Country-of-origin effects and antecedents of industrial brand equity☆

Yi-Min Chen a,⁎, Yi-Fan Su a, Feng-Jyh Lin b,⁎⁎

a National University of Kaohsiung, Taiwan
b Department of Business Administration, Feng Chia University, Taichung, Taiwan

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ABSTRACT

Does the country-of-origin effect matter to industrial brand equity in international business-to-business (B2B) markets? The effect of a product’s country-of-origin (COO) on both industrial buyers’ and consumers’ perceptions and evaluations has been one of the most widely studied phenomena in the fields of international business, marketing, and consumer behavior since the 1960s. Although many country-of-origin studies focus on consumer behavior in developed countries and acknowledge that the processes and stages of economic development by which consumers use COO information may differ in developing countries, the fact that there has been little research to investigate the effects of COO could explain the variations in international buyers’ evaluations of industrial brand equity in the newly-industrialized economies, such as Taiwan. Taiwanese firms are now formidable global B2B market players by successfully transforming themselves from manufacturing mainly low-value and labor-intensive goods to producing many high value-added products that require advanced technology, equipment and significant business expertise. With the adoption of advanced technology and equipment, an important question is whether unique and innovative fastener products from Taiwan have generated the country-of-origin effects in international B2B buyers’ minds. The main finding is that the country-of-origin of fasteners has not yet become an important antecedent of industrial brand equity in the case of the fastener industry in Taiwan.

1. Introduction

Taiwanese firms have emerged as formidable global B2B market players by successfully transforming themselves from manufacturing mainly low-value and labor-intensive goods to producing many high value-added products that require advanced technology, equipment and significant business expertise (Chen, 2010; Huarng, 2010). Taiwan is one of the first developing countries to open up to international economic flows, first targeting export markets and then relying on direct investments from foreign multinationals. In this regard, the fastener industry has played a central role in the development of the Taiwan economy.

The fastener industry in Taiwan has a reputation in the world as the kingdom of screws since the 1990s. For example, the market share of Taiwanese fastener products in the U.S. market exceeded 50% until the early 2000s. However, the importance of Taiwanese fastener products to the world has declined with the emergence of Chinese screws in recent years. To cope with the challenges from low-priced Chinese products, many fastener firms in Taiwan have been eager to reposition themselves from an emphasis on original equipment manufacturing (OEM) toward original design manufacturing (ODM) or even original brand manufacturing (OBM) by investing in advanced equipment and upgrading their manufacturing facilities. Therefore, in acknowledging the increasingly important role of brands and innovative products, how to brand Taiwanese fastener products in international B2B markets is a salient issue in international marketing and brand management research. In addition, based on the transformations from OEM to ODM or OBM in Taiwan’s fastener industry in recent years, another question concerns whether the unique and innovative screws that Taiwanese fastener firms are now manufacturing have generated the country-of-origin effects in international industrial buyers’ minds?

Brand equity has been a prevalent topic in business practice as well as in academic research since the early 1990s. In addition, the country-of-origin (COO) effect has been a key theoretical and empirical issue related to brand equity in the international marketing and consumer behavior fields (Ahmed and d’Astous, 2006). For example, the Sanlu tainted milk powder incident in 2008 represents a negative effect of COO on products from China. After 16 infants were diagnosed with kidney stones in July 2008 due to the presence of the toxic chemical melamine in the Sanlu milk powder, which is one of the top brands in China, most customers including B2C consumers and B2B manufacturers refused to buy any milk products from Sanlu, and even from China. In fact, due to the use of melamine as an ingredient
in imports of milk powder from China, Lipton and Nestlé, the world’s leading instant coffee and milk tea manufacturers, recalled and destroyed all products that were found to contain melamine, especially in Hong Kong, Macau, and Taiwan. However, while most previous studies have investigated the COO effect on customer-based brand equity in the B2C markets, there are so far no studies dedicated to the country-of-origin effect on industrial buyer-based brand equity in international B2B markets.

In the B2B markets, it is increasingly difficult to gain competitive advantage either based on product quality or price. Recently, industrial companies have sought to differentiate themselves from their competitors by implementing B2B branding strategies (Mudambi, 2002; Mudambi, Doyle, and Wong, 1997). For example, Boeing, Cisco Systems, Dell, FedEx, General Electric, HP, IBM, Intel, Microsoft, and SAP are among the most cited best-practice brands in the area of B2B branding. Although most of them also operate in B2C markets, their main business operations are concentrated on B2B. As in B2C markets, brands serve exactly the same general purpose in B2B segments by facilitating the identification of products, services and businesses as well as differentiating them from the competition (Anderson and Narus, 2004). In addition, Kotler and Pfoertsch (2007) suggest the need for branding international B2B companies to increase perceived value to customers, and reduce the complexity involved in the buying decisions.

