.2013.10.007

Jayawardhena, C., Souchon, A. L., Farrell, A. M., & Glanville, K. (2007). Outcomes of service encounter quality in a business-to-business context. *Industrial Marketing Management*, 36(5), 575–588. https://doi.org/10.1016/j.indmarman.2006.02.012

Jensen, M. B., & Jepsen, A. L. (2007). Low attention advertising processing in B2B markets. *Journal of Business and Industrial Marketing*, 22(5), 342–348. https://doi.org/10.1108/08858560710773477

Jensen, M., Jr, & Asparouhov, K. (2008). Toward a B2B customer-based brand equity model. *Journal of Targeting, Measurement and Analysis for Marketing*, 16(2), 122–128. https://doi.org/10.1057/jt.2008.4

Jöreskog, K. G., & Sörbom, D. (1993). LISREL 8: Structural equation modeling with the SIMPLS command language. Scientific Software International.

Juntunen, J., Juntunen, M., & Juga, J. (2015). Latent classes of service quality, logistics costs and loyalty. *International Journal of Logistics Research and Applications*, 18(5), 442–458. https://doi.org/10.1080/13675567.2014.980793

Kadic-Mazalalic, S., Vido, I., Obadia, C., & Plank, R. (2016). Clarifying the influence of emotional intelligence on salesperson performance. *Journal of Business and Industrial Marketing*, 31(7), 877–888. https://doi.org/10.1108/JBIM-09-2015-0168

Kaur, H., & Soch, H. (2018). Satisfaction, trust and loyalty: Investigating the mediating effects of commitment, switching costs and corporate image. *Journal of Asia Business Studies*, 12(6), 361–380. https://doi.org/10.1108/JABS-08-2015-0119

Keller, K. L. (1993). Conceptualizing, measuring, and managing customer-based brand equity. *Journal of Marketing*, 57(1), 1–22. https://doi.org/10.1177/002224939305700101

Kemp, E. A., Borders, A. L., Anaza, N. A., & Johnston, W. J. (2018). The heart in organizational buying: Marketers’ understanding of emotions and decision-making of buyers. *Journal of Business and Industrial Marketing*, 33 (1), 19–28. https://doi.org/10.1108/JBIM-06-2017-0129

Kuhn, K. A., Alpert, F., & Pope, N. K. L. (2008). An application of Keller’s brand equity model in a B2B context. *Qualitative Market Research: An International Journal*, 11(1), 40–58. https://doi.org/10.1108/13522750810864550

Kumar, V., Cohen, G. S., & Rangan, B. (2015). Establishing brand equity among business-to-business referral sources in the emerging markets: The case of specialty medical practice. *Industrial Marketing Management*, 51, 26–34. https://doi.org/10.1016/j.indmarman.2015.04.018

Lam, S. Y., Shankar, V., Erramilli, M. K., & Murray, S. (2004). Customer value, satisfaction, loyalty, and switching costs: An illustration from a business-to-business service context. *Journal of the Academy of Marketing Science*, 32(3), 293–311. https://doi.org/10.1177/00920700304263330
Leek, S., & Christodoulides, G. (2011). A literature review and future agenda for B2B branding: Challenges of branding in a B2B context. Industrial Marketing Management, 40(6), 830–837. https://doi.org/10.1016/j.indmarman.2011.06.006

Leek, S., & Christodoulides, G. (2012). A framework of brand value in B2B markets: The contributing role of functional and emotional components. Industrial Marketing Management, 41(11), 106–114. https://doi.org/10.1016/j.indmarman.2011.11.009

Li, Y., Wang, X., & Yang, Z. (2013). The Effects of Corporate-Brand Credibility, Perceived Corporate-Brand Origin, and Self-Image Congruence on Purchase Intention: Evidence From China’s Auto Industry. Journal of Global Marketing, 24(1), 58–68. https://doi.org/10.1080/09199629.2011.545720

Marquardt, A. J. (2013). Relationship quality as a resource to build industrial brand equity when products are uncertain and future-based. Industrial Marketing Management, 42(8), 1386–1397. https://doi.org/10.1016/j.indmarman.2013.07.017

Mayr, T., Zins, A. H., & Zins, A. H. (2012). Extensions on the conceptualization of customer perceived value: Insights from the airline industry. International Journal of Culture, Tourism and Hospitality Research, 6(4), 356–376. https://doi.org/10.1108/17506181211265086

