NOTE:

1. This article is strong enough to be published.
2. To strengthen the article, it is recommended should provide theoretical framework in the subtitles.
3. The References may be added with several main references on management branding
4. please remain aware of the article's grammar. Choose the right terminology according to the scientific field.
5. Edit the article using the provided template

Increasing Influence of Brand Image, Perceived Quality, and Purchase Intention Towards Country of Origin in the Purchase of Hydraulic Excavators in Mining Industry

Pancanto Kuat PRABOWO
Department of Management, Faculty of Economy,
Universitas Ma'arif Hasyim Latif (UMAHA),
Sidoarjo, East Java, Indonesia
Email:

Abstract

The increasing need for heavy equipment encourages manufacturers to find the right marketing strategy. This research aims to determine to what extent these variables, such as brand image, perceived quality and purchase intention, substantially effect on the country of origin for purchasing hydraulic excavators in the non-ferrous mineral and rock-quarry mining industry. This research employed quantitative methods using SEM-PLS analysis. The population of this study was 136 mining companies and 59 samples of hydraulic excavator user companies in the non-ferrous mineral and rock-quarry mining companies in East Java Province, Indonesia. This study resulted in those three variables increasingly impact the country of origin in determining the decision to purchase heavy equipment. This research finding is of importance for providing alternative considerations for policymakers in the purchasing of heavy equipment in the non-ferrous mineral and rock-quarry mining industry.

Keywords: *Brand Image, Perceived Quality, Purchase Intention, Country of Origin, Hydraulic Excavator, Mineral Mining Industry*

1. Introduction

In the last ten years, the need for heavy equipment has shown an increase in growth [1], [2]. Producers and distributors work hard to devise marketing strategies for the right segments, particularly for the non-ferrous mineral and rock-quarry mining industry [3], [4]. Every principle of heavy equipment companies has several distributors in a country that provide product availability to diverse customers. The product offerings range from technology to optimise engine performance, keep emission levels low, payment methods and provide systems and warranties.

In determining strategies to dominate the market, heavy equipment manufacturers usually build perceptions of customers' origin of heavy equipment or country of origin. In contrast, consumers have many choices when purchasing equipment. Therefore, country of origin is considered a product characteristic that consumers consider, which raises the quality perception of and evaluates heavy equipment products [5].

However, the latest development shows that originating country is not the only consideration in purchasing heavy equipment. Reality also shows declining development of heavy

equipment sales in the Asia Pacific, 2011 to 2018 confirm the problem. Research conducted by Li [6] does not show the effect on purchase intention. In addition, collaborative research between Kurniawan and Indriani [7] proves the lower capability of perceived quality in influencing purchase intentions. Meanwhile, previous research also finds that brand image and perceived quality have an insignificant effect on purchase intention [8], [9].

In making decisions to purchase, customers usually consider the significance of the brand image. Several researchers [10]–[12] believe in substantial meaning of brand, which was not restricted by the accessories, know-how, or product style. For them, product brand arises due to advertising, promotion, or user image. At the same time, consumers also take into account the importance of perceived quality, which reveals a value of a product. Otherwise, rivals would easily find ways to enter the market to replace existing products [13]–[15]. The perceived quality is closely related to consumers' overall quality of products or services for the expected purpose [16], [17]. Furthermore, the quality of the product has a close relationship to consumers' intention to buy a product. Therefore, the product quality encourages consumers to establish a strong relationship with the company.

This research examines how customers' perceptions of heavy equipment are from America and Japan in the non-ferrous mineral and rock-quarry mining industry. Heavy equipment produced by the two countries is considered more optimal durability, strength, and production than Korean and Chinese heavy equipment. Furthermore, with products from the country of origin, many customers perceive that the service, quality, and performance provided by product distributors from Japan and America have better service perceptions than other producing countries, affecting customer satisfaction.

2. Methodology

This research used quantitative methods that are exploratory. Explanatory research describes the link between variables that affect the proposition [18], [19]. Meanwhile, To conclude, causal research seeks and defines the connection (causation) and the impact of studied variables [20]. Meanwhile, secondary data is obtained from internal company data, while primary data through surveys use questionnaires. Finally, data analysis explained influences between variables with the use of Smart PLS v.2 program.