By comparing B2B studies with the abundance of B2C studies, international B2B branding research is relatively scarce (Mudambi et al., 1997; van Riel, de Mortanges, and Streukens, 2005). Although only a few researchers have recently focused on industrial brand equity or B2B brand equity (e.g., Michell, King, and Reast, 2001; Mudambi, 2002), the depth and extensiveness of customer-based brand equity offer an extensive background to industrial brand equity (Mudambi, 2002). In fact, several dimensions in customer-based brand equity can be directly applied and transferred to industrial brand equity (Michell et al., 2001; van Riel et al., 2005). Therefore, this study in following the previous literature on customer-based brand equity proposes a conceptual framework of industrial branding that is based on the theory of Aaker (1991) with the COO effect, and investigates and validates the sources of industrial brand equity in international B2B markets by using the case of the fastener industry in Taiwan.

2. Conceptual development and research hypotheses

In the consumer marketing literature, “brand equity” is the added value of a brand that forms part of a product created in the minds of consumers in response to past investments in the marketing of the brand (Keller, 1998). In other words, customer-based brand equity is generated when the customer is aware of the brand, perceives the overall quality or superiority of the brand relative to alternative products, and associates some favorable, strong, and unique attributes with the brand’s image (Aaker, 1991). Thus the antecedents of brand equity have long been of central interest to international marketing and consumer behavior researchers, as well as to international business managers. Although procurement in international markets is often rational and calculative, B2B brands are able to play a significant role in establishing a consideration set of potential suppliers in international B2B markets. Therefore, the fastener industry, industrial brands are rarely if ever used to evoke non-product-related associations. Therefore brand associations are not regarded as an antecedent of industrial brand equity in this study. By building on the theory of Aaker (1991) and previous studies that conceptualize how customers evaluate brand equity, this study considers the industrial brand equity that accrues to a firm, rather than a product, to be the relevant dependent variable in the context of B2B markets, and attempts to explain why perceived quality, brand awareness, brand loyalty and COO are regarded as sources of industrial brand equity.

The importance of perceived quality as a source of customer-based brand equity is well established in the B2C market (Aaker, 1991), and had recently also been recognized as a driving force behind B2B branding (Rendixen, Bukasa, and Abratt, 2004; McQuiston, 2004). The strength of perceived quality is primarily driven by tangible attributes of the product such as product quality, and intangible attributes of the firm such as service quality. Thus in B2B markets, service quality including personal contact and support services, together with the product’s physical quality, increasingly form the basis of competitive advantage (Alvarez and Galera, 2001), and are critical to purchasing decisions and branding (Håkan, 1982; Raayuven and Miller, 2007). Viewed in this light, the fastener firms can reap significant industrial brand equity by increasing perceived product quality and perceived service quality in international B2B markets. Therefore, this study hypothesizes positive relationships between perceived product quality, perceived service quality and industrial brand equity.

H1. Perceived product quality associates positively with industrial brand equity.

H2. Perceived service quality associates positively with industrial brand equity.

Brand awareness is the customer’s ability to recognize and recall the brand among comparable products in a certain industry under different conditions of complexity and time pressure (Aaker, 1991; Keller, 1998), and is a critical antecedent of customer-based brand equity in B2C markets. Since a brand name provides symbolic meanings that aid the customer to recognize and recall the supplier and its product outcome (Janiszewski and Van Osselaer, 2000), brand name is the most fundamental element of brand awareness (Davis, Gollicic, and Marquardt, 2008). In many B2B markets brand name is often the company name and a growing number of alternative suppliers can provide similar products to their industrial buyers. Therefore, how to create an effective brand name that embodies unique values to aid the customer in recognizing and recalling the supplier and the product has recently become important to industrial firms. In addition, recent research shows that a brand name and brand awareness explain a significant amount of the variance in brand equity in industrial firms (Davis et al., 2008).

Thus, the fastener firms can reap significant industrial brand equity by building a higher level of brand awareness in the consumers’ mind.

H3. Brand awareness associates positively with industrial brand equity.