Michell, P., King, J., & Reast, J. B. (2001). Brand values related to industrial products. Industrial Marketing Management, 30(5), 415–425. https://doi.org/10.1016/S0019-8501(99)00097-8

Molineri, L. K., Abratt, R., & Dion, P. (2008). Satisfaction, quality and value and effects on repurchase and positive word-of-mouth behavioral intentions in a B2B services context. Journal of Services Marketing, 22(5), 363–373. https://doi.org/10.1108/0887604081089139

Mudambi, S. M. D. (2002). Branding importance in business-to-business markets. Three buyer clusters. Industrial Marketing Management, 31(6), 523–533. https://doi.org/10.1016/S0263-4707(02)00184-0

Nunnally, J. C., & Bernstein, I. H. (1994). The assessment of reliability. In J. A. Vaimparee & J. R. Betsi (Eds.), Psychometric Theory (pp. 248–292). McGraw-Hill, Inc. https://doi.org/10.1108/13670479410470882

Nyadzayo, M. W., Matando, M. J., & Ewing, M. T. (2016). Franchisee-based brand equity: The role of brand relationship quality and brand citizenship behavior. Industrial Marketing Management, 52, 163–174. https://doi.org/10.1016/j.indmarman.2015.07.008

Ohnemus, L. (2009). B2B branding: A financial burden for shareholders? Business Horizons, 52(2), 159–166. https://doi.org/10.1016/j.bushor.2008.10.004

Oliver, R. L. (1999). Whence Consumer Loyalty? Journal of Marketing, 63(August), 10–17. https://doi.org/10.1177/0022249996034010

Pollant, J. (2001). SPSS Survival Manual: A Step by Step Guide to Data Analysis Using SPSS for Windows. Open University Press.

Popadimitriou, D., Apostolopoulou, A., & Koliopoulos, K. (2011). Destination Personality, Affective Image, and Behavioral Intentions in Domestic Urban Tourism. Journal of Travel Research, 50(3), 302–315. https://doi.org/10.1177/0047287510361839

Parasuraman, A., Zeithami, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. Journal of Retailing, 64(1), 12–40. https://doi.org/10.1016/0012-6859(84)90004-3

Patterson, P. G., & Spreng, R. A. (1997). Modelling the relationship between perceived value, satisfaction and repurchase intentions in a business-to-business, services context: An empirical examination. International Journal of Service Industry Management, 8(3), 314–434. https://doi.org/10.1108/095642397100960158

Persson, N. (2010). An exploratory investigation of the elements of B2B brand image and its relationship to price premium. Industrial Marketing Management, 39(8), 1269–1277. https://doi.org/10.1016/j.indmarman.2010.02.024

Ragnhild, T., Mohamad, O., Young, N. C., & Lo, M. C. (2011). Testing dimensionality of the consumer ethnocentrism scale (CE5SCALE): Assessing reliability and validity in a multicultural context. Australian Journal of Basic and Applied Sciences, 5(9), 325–334. http://ajbasweb.com/old/ajbas2011/September-2011/325-334.pdf

Rauyven, P., & Miller, K. E. (2007). Relationship quality as a predictor of B2B brand equity in the operating context. Journal of Business Research, 60(1), 21–31. https://doi.org/10.1016/j.jbusres.2005.11.006

Reimann, M., Schilke, O., & Thomas, J. S. (2010). Customer relationship management and firm performance: The mediating role of business strategy. Journal of the Academy of Marketing Science, 38(3), 326–346. https://doi.org/10.1177/0092150010365966

Ringham, L. A., Johnson, L. W., & Morton, C. P. (1994). Customer satisfaction and loyalty for a continual consumer service. Australasian Journal of Market Research, 2(2), 43–48.