This study's population was conducted in East Java Province in the non-metallic and rock mineral mining industry. The research was carried out on knowledgeable and experienced customers, particularly those using the product for more than a year. The research observations resulted in 136 customers or population who have used the product for more than one year. They lived throughout various areas in East Java Province, Indonesia.

This study used 59 companies as a research sample. They were heavy excavator equipment that used breakers in the non-ferrous mineral and rock-quarry mining companies. In collecting data, this study applied questionnaires measured by the Likert scale. The scale used aims to assess a person's or group's behaviours, viewpoints, and analysis of social phenomena. This group are located in the East Java Province.

In conducting hypothesis analysis and testing, the study used an inferential statistical approach with Smart PLS software through the PLS test tool. This software can make predictions, particularly when the research parameter is either formative or replicating factors known as indicator variables.

To strengthen the article, it is recommended should provide theoretical framework in the subtitles.

3. Result and Discussion

3.1. Validity and Reliability Tests

Based on validity test, this study finds Pearson's correlation coefficient for each statement upon every variable of country of origin, brand image, perceived quality, and purchase intention show a higher linkage value than r table 0.361 and more significance value than 5%. This result confirms that all statement used to assess each predictor of the four variables are reliable and valid.

As for reliability test, the result shows a greater value of 0.60 by applying Cronbach's alpha values for all research variables. This result supports the preparation of questionnaire statements on those four variables, such as country of origin, brand image, perceived quality, and purchase intention which can be asserted trustworthy as a measuring tool in producing consistent answers.

3.2. Descriptive Statistics

This research presents descriptive statistical findings on those four variables is shown in Figure 1.

Figure 1. Four Variables Result by Country

The four variables demonstrate that Korean products have a higher rating, followed by those of the United States and Japan, which are rated equally. The lowest rating belongs to Chinese products.

3.3. PLS: Evaluating Outer Model

This research evaluates outer model for assessing reliability and validity of the four variables. Furthermore, validity measurements of convergent and discriminant were also carried out to calculate validity and reliability. Using PLS in testing convergent validity can be done by applying outer loading. Previous research determined general provision is that outer loading which is > 0.50 determines convergent validity and average variance extracted (AVE) > 0.50 [21], [22]. T-statistic value defines validity of indicators with a higher value than 1.96.

By evaluating the convergent validity, all four indicators show more than 0.50 outer loading and a T-statistics value more than 1.96. The result concludes the validity of measuring those four variables. The result is also significant for further analysis by fulfilling the convergent validity.

A concurrent validity test can also be conducted by measuring the AVE value. For example, the AVE value for each of the four variables is deemed to have an AVE value > 0.50. Those variables show that all indicators inferred is valid in assessing latent variables or meeting convergent validity.

Another assessment was implemented to find out the discriminant validity through cross-loading value which determines discriminant validity for each indicator. In order to have discriminant validity, a higher cross-loading value is more important than other variables. Moreover, the result of discriminant validity reveals that the cross-loading value of all indicators is greater than the variables they form and low on other variables. The test result indicates that the four variables, such as country of origin, brand image, perceived quality, and purchase intention, are valid.

Comparing the AVE basis on every variable with the correlation value is another significant method for determining discriminant validity. The validity is determined by higher value of the AVE root than the correlation value. The discriminant validity test results, which compare AVE roots with correlation values between variables, show a higher AVE root value of all research variables compared to the correlation value of those variables. As a result, the four variables have significant discriminant validity.

As for the composite reliability, the PLS test applies two methods, such as Cronbach's alpha and composite reliability. In the first test, measuring the lower limit of reliability values is important. Meanwhile, the second test determines the reliability value of a variable [23]. Estimating the internal consistency of a construct can be obtained by applying composite reliability [24]. The general provision for the validity of the two methods is more than 0.70. Nevertheless, reliability value of 0.60 is deemed to be valid [25]. The test results of the two methods reached greater than 0.70. Therefore, the result confirms that the four variables, such as country of origin, brand image, perceived quality, and purchase intention, are reliable.