“Brand loyalty” is a deep commitment to repurchase or a consistent preference for a product/service, and leads to certain marketing advantages such as reduced cost, profitability, and favorable word-of-mouth (Aaker, 1991; Oliver, 1999). Brand loyalty is often recognized as a source or antecedent of brand equity (Aaker, 1991; Keller, 1998). For example, Lassar, Mittal, and Sharma (1995), from a customer-based perspective, argue that brand equity stems from great confidence or impressive images in the customers’ minds, and such confidence or images will translate into customers’ loyalty that makes them willing to pay premium prices for brands. In addition, van Riel et al. (2005), from an industrial buyer perspective, find a direct positive relationship between brand loyalty and industrial brand equity.

Therefore, the fastener firms can reap higher levels of industrial brand equity by increasing brand loyalty, and this study hypothesizes...
that there exists a positive relationship between brand loyalty and industrial brand equity.

H4. Brand loyalty associates positively with industrial brand equity.

Schooler (1965) is the first to identify the importance of country-of-origin as a cue in consumer choice behavior in the international business literature. Since Schooler (1965) and Reierson (1967), researchers provide several definitions of COO based on consumers’ perceptions of products from a given country.

Among these, Nagashima (1970) provides the earliest definition of COO which relates to the image, reputation, and stereotype that businessmen and consumers attach to products of a specific country, and is based on such variables as national characteristics, economic and political background, history, and traditions. This definition has wide acceptance in the subsequent literature (e.g., Roth and Romeo, 1992). Nevertheless, this study gives rise to a similar and more comprehensive perspective of COO that has led to the conceptualized measurement of a general summary construct about a particular country. Since the 1970s, COO effects have shown that brands originating in a particular country can create intangible assets or liabilities in consumers’ minds that are shared by other brands originating from the same country (Kim and Chung, 1997). In addition, several researchers have found evidence of an important relationship between COO and brand equity (Pappu, Quester, and Cooksey, 2007).

Therefore, brands with higher levels of COO effects are more likely to have higher industrial brand equity for Taiwanese fastener firms in international B2B markets.


3. Research method

Unlike the industrialization of Japan and South Korea, in which large firms led the export-oriented growth, the economic success of the Taiwanese fastener industry in the international marketplace has been mainly led by small and medium-sized enterprises (SMEs), often involved in direct contractual relationships with U.S. and European clients. Many of these Taiwanese fastener SMEs produce drywall screws, chipboard screws, self-drilling screws, decking screws, and tapping screws for construction purposes, and recently, some firms have undergone industrial upgrades and transformation by shifting from a low-end mass production mode to developing highly-engineered and technologically-advanced fasteners. This study therefore uses these fastener SMEs with outstanding performance to investigate the COO effects and antecedents of industrial brand equity.

For example, since upgrading from OEM to ODM and OBM through substantial R&D and marketing investments, the S fastener company has become one of the top 10 fastener firms and one of the top 1000 enterprises in Taiwan in the last 20 years, and has received many national awards including the Taiwanese Golden Exporter Award, Taiwanese Rising Star Award, and National Award for Outstanding Taiwanese SMEs.

The questionnaire is designed on the basis of a seven-point Likert scale that ranges from strongly disagree to strongly agree, is pretested using a judgment sample of 30 international industrial buyers, and is subsequently revised to improve readability and understanding. Based on interviews with the marketing executives of Taiwanese fastener SMEs, the population size of foreign industrial buyers is limited to 102. With the support of company sales representatives, invitations to participate in the survey were sent over the period from February to April 2009 through fax, e-mail, and an online questionnaire website (www.my3q.com) to these industrial buyers in North America, Europe, Oceania, and Asia.

Most of the respondents were male (68.8%), over 40 years old (79.7%), and experienced representatives (75.0%) who had worked for the fastener industry over a period of six years. Since most of the respondents were senior and experienced representatives in the fastener industry, they could provide valuable information on the issue of industrial brand equity.

3.1. Measures, measure validation, and data analysis

With a conceptual framework, the questionnaire utilizes items adapted from existing scales to measure perceived product quality, perceived service quality, brand awareness, brand loyalty, country-of-origin, and industrial brand equity. The study combines proposed scales from van Riel et al. (2005) with measures drawn from studies on brand equity in international markets such as Michell et al. (2001) and Davis et al. (2008), and uses proposed scales in Pisharodi and Parameswaran (1992) to measure the construct of the country-of-origin. To ensure that the indicators of each construct actually measure what they are supposed to measure, this study measures Cronbach’s alpha to evaluate the construct reliability for each measure in the pretest step. The pilot study shows that the Cronbach’s alphas of all constructs are over the threshold of 0.70, which means good reliability for each construct.