Samudro, A., Sumarwana, U., Simanjuntak, M., & Yusuf, E. Z. (2019). Building the Relationship Quality Model: An Investigation of the Chemical Industry. MIX: Jurnal Ilmiah Manajemen, 9(3), 528–543. https://doi.org/10.22441/mix.v9i3.010

Samudro, A., Sumarwana, U., Simanjuntak, M., & Yusuf, E. Z. (2020). Assessing the effects of perceived value and perceived value on customer satisfaction. Management Science Letters, 10(5), 1077–1084. https://doi.org/10.5267/j.msl.2019.11.001

Samudro, A., Sumarwana, U., Yusuf, E. Z., & Simanjuntak, M. (2018a). Perceived Quality and Relationship Quality as Antecedents and Predictors of Loyalty in the Chemical Industry: A Literature Review. European Scientific Journal, 14(28), 173. https://doi.org/10.19044/esj.2018.v14n28p173

Samudro, A., Sumarwana, U., Yusuf, E. Z., & Simanjuntak, M. (2018b). Perceived Value, Social Bond, and Switching Cost as Antecedents and Predictors of Customer Loyalty in the B2B Chemical Industry Context: A Literature Review. International Journal of Marketing Studies, 10(4), 124. https://doi.org/10.5539/ijms.v10n4p124

Samudro, A., & Susanti, V. (2021). Assessing the direct influencers of brand loyalty: An investigation of chemical industry in the developing country of Indonesia. Management Science Letters, 11(6), 1939–1948. https://doi.org/10.5267/j.mls.2021.11.007

Sekaran, U., & Bougie, R. (2016). Research method for business: A skill building approach (7th ed.). John Wiley & Sons, Ltd.

Selnes, F., & Sallis, J. (2003, July). Promoting relationship learning. Journal of Marketing, 67(3), 80–95. https://doi.org/10.1509/jmkg.67.3.80.18656

Sharma, V. (2017). Patient satisfaction and brand loyalty in health-care organizations in India. Journal of Asia Business Studies, 11(1), 73–87. https://doi.org/10.1155/2015/256976

Sheth, J. N., & Sharma, A. (1997). Supplier relationships: Emerging issues and challenges. Industrial Marketing Management, 26(2), 91–100. https://doi.org/10.1016/S0263-4707(96)00153-8
Spreng, R. A., Hui Shi, L., & Poge, T. J. (2009). Service quality and satisfaction in business-to-business services. *Journal of Business & Industrial Marketing, 24*(8), 537–548. https://doi.org/10.1108/ 08858620910999411

Suh, T., & Houston, M. B. (2010). Distinguishing supplier reputation from trust in buyer–supplier relationships. *Industrial Marketing Management, 39*(5), 744–751. https://doi.org/10.1016/j.indmarman.2010.02.013

Sussanti, V., Sumarwan, U., Simanjuntak, M., & Yusuf, E. Z. (2019a). PENGARUH PERCEIVED BRAND QUALITY, PERCEIVED VALUE DAN SWITCHING COST TERHADAP CUSTOMER SATISFACTION DAN BRAND LOYALTY: STUDI PASAR INDUSTRI KIMIA DI INDONESIA. *Jurnal Ilmiah Manajemen, 9*(2), 282–297. https://doi.org/10.22441/mix.2019.v9i2.003

Sussanti, V., Sumarwan, U., Simanjuntak, M., & Yusuf, E. Z. (2019b). The Rational Factors of Perceived Quality and Perceived Value as the Drivers of Customer Satisfaction and Brand Loyalty. Bisnis & Birokrasi Journal, 26(3), 132–144. https://doi.org/10.20476/jbb.v26i3.11121

Sussanti, V., Sumarwan, U., Simanjuntak, M., & Yusuf, E. Z. (2019c). How to Manage Customer Satisfaction through Brand Association and Perceived Value Strategy. *GATR Journal of Management and Marketing Review, 4*(3), 184–193. https://doi.org/10.35609/ jmmr.2019.4.3(3)

Sussanti, V., Sumarwan, U., Simanjuntak, M., & Yusuf, E. Z. (2020a). How to anticipate and manage customer satisfaction and brand loyalty by investigating emotional aspects in the B2B setting. *Management Science Letters, 10*(14), 3271–3278. https://doi.org/10.5267/j.msl.2020.6.011

Sussanti, V., Sumarwan, U., Simanjuntak, M., & Yusuf, E. Z. (2020b). Rational antecedent framework of brand satisfaction in the industrial market: Assessing rational perceived quality and rational perceived value roles. *International Review of Management and Marketing, 10*(1), 19–26. https://doi.org/10.32479/irmm.9017

Sweeney, J. C., & Webb, D. (2002). Relationship Benefits: An Exploration of Buyer-Supplier Dyads. *Journal of Relationship Marketing, 12*(2), 77–91. https://doi.org/10.1300/J366v01n02_05