3.4. PLS: Assessing Inner Model

R2 is used to evaluate dependent constructs' PLS structural (or inner) model. Having path coefficient value or t-

value (t-statistics), this test aims to construct a significance meaning. The higher the R2 value, the better the proposed model's prediction. Testing on alpha (research error rate) of 5%, for instance, the path coefficient score or inner model indicated by the T-statistics value must be greater than 1.96 [21].

3.4.1. R-square

Processing data with PLS, coefficient (R-square) shows the result of brand image is 0.112; perceived quality is 0.172; purchase intention is 0.259

Meanwhile, Q2 value shows measurement quality in the PLS model which result in similar value to the coefficient or R-Square in regression analysis. The higher the R-Square, the more reliable the model. From the value of the calculated R-square, the Q2 value is:

Value Q2 = 1 – (1-0.112) x (1-0,172) x (1-0.259)

= 0.455

Having Q2 value is 0.455, it means that value emphasizes the diverse amount of research data that this study develops is 45.5%. Therefore, this value shows the model in the study is considered somewhat good.

3.4.2. Hypothesis Testing Results

Analysing the coefficient influence between the four variables leads this research to the next level. Its main purpose is to assess hypothesis by employing t-statistics value. Determinants of the partial influence is based on the t-statistics value with the provision that t-statistics ratio in more than 1.96. Furthermore, this research also considers the influence of exogenous to endogenous variables and vice versa. The value of less than 1.96 means that exogenous variable does not have any interplay to endogenous one.

Figure 2 shows the coefficient influence of the inner weight:

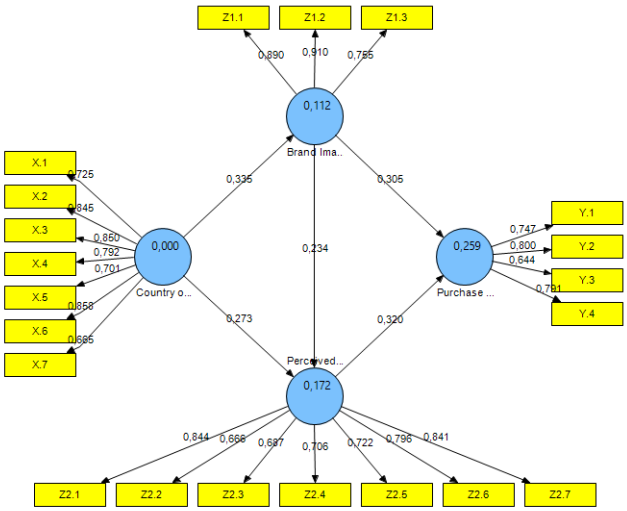

Figure 2. Coefficient Influence

The use of bootstrapping for testing variables on PLS resulted in finding is shown in Table 1.

Hip.	Inter-Variable Influence			Coef.	T-stat.
1	Country of Origin	to	Brand Image	0.335	3.513
2	Country of Origin	to	Perceived Quality	0.273	2.604
3	Brand Image	to	Perceived Quality	0.234	2.029
4	Brand Image	to	Purchase Intention	0.305	2.411
5	Perceived Quality	→	Purchase Intention	0.320	3.809

Table 1. Hypothesis Testing with Inner Weight

The table 1 obviously explains as follows:

1. T-statistics show the influence of country of origin to brand image resulted in 0.335, which is better than 1.96. Therefore, the first factor substantially impacts the second factor, and hypothesis 1 is accepted.
2. The table also shows the influence of the first variable on perceived quality is 0.273. The result values are higher than 1.96, which means that the first variable has an essential effect on the second variable. Therefore, hypothesis 2 is proven.
3. Based on brand image, the magnitude of its influence on perceived quality is 0.234 and is higher than 1.96. This result concludes that the factor has ample consequences for the second factor, and hypothesis 3 is confirmed).
4. The table also shows that brand image substantially influences purchase intention— T statistic results in 0.305, which is better than 1.96. In turn, hypothesis 4 is verified.