Partial least squares (PLS) analysis simultaneously estimates hypothesized relationships in the following equation:

\[ BE = \alpha + \beta_1PROD + \beta_2SERV + \beta_3BA + \beta_4BL + \beta_5COO + \varepsilon \]

where BE is industrial brand equity, PROD perceived product quality, SERV perceived service quality, BA brand awareness, BL brand loyalty, and COO country-of-origin. In the equation, \( \alpha \) represents the intercept, \( \beta \) the coefficient, and \( \varepsilon \) the error term. The variance-based PLS, rather than the covariance-based LISREL, is chosen for two reasons. First, unlike the minimum requirement of 200 cases for using LISREL, PLS allows the use of a small sample size of respondents for estimating the structural models (Chin and Newsted, 1999). Second, while ordinary least squares method usually yields unstable results due to the high correlations between the predictor variables, PLS can avoid the multicollinearity problem to reduce errors of analysis (Ryan, Rayner, and Morrison, 1999).

Given these advantages, PLS has become one of the popular statistical methods for linear models in recent years, and this study uses the software Visual PLS to implement the PLS technique to test the study’s hypotheses. PLS consists of two procedures: the measurement model and the structural model. Each of these is discussed in the following sections.

4. Results

The measurement model requires the use of confirmatory factor analysis to ensure that the indicators for each construct actually measure what they are supposed to measure by testing the validity and reliability of each construct. For the validity of the sample, tests for both convergent and discriminant validity are performed. Convergent validity is assessed by examining construct loadings and average variance extracted (AVE). Table 1 shows that all constructs’ loadings shown in Table 1 are significant (p<0.01) and above the recommended threshold of 0.50 for AVE (Fornell and Larcker, 1981), which indicates good convergent validity. Discriminant validity is examined by comparing the shared variance among indicators for each construct (i.e., AVE) with the variance shared between constructs (i.e., squared correlations) (Davis et al., 2008).

The criterion for testing discriminant validity is determined when AVE for each construct is greater than the squared correlations with other constructs (Fornell and Larcker, 1981). By displaying AVE for each construct and squared correlations between constructs and reading down the columns and/or across the rows, Table 2 shows that AVE for each construct is greater than the squared correlations
between constructs, thereby meeting the test for discriminant validity. For the reliability of the model, this study conducts the test for composite reliability (CR). A higher CR means more construct reliability and a higher representativeness of the latent variables. All estimated latent variables in Table 1 are above the recommended threshold of 0.60 for CR.

The structural model involves the use of the squared multiple correlation (R²) of the dependent variable to examine the explanatory power of the model. 79% of the variation in the level of industrial brand equity is explained by the independent variables (i.e., the perceived product quality, perceived service quality, brand awareness, brand loyalty and country-of-origin). In the B2B manufacturing settings, these findings show support for a positive relationship between perceived product quality and industrial brand equity (H1, β = 0.53**), brand awareness and industrial brand equity (H3, β = 0.41**), and brand loyalty and industrial brand equity (H4, β = 0.37**), the findings of the hypothesized relationships between perceived service quality and industrial brand equity (H2, β = −0.13), and between country-of-origin and industrial brand equity (H5, β = 0.07) do not receive support.

5. Discussion, conclusions and implications

This study explores the sources of industrial brand equity in international B2B markets with a particular interest in investigating the effects of perceived product quality, perceived service quality, brand awareness, brand loyalty and country-of-origin. In the marketing field, researchers have long been interested in understanding the antecedents of brand equity. However, many previous studies have focused on customer-based brand equity rather than industrial buyer-based brand equity (e.g., Ko et al., 2009). Thus, the present study examines the relationships between international industrial buyers’ perceived quality of screws, awareness and loyalty of a company, the COO effect, and brand equity for fastener SMEs in Taiwan, thus providing new findings for the literature and offering support to some existing findings for brand management in industrial B2B manufacturing settings.