Sweeney, J. C., & Webb, D. A. (2007). How functional, psychological, and social relationship benefits influence individual and firm commitment to the relationship. *Journal of Business & Industrial Marketing, 22*(7), 474–488. https://doi.org/10.1111/j.1543-1567.2006.00254.x

Taylor, S. A., Hunter, G. L., & Lindberg, D. L. (2007). Understanding (customer-based) brand equity in financial services. *Journal of Services Marketing, 21*(4), 241–252. https://doi.org/10.1108/ 08876040710798540

Turkylmaz, A., Oztekin, A., Zaim, S., & Demirel, O. F. (2013). Universal structure modeling approach to customer satisfaction index. *Industrial Management & Data Systems, 113*(7), 952–969. https://doi.org/10.1108/IMDS-12-2012-0444

Uлага, W., & Chacour, S. (2001). Measuring customer-perceived value in business markets. *Industrial Marketing Management, 30*(6), 525–540. https://doi.org/10.1016/S0215-0850(01)00122-4

Ulaga, W., Eggert, A., & Zolwikiewski, J. (2006). Relationship value and relationship quality: Broadening the nomological network of business-to-business relationships. *European Journal of Marketing, 40*(3/4), 311–327. https://doi.org/10.1108/ 03090560610648075

Urbach, N., & Ahlemann, F. (2010). Structural Equation Modeling in information systems research using Partial Least Squares. *Journal of Information Technology Theory and Application, 11*(2), 5–40. https://www.researchgate.net/profile/Nils_Urbach/publication/228467554_Structural_equation_modeling_in_information_systems_research_using_Partial_Least_Squares/links/0912f0ff6471d55f7000000 Structural-equation-modeling-in-information-sys

Van Riel, A. C. R., De Mortanges, C. P., & Streukens, S. (2005). Marketing antecedents of industrial brand equity: An empirical investigation in specialty chemicals. *Industrial Marketing Management, 34*(8), 841–847. https://doi.org/10.1016/j.indmarman.2005.01.006

Vera, Y. (2013). Perceived brand quality as a way to superior customer perceived value crossing by moderating effects. *Journal of Product and Brand Management, 22*(2), 147–156. https://doi.org/10.1108/ JPBPM-04-2014-0551

Vinzi, V. E., Trinchera, L., & Amato, S. (2010). PLS path modeling: From foundations to recent development and open issues for model assessment and improvement. In V. E. Vinzi, W. W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of Partial Least Squares* (pp. 47–83). Springer-Verlag. https://doi.org/10.1007/978-3-540-32827-8_3

Walley, K., Custance, P., Taylor, S., Lindgreen, A., Hingley, M., & Beverland, M. (2007). The importance of brand in the industrial purchase decision: A case study of the UK tractor market. *Journal of Business and Industrial Marketing, 22*(6), 383–393. https://doi.org/10.1108/ 08858620710780145

Wallin Andressen, T., & Lindestad, B. (1998). Customer loyalty and complex services. *International Journal of Service Industry Management, 9*(1), 7–23. https://doi.org/10.1108/09564239810999923

Watson, G. F., Beck, J. T., Henderson, C. M., & Palmatier, R. W. (2015). Building, measuring, and profiting from customer loyalty. *Journal of the Academy of Marketing Science, 43*(6), 790–825. https://doi.org/10.1007/s11747-015-0439-4

Wiedmann, K.-P. (2002). Germany: Analyzing the German Corporate Reputation Landscape. *Corporate Reputation Review, 4*(4), 337–353. https://doi.org/10.1057/palgrave.crr.1540155

Zabliti, A. R., Brown, B. P., & Douthat, N. (2010). The relative importance of brands in modified rebuy purchase situations. *International Journal of Research in Marketing, 27*(3), 248–260. https://doi.org/10.1016/j. ijresmar.2010.02.005

Zhang, J., & He, Y. (2014). Key dimensions of brand value co-creation and its impacts upon customer perception and brand performance: An empirical research in the context of industrial service. *Nankai Business Review International, 5*(1), 43–69. https://doi.org/10.1108/NBRI-09-2013-0033
### Appendix 1 Questionnaire