5. The last test concerns the impact of perceived quality to purchase intention. With 0.320 of a T-statistic, it values higher than 1.96 and directs to the conclusion the first variable influences significantly the second variable. Consequently, hypothesis 5 is acknowledged).

The outcomes of this research are similarly coherent to those of Li [6], Phau and Prendergast [26], and Beneke and Rozum [14]. According to those studies, products with a good reputation often seem to entice consumers to buy them. Furthermore, this research confirms previous research that emphasises that products with good perceived quality determine consumers' purchasing behaviour toward the products [27]–[30]. In addition, result of this research strengthens the research finding of Kim et al. (2015), which claims that products deriving from countries renowned for their high product quality lean-to have consumers' higher demand than those of less popular countries [27], [31]. Moreover, the increasing importance of country of origin is necessary to introduce product quality. It will importantly increase perceived quality and customer buying interest [11], [32], [33].

Increasing brand equity shows contributes to strengthening the company's reputation [34]. Brand equity reflects the power that provides value to companies and consumers [14]. Brand equity can be divided into two perspectives such as consumers and industry. From a corporate standpoint, brand equity benefits the company, increases liquidity, and market dominance. Meanwhile, brand equity is provided by consumers who have a positive belief in the brand [35], [36]. Therefore, taking consumer perspective is of importance for this study in order to focus more on the brand image and perceived quality.

4. Conclusion

This study resulted in significant findings that purchase intentions for heavy equipment in the non-metallic mineral mining industry and rocks are getting stronger not only influenced by country of origin, but also by the relationship between country of origin and brand image, perceived quality, and purchase intention. Therefore, this research finding significantly contributes to an alternative consideration in purchasing heavy equipment for company owners and policymakers in the non-ferrous mineral and rock-quarry mining.

Acknowledgement

The author expressed his gratitude to the Association of Indonesian Mining Experts (Perhimpunan Ahli Pertambangan Indonesia/PERHAPI), Association of Contractors and Mining Companies (East Java Province), and Universitas Ma'arif Hasyim Latif (UMAHA), Sidoarjo (East Java Province) for providing support in the implementation of this research.

References

[1] S. Jensen, "Heavy Equipment Demand Stays Strong in Second Quarter," 2021. [Online]. Available: https://www.oemoffhighway.com/market-analysis/article/21577561/heavy-equipment-demand-stays-strong-in-second-quarter-2021.

[2] Expert Market Research, "Global Heavy Mining Equipment Market Outlook," 2022. [Online]. Available: https://www.expertmarketresearch.com/reports/heavy-mining-equipment-market.

[3] I. Milošević, M. Kovačević, and P. Petronijević, "Estimating Residual Value of Heavy Construction Equipment Using Ensemble Learning," J. Constr. Eng. Manag., vol. 147, no. 7, p. (ASCE)CO.1943-7862.0002088, Jul. 2021, doi: 10.1061/(ASCE)CO.1943-7862.0002088.

[4] J. Rubenstone, "Equipment Maker CNH Industrial Outlines Spin-Off of On-Road Unit, Future of Alternative Fuels," ENR (Engineering News-Record), vol. 283, no. 8, 2019.

[5] A. Trentin, T. Aichner, E. Sandrin, and C. Forza, "Competing through manufacturing: countering a product's liability of foreignness through mass customization," Int. J. Oper. Prod. Manag., vol. 40, no. 11, pp. 1661–1683, 2020, doi: 10.1108/IJOPM-11-2019-0725.

[6] C. P. Li, "Effects of Brand Image, Perceived Price, Perceived Quality, and Perceived Value on the Purchase Intention towards Sports and Tourism Products of the 2016 Taichung International Travel Fair," J. Int. Manag. Stud., vol. 12, no. 2, pp. 97–107, 2017.

[7] H. A. Kurniawan and F. Indriani, "Pengaruh product knowledge, perceived quality, perceived risk, dan perceived value terhadap purchase intention," Diponegoro J. Manag., vol. 7, no. 4, pp. 1–13, 2018.