### Table 1
Composition of constructs and items loading.

<table>
<thead>
<tr>
<th>Constructs/items</th>
<th>Std. loading</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived product quality (CR = 0.92; AVE = 0.74)</td>
<td>0.77**</td>
<td>11.52</td>
</tr>
<tr>
<td>Products manufactured by S company are high quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Products manufactured by S company have excellent development lead time</td>
<td>0.69**</td>
<td>22.93</td>
</tr>
<tr>
<td>Product manufactured by S company are dependable and consistent</td>
<td>0.91**</td>
<td>34.38</td>
</tr>
<tr>
<td>Products manufactured by S company are innovative</td>
<td>0.85**</td>
<td>29.92</td>
</tr>
<tr>
<td>Perceived service quality (CR = 0.92; AVE = 0.85)</td>
<td>0.95**</td>
<td>142.48</td>
</tr>
<tr>
<td>We are satisfied with production support for the products of S company</td>
<td></td>
<td></td>
</tr>
<tr>
<td>We are satisfied with development support for the products of S company</td>
<td>0.90**</td>
<td>37.91</td>
</tr>
<tr>
<td>Brand awareness (CR = 0.97; AVE = 0.91)</td>
<td>0.94**</td>
<td>57.77</td>
</tr>
<tr>
<td>The name of S company is well-known in the fastener industry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S company is recognized as a strong trading partner</td>
<td>0.96**</td>
<td>72.15</td>
</tr>
<tr>
<td>S company is a leading edge supplier</td>
<td>0.96**</td>
<td>34.38</td>
</tr>
<tr>
<td>S company makes the purchase process easier</td>
<td>0.95**</td>
<td>105.48</td>
</tr>
<tr>
<td>Brand loyalty (CR = 0.96; AVE = 0.90)</td>
<td>0.89**</td>
<td>17.54</td>
</tr>
<tr>
<td>Overall we are very satisfied with S company</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If asked, we would recommend S company</td>
<td>0.96**</td>
<td>55.78</td>
</tr>
<tr>
<td>We intend to do business again with S company in the future</td>
<td>0.98**</td>
<td>98.06</td>
</tr>
<tr>
<td>Country-of-origin (CR = 0.98; AVE = 0.89)</td>
<td>0.95**</td>
<td>57.77</td>
</tr>
<tr>
<td>Well educated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard working</td>
<td>0.95**</td>
<td>76.08</td>
</tr>
<tr>
<td>Achieving high standards</td>
<td>0.94**</td>
<td>54.70</td>
</tr>
<tr>
<td>Raised standard of living</td>
<td>0.94**</td>
<td>66.63</td>
</tr>
<tr>
<td>Technical skills</td>
<td>0.95**</td>
<td>128.18</td>
</tr>
<tr>
<td>Brand equity (CR = 0.92; AVE = 0.69)</td>
<td>0.75**</td>
<td>13.07</td>
</tr>
<tr>
<td>S company's brand is different from those of other providers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S company is a financially stable company</td>
<td>0.92**</td>
<td>60.72</td>
</tr>
<tr>
<td>The fact that the products are of S company certainly adds value</td>
<td>0.71**</td>
<td>11.98</td>
</tr>
<tr>
<td>The fact that the products are of S company is important to me</td>
<td>0.93**</td>
<td>75.02</td>
</tr>
<tr>
<td>We are willing to pay more in order to do business with S company</td>
<td>0.84**</td>
<td>31.06</td>
</tr>
</tbody>
</table>

CR = composite reliability.
AVE = average variance extracted.
** p = 0.01.

### Table 2
Discriminant validity.

<table>
<thead>
<tr>
<th>PROD</th>
<th>SERV</th>
<th>BA</th>
<th>BL</th>
<th>COO</th>
<th>BE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROD</td>
<td>0.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SERV</td>
<td>0.14</td>
<td>0.92</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BA</td>
<td>0.64**</td>
<td>0.39**</td>
<td>0.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BL</td>
<td>0.73**</td>
<td>0.57**</td>
<td>0.11</td>
<td>0.95</td>
<td></td>
</tr>
<tr>
<td>COO</td>
<td>0.75**</td>
<td>0.70**</td>
<td>0.06</td>
<td>0.57**</td>
<td>0.94</td>
</tr>
<tr>
<td>BE</td>
<td>0.74**</td>
<td>0.71**</td>
<td>0.52**</td>
<td>0.68**</td>
<td>0.59**</td>
</tr>
</tbody>
</table>

The square roots of Average Variance Extracted (AVE) on the diagonal appear in bold.