**The Scale:**

1 strongly disagree  
2 disagree  
3 neutral  
4 agree  
5 strongly agree

| Product Quality |  |  |  |  |  |
|-----------------|---|---|---|---|---|
| PQ1. This company provide products that meet quality requirements. | 1 | 2 | 3 | 4 | 5 |
| PQ2. This company provide good quality products. | 1 | 2 | 3 | 4 | 5 |
| PQ3. This company provide consistent good quality products. | 1 | 2 | 3 | 4 | 5 |

| Reliability |  |  |  |  |  |
|-------------|---|---|---|---|---|
| RL1. This company provide excellent technical and formulation solution. | 1 | 2 | 3 | 4 | 5 |
| RL2. The technical team always ready to solve our complaint accurately. | 1 | 2 | 3 | 4 | 5 |
| RL3. The sales team always ready to solve our complaint accurately. | 1 | 2 | 3 | 4 | 5 |
| RL4. The sales team is reliable to provide fair solution. | 1 | 2 | 3 | 4 | 5 |
| RL5. The emulsion's delivery meets the schedule. | 1 | 2 | 3 | 4 | 5 |

| Responsiveness |  |  |  |  |  |
|----------------|---|---|---|---|---|
| RS1. This company provide fast technical solution. | 1 | 2 | 3 | 4 | 5 |
| RS2. The sales team always respond to our needs fast. | 1 | 2 | 3 | 4 | 5 |
| RS3. The technical team always ready to solve our complaint. | 1 | 2 | 3 | 4 | 5 |
| RS4. The sales team always ready to solve our complaint. | 1 | 2 | 3 | 4 | 5 |

| Perceived Value |  |  |  |  |  |
|----------------|---|---|---|---|---|
| PV1. The emulsion quality performance is equals with the price. | 1 | 2 | 3 | 4 | 5 |
| PV2. The emulsion price is competitive. | 1 | 2 | 3 | 4 | 5 |
| PV3. We received a good service that is equals with the price. | 1 | 2 | 3 | 4 | 5 |
| PV4. The overall performance is equals with the price. | 1 | 2 | 3 | 4 | 5 |

| Corporate Brand Image |  |  |  |  |  |
|------------------------|---|---|---|---|---|
| BI1. We are familiar with this corporate brand. | 1 | 2 | 3 | 4 | 5 |
| BI2. This company has a positive image. | 1 | 2 | 3 | 4 | 5 |
| BI3. This company has a good reputation in the industry. | 1 | 2 | 3 | 4 | 5 |
| BI4. This company has a good brand impression. | 1 | 2 | 3 | 4 | 5 |

| Salesman Competency |  |  |  |  |  |
|---------------------|---|---|---|---|---|

(Continued)
### Product Quality

| SP1. This company employed expert salespersons that understand the product knowledge. | 1 2 3 4 5 |
| SP2. This company employed knowledgeable salespersons that understand our market. | 1 2 3 4 5 |
| SP3. This company employed empathic salespersons that understand our company. | 1 2 3 4 5 |
| SP4. This company employed communicative salespersons. | 1 2 3 4 5 |

### Customer Satisfaction

| CS1. We satisfied with the quality and solution provided. | 1 2 3 4 5 |
| CS2. We satisfied with the service provided. | 1 2 3 4 5 |
| CS3. We satisfied with the fairness business relationship. | 1 2 3 4 5 |
| CS4. We satisfied with overall performance of this company. | 1 2 3 4 5 |
| CS5. We satisfied with the integrity of this corporate brand. | 1 2 3 4 5 |
| CS6. We satisfied with being close with this company. | 1 2 3 4 5 |
| CS7. We satisfied with the smooth communication. | 1 2 3 4 5 |

### Brand Loyalty

| BL1. We will purchase the same products from this company. | 1 2 3 4 5 |
| BL2. We will purchase the same products from this company with more quantity | 1 2 3 4 5 |
| BL3. We will purchase other emulsion products from this company. | 1 2 3 4 5 |
| BL4. We will prioritize this company. | 1 2 3 4 5 |
| BL5. We will recommend this company to others. | 1 2 3 4 5 |