[8] L. Chen et al., "Relationship analysis among apparel brand image, self-congruity, and consumers' purchase intention," Sustain., vol. 13, no. 22, pp. 1–15, 2021, doi: 10.3390/su132212770.

[9] B. Swoboda and C. Sinning, Endorsement of Global Product Brands by Global Corporate Brands – A Consumer Perspective Across Nations, vol. 61, no. 4. Springer Berlin Heidelberg, 2021.

[10] P. Kotler and K. L. Keller, Marketing management, 15th ed. London: Pearson Education, 2016.

[11] M. J. Baker and L. Ballington, "Country of origin as a source of competitive advantage," J. Strateg. Mark., vol. 10, no. 2, pp. 157–168, 2002, doi: 10.1080/09652540210125297.

[12] C. Marques, R. V. da Silva, N. S. Davcik, and R. T. Faria, "The role of brand equity in a new rebranding strategy of a private label brand," J. Bus. Res., vol. 117, no. January, pp. 497–507, 2020, doi: 10.1016/j.jbusres.2020.06.022.

[13] U. Suhud, M. Allan, S. Rahayu, and D. Prihandono, "When Brand Image, Perceived Price, and Perceived Quality Interplay in Predicting Purchase Intention: Developing a Rhombus Model," Acad. J. Interdiscip. Stud., vol. 11, no. 1, pp. 232–245, 2022, doi: 10.36941/ajis-2022-0021.

[14] J. Beneke and K. Rozum, "Brand perception across cultures: A comparative study of Skoda's brand characteristics in Poland and the United Kingdom," J. Bus. Retail Manag. Res., vol. 12, no. 2, pp. 1–14, 2018, doi: 10.24052/jbrmr/v12is02/bpacacsosbcipatuk.

[15] F. G. Mariutti and J. de M. E. Giraldi, "Country brand equity: The role of image and reputation," BAR - Brazilian Adm. Rev., vol. 17, no. 3, pp. 1–24, 2020, doi: 10.1590/1807-7692bar2020180128.

[16] M. Monika and F. Antonio, "How Superhero Characters Shape Brand Alliances and Leverage the Local Brand: The Evidence from Indonesia," Businesses, vol. 2, no. 1, pp. 33–53, 2022, doi: 10.3390/businesses2010003.