** p = 0.01.

### Table 3
Results of hypothesis testing.

<table>
<thead>
<tr>
<th>Path model</th>
<th>Hypothesis</th>
<th>Path coefficient</th>
<th>t-value</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROD → BE</td>
<td>H1</td>
<td>0.53**</td>
<td>5.65</td>
<td>Significant</td>
</tr>
<tr>
<td>SERV → BE</td>
<td>H2</td>
<td>−0.13</td>
<td>1.23</td>
<td>Insignificant</td>
</tr>
<tr>
<td>BA → BE</td>
<td>H3</td>
<td>0.41**</td>
<td>8.17</td>
<td>Significant</td>
</tr>
<tr>
<td>BL → BE</td>
<td>H4</td>
<td>0.37**</td>
<td>6.35</td>
<td>Significant</td>
</tr>
<tr>
<td>COO → BE</td>
<td>H5</td>
<td>0.07</td>
<td>0.77</td>
<td>Insignificant</td>
</tr>
</tbody>
</table>

** p = 0.01.
5.1. Implications

First, the current findings demonstrate that the country-of-origin of fasteners has not yet become an important antecedent of industrial brand equity. These new findings imply that although the fastener sectors in Taiwan have upgraded and automated their production processes with innovative outcomes, it is still difficult for some of the Taiwanese fastener SMEs to compete with counterparts in China exclusively on the basis of more efficient manufacturing facilities. The reason behind this phenomenon is that the fastener industry is still a labor-intensive and price-oriented sector, rather than a country-of-origin-oriented industry.

However, with current antidumping issues against fastener imports from China, Taiwanese fastener SMEs still have the chance to regain the advantage of Taiwan-made screws in international buyers’ minds. On the other hand, Taiwanese fastener SMEs started to develop their own innovative and branded products in international B2B markets only a few years ago. Concluding that country-of-origin effects do not exist for Taiwanese products in international markets is premature, especially B2B brands from emerging economies. Thus, a clear implication for managers responsible for branding and communicating B2B products in international markets is to continue to create clear awareness of the offering and provide appropriate imagery to consolidate the reputation of firms in both their internal (product) and external (country-of-origin) dimensions.

Second, the results of testing the hypotheses confirm the existence of a significant relationship between perceived product quality and industrial brand equity, but not between perceived service quality and industrial brand equity. This insignificant relationship implies that the service quality of fastener products is not an important factor for building industrial brand equity in international buyers’ minds. This is a new finding in the literature. One possible explanation for this finding is that although Taiwanese fastener companies might unavoidably produce defective products, industrial buyers usually do not return these defective products to their fastener providers to ask for assistance with services or other customer services. In addition, the upgrading to highly-engineered and technologically-advanced machines and equipment by Taiwanese fastener SMEs has created an image and impression of reliability and high quality in the customers’ minds since the 1990s in so far as screws are concerned. Third, the results indicate that brand loyalty explains a significant amount of the variance in industrial brand equity in the fastener industry. One possible explanation is that it is difficult to switch fastener providers for loyal industrial buyers due to their preferences and the long-term relationships. In addition, Taiwanese fastener SMEs with variable innovative products, high response rates and efficient logistics make loyal customers satisfied even when they pay high prices.

Fourth, the results show that the brand awareness of a company is related to industrial buyer-based brand equity. This finding implies that brand names can be used to differentiate the offers among fastener products and to give a firm an advantage over its B2B competitors. Traditionally, Taiwanese fastener manufacturers believe that it is impossible to build an international brand for screws because of fastener product characteristics such as small size, low unit price, or their being embedded inside the goods (e.g., buildings, machines and houses). However, the current findings indicate that international B2B customers are willing to pay more to do business with fastener providers with strong brand awareness. Finally, this study provides evidence of the application of customer-based brand equity theory in consumer contexts in the context of international B2B manufacturing.

The findings indicate that Aaker’s (1991) conceptualization of brand equity as a construct comprised of perceived quality, brand awareness and brand loyalty provides an appropriate framework for explaining and predicting variance in industrial brand equity among fastener brands.

5.2. Limitations and directions for future research

A number of limitations and suggestions pertain to this study. First, the study focuses exclusively on a single industrial market: the fastener market. Future research could expand the subject under study to different industries (e.g., high-tech industries) to fully understand the antecedents of industrial branding. Second, future studies could employ a large sample population to obtain numerous responses that would make the studies more reliable and valid.

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