### Appendix 2 Discriminant Validity

Fornell-Larcker Criterion

|       | BL  | BRAND | CS   | EBA | PQ   | PV   | RBQ  | REL  | RES  | SALES |
|-------|-----|-------|------|-----|------|------|------|------|------|-------|
| BL    | 0.855 |       |      |     |      |      |      |      |      |       |
| BRAND | 0.715 | 0.871 |      |     |      |      |      |      |      |       |
| CS    | 0.823 | 0.699 | 0.867|     |      |      |      |      |      |       |
| EBA   | 0.763 | 0.932 | 0.783| 0.828|      |      |      |      |      |       |
| PQ    | 0.615 | 0.581 | 0.682| 0.643| 0.889|      |      |      |      |       |
| PV    | 0.741 | 0.684 | 0.710| 0.702| 0.560| 0.896|      |      |      |       |
| RBQ   | 0.807 | 0.700 | 0.854| 0.789| 0.834| 0.719| 0.795|      |      |       |
| REL   | 0.799 | 0.680 | 0.815| 0.761| 0.715| 0.720| 0.970| 0.827|      |       |
| RES   | 0.795 | 0.673 | 0.855| 0.772| 0.702| 0.693| 0.962| 0.927| 0.856|       |
| SALES | 0.715 | 0.703 | 0.760| 0.907| 0.628| 0.623| 0.779| 0.747| 0.772| 0.917 |
### Outer Loadings

| BL  | BRAND | CS   | EBA | PQ   | PV   | RBQ | REL | RES | SALES |
|-----|-------|------|-----|------|------|-----|-----|-----|-------|
| BI1 | 0.856 |      |     |      |      |     |     |     |       |
| BI1 | 0.763 |      |     |      |      |     |     |     |       |
| BI2 | 0.911 |      |     |      |      |     |     |     |       |
| BI2 | 0.841 |      |     |      |      |     |     |     |       |
| BI3 | 0.915 |      |     |      |      |     |     |     |       |
| BI3 | 0.852 |      |     |      |      |     |     |     |       |
| BI4 | 0.796 |      |     |      |      |     |     |     |       |
| BI4 | 0.786 |      |     |      |      |     |     |     |       |
| BL1 | 0.897 |      |     |      |      |     |     |     |       |
| BL2 | 0.758 |      |     |      |      |     |     |     |       |
| BL3 | 0.902 |      |     |      |      |     |     |     |       |
| BL4 | 0.924 |      |     |      |      |     |     |     |       |
| BL5 | 0.779 |      |     |      |      |     |     |     |       |
| CS1 | 0.829 |      |     |      |      |     |     |     |       |
| CS2 | 0.877 |      |     |      |      |     |     |     |       |
| CS3 | 0.875 |      |     |      |      |     |     |     |       |
| CS4 | 0.886 |      |     |      |      |     |     |     |       |
| CS5 | 0.930 |      |     |      |      |     |     |     |       |
| CS6 | 0.820 |      |     |      |      |     |     |     |       |
| CS7 | 0.845 |      |     |      |      |     |     |     |       |
| PQ1 | 0.834 |      |     |      |      |     |     |     |       |
| PQ1 | 0.693 |      |     |      |      |     |     |     |       |
| PQ2 | 0.911 |      |     |      |      |     |     |     |       |
| PQ2 | 0.748 |      |     |      |      |     |     |     |       |
| PQ3 | 0.921 |      |     |      |      |     |     |     |       |
| PQ3 | 0.781 |      |     |      |      |     |     |     |       |
| PV1 | 0.891 |      |     |      |      |     |     |     |       |
| PV2 | 0.865 |      |     |      |      |     |     |     |       |
| PV3 | 0.897 |      |     |      |      |     |     |     |       |
| PV4 | 0.930 |      |     |      |      |     |     |     |       |
| Rel1| 0.846 |      |     |      |      |     |     |     |       |
| Rel1| 0.822 |      |     |      |      |     |     |     |       |
| Rel2| 0.837 |      |     |      |      |     |     |     |       |
| Rel2| 0.827 |      |     |      |      |     |     |     |       |
| Rel3| 0.844 |      |     |      |      |     |     |     |       |
| Rel3| 0.846 |      |     |      |      |     |     |     |       |
| Rel4| 0.867 |      |     |      |      |     |     |     |       |
| Rel4| 0.835 |      |     |      |      |     |     |     |       |
| Rel5| 0.736 |      |     |      |      |     |     |     |       |
| Rel5| 0.665 |      |     |      |      |     |     |     |       |
| Res1| 0.778 |      |     |      |      |     |     |     |       |
| Res1| 0.794 |      |     |      |      |     |     |     |       |
| Res2| 0.875 |      |     |      |      |     |     |     |       |
| Res2| 0.847 |      |     |      |      |     |     |     |       |
Appendix 3 PLS 3.0 result—standardized
Appendix 4 PLS 3.0 result—t-value