[17] D. A. Aaker, Building Strong Brands. New York: Simon and Schuster, 2012.
[18] M. M. Asad, R. Bin Hassan, F. Sherwani, Z. Abbas, M. S. Shahbaz, and Q. M. Soomro, “Identification of effective safety risk-mitigating factors for well control drilling operation,” J. Eng. Des. Technol., vol. 17, no. 1, pp. 218–229, Feb. 2019, doi: 10.1108/JEDT-04-2018-0068.
[19] H. Bentouhami, L. Casas, and J. Weyler, “Reporting of ‘theoretical design’ in explanatory research: A critical appraisal of research on early life exposure to antibiotics and the occurrence of asthma,” Clin. Epidemiol., vol. 13, no. August, pp. 755–767, 2021, doi: 10.2147/CLEP.S318287.
[20] F. Hastrup and B. B. Walters, “Theory and methodology in causal research: A commentary,” Geogr. Tidsskr., vol. 112, no. 2, pp. 206–207, 2012, doi: 10.1080/00167223.2012.741879.
[21] W. Abdillah and H. Jogiyanto, Partial least square (PLS): Alternatives structural equation modelling (SEM) dalam penelitian bisnis. Yogyakartaa: Andi Offset, 2015.
[22] W. C. Yew, S. M. Kong, and A. H. Awang, “Developing a Conceptual Model for the Causal Effects of Outdoor Play in Preschools Using PLS-SEM,” pp. 1–20, 2022.
[23] D. G. Bonett and T. A. Wright, “Cronbach’s alpha reliability: Interval estimation, hypothesis testing, and sample size planning,” J. Organ. Behav., vol. 36, no. 1, pp. 3–15, Jan. 2015, doi: 10.1002/job.1960.
[24] K. I. Adenuga, V. W. Mbarika, and Z. O. Omogbadegun, “Technical Support: Towards Mitigating Effects of Computer Anxiety on Acceptance of E-Assessment Amongst University Students in Sub Saharan African Countries,” IFIP Adv. Inf. Commun. Technol., vol. 558, no. May, pp. 48–72, 2019, doi: 10.1007/978-3-030-20671-0_5.
[25] B. E. Wibawa, A. N. Bambang, D. Suprapto, and F. Purwanti, “The Development of Government Policy in Tour Ship Route Tourism Management in Karimunjawa Island, Indonesia,” Polish J. Sport Tour., vol. 28, no. 2, pp. 32–37, 2021, doi: 10.2478/pjst-2021-0012.
[26] I. Phau and G. Prendergast, “Conceptualizing the country of origin of brand,” J. Mark. Commun., vol. 6, no. 3, pp. 159–170, 2000, doi: 10.1080/13527260050118658.
[27] L. Sanny, T. D. Julianto, S. Savionus, and B. W. bin Y. Kelena, “Purchase intention in the fashion industry on local and international E-commerce in Indonesia,” Int. J. Asian Bus. Inf. Manag., vol. 13, no. 2, pp. 1–12, 2022, doi: 10.4018/IJABIM.20220701.oa4.
[28] E. Gil-Cordero, F. J. Rondan-Cataluña, and M. Rey-Moreno, “Premium Private Label strategies: social networks and traditional perspectives,” J. Innov. Knowl., vol. 6, no. 2, pp. 78–91, 2021, doi: 10.1016/j.jik.2020.06.003.
[29] M. Tukiran, P. H. P. Tan, and W. Sunaryo, “Obtaining customer satisfaction by managing customer expectation, customer perceived quality and perceived value,” Uncertain Supply Chain Manag., vol. 9, no. 2, pp. 481–488, 2021, doi: 10.5267/j.uscm.2021.1.003.
[30] F. Cassia, “‘Manufacturing is coming home’: does reshoring improve perceived product quality?” TQM J., vol. 32, no. 6, pp. 1099–1113, 2020, doi: 10.1108/TQM-11-2019-0260.
[31] J. Ostberg, “The mythological aspects of country-of-origin: The case of the Swedishness of Swedish fashion,” J. Glob. Fash. Mark., vol. 2, no. 4, pp. 223–234, 2011, doi: 10.1080/20932685.2011.10593100.
[32] P. Antonetti, D. Manika, and C. Katsikeas, “Why consumer animosity reduces product quality perceptions: The role of extreme emotions in international crises,” Int. Bus. Rev., vol. 28, no. 4, pp. 739–753, 2019, doi: 10.1016/j.ibusrev.2019.02.003.
[33] R. B. Kim and Y. Chao, “The effect of country of origin on consumer-based brand equity (CBBE) of Colombian consumers: An empirical investigation of Samsung vs. Huawei brands,” J. Int. Stud., vol. 11, no. 3, pp. 70–81, 2018, doi: 10.14254/2071-8330.2018/11-3/6.
[34] C. Lou and S. Yuan, “Influencer Marketing: How Message Value and Credibility Affect Consumer Trust of Branded Content on Social Media,” J. Interact. Advert., vol. 19, no. 1, pp. 58–73, 2019, doi: 10.1080/15252019.2018.1533501.
[35] J. J. Cambra-Fierro, M. Fuentes-Blasco, R. Huerta-Álvarez, and A. Olavarría, “Customer-based brand equity and customer engagement in experiential services: insights from an emerging economy,” Serv. Bus., vol. 15, no. 3, pp. 467–491, 2021, doi: 10.1007/s11628-021-00448-7.
[36] P. L. Tan, S. M. Rasoolimanesh, and M. a/p Govindaraju, “How Corporate Social Responsibility Affects Brand Equity and Loyalty? A Comparison between Private and Public Universities,” Heliyon, vol. 8, no. September 2021, p. e09266, 2022, doi: 10.1016/j.heliyon.2022.e09266.