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The Influence of Product Awareness and Value Perception on Innovation Performance: A Case Study in Mineral Water Company

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Abstract— This research investigates the influence of consumer's product awareness, value perception, and trust in helping innovation performance of the mineral water company. Therefore, a structural equation model (SEM) is applied to scrutinize the model fit and the three hypotheses to illuminate the relationships among these constructs. The results reveal that consumer's product awareness and value perception is critical due to its influence on the consumer's trust. The consumer's trust demonstrates a positive influence on the innovation performance. This study proves the existence of a more complex insight that the consumer's trust partially mediates the relationships between product awareness and innovation performance. Moreover, it also partly mediates the relationships between value perception and innovation performance. These findings constitute a new contribution to the literature on marketing and innovation managements through the development of some antecedents such as product awareness and value perception to consumer's trust and innovation. This study can enhance the innovation performance of mineral water companies to achieve sustainable competitive advantage.

Keywords— *product awareness, value perception, innovation, structural equation model (SEM), mineral water company*

1. Introduction

A mineral water company in Curug, Tangerang is a family business and a manufacturer that produces drinking water with XYZ brand. The company has operated this sort of business for more than 7 years and used production system of manufacturing stock. There are some volume types of product, i.e.: 220 ml, 600 ml, and 1500 ml. In this study, we limit the product volume in 220 ml. Meanwhile, the company has not yet done a research on how to achieve sustainability competitive advantage amidst the competition with other new mineral water companies. Therefore, this

paper is directed to scrutinize how this company can strive for excellence in the competitive environment.

Innovation is the key to success for company's sustainability in long term period. Innovation can be delineated by the successful exploitation of new ideas [1]. Previous studies of the innovation performance of manufacturing company have been reviewed by researchers [2,3,4]. They discovered that there is a positive and linear correlation between innovation performance and trust. Trust can be described as the belief of consumers to product that will fulfil certain functions. With trust, consumer and manufacturer can share any information in order to achieve product competitiveness/product innovation. The relationship between trust and value perception has been studied by researchers [5,6,7]. Their study reported that value perception significantly positively influences trust. Value perception is a customer assessment to the product advantages. Moreover, product awareness is also used as an antecedent of trust. Product awareness is how a company being identified. When consumer has an experience with the outstanding brand identity, it will develop trust [8].

In this study, four constructs are used, i.e.: product awareness, value perception, trust, and innovation. Thus, the three key research questions are formulated as follows: (1) how do product awareness and value perception influence trust?, (2) how does trust influence innovation performance?, and (3) how does trust moderate that influence? Hypothetically, this study enriches the innovation and marketing management literature by searching the effects of product awareness, value perception, and trust on innovation performance. At empirical level, this research will give recommendations for chief executive officers to

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boost their business result by improving innovation performance.

The next parts of the paper is presented in orderly structures: Literature review is described in Section 2. Section 3 provides research method. Section 4 elaborates research findings. The final part highlights conclusion and implications.

2.   Literature Review

The four constructs are engaged in the model building process, such as product awareness, value perception, trust, and innovation. Figure 1 below illustrated the overall constructs and their relationship. By observing these relationships, the most important resources can be revealed in a mineral water company that influence their innovation performance.
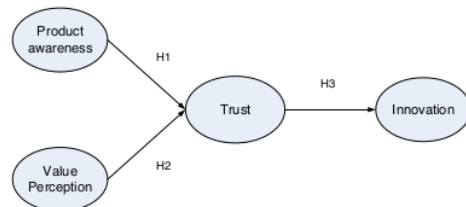
Figure 1. Proposed model

2.1   Product Awareness

Product awareness or brand awareness is how a company is being identified. The main factor to win the competitive environment is associating the product with a strong brand identity [9]. Product awareness provides a powerful engagement type involving a retailer and its customer. There are three levels of engagement: (1) an outstanding customer experience, (2) an emotional connection, and (3) a shared identity [8]. Some customers commonly start having an outstanding experience, next moving beyond it and then developing trust. Several marketing mix impacts on private labels brand equity creation has been explored by Abril et al. [10]. They found that private labels in-store communications, private labels distribution intensity and the perceived price are the most efficient marketing mix tools for private label brand equity creation. The mineral water company communicates with his retailers and consumers related to product awareness on product safety to be consumed, the hygiene product, ISO and SNI labels. This leads to:

H1. Product awareness positively influences trust.

2.2   Value Perception

Value perception can be defined as a customer assessment to product characteristic, product attribute, product performance, and all the consequences that arise from using product. Value perception is the comparison between the cost of product and the advantage of product [11]. The advantage of product consists of consumption benefit and economic value. Consumer expects to gain more value than the cost itself. The relationship between value perception and trust has been studied by [6,7]. Based on their results, value perception has an influence to the consumer trust. This leads to:

H2. Value perception positively influences trust

2.3   Trust

Trust is described as the belief of consumers that product will comply certain functions, such as an appropriateness between label and real products and its product image. Trust makes a firm believe that consumer would like to collaborate with him even though there may be risks. Therefore, firms can set more resources in utilizing knowledge and collaborative innovation activities [2]. Trust is crucial since it is at the heart of a collaborative innovation capability. Since it can become the foundation to build and sustain the collaborative alliances [3]. Trust makes business performers involved in innovation able to share information and collectively solve problems within better risk management [4]. When trust is maintained between firm and consumer to such an extent; then knowledge can flow smoothly to improve firms' innovation performance. This leads to :

H3.   Trust positively influences innovation performance

2.4   Innovation

Innovation is an idea, practice, or object understood as a new thing. There are two models of innovation, i.e.: idea generation (IG) and idea implementation or realization (IR) [12]. Idea generation is defined as creating new ideas or new work methods. Meanwhile idea realization can be defined as ideas transformation into useful applications. Company creates higher value to consumer through a new product design, a new process design, or shorter new product

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development cycle times that has a competitive advantage [13]. Corporate sustainability is eventually affected by process innovation and product innovation [14]. Product innovation in a mineral water company can be afforded by eye catching cup model, cup pattern design, cup cover, and water volume.

3.   Research Method

3.1   Research Design

A survey has been conducted through questionnaire dissemination as instrument for the data collection. Table 1 illustrates the measurement items of four constructs in the questionnaire. A combination and synthesis of past formulations are reflected by the measurement items. All the items in the construct measured on a seven-point scale with "1=strongly disagree" and "7=strongly agree" [15].

Table 1. Summary of the four constructs and their measurement items

Construct		Measurement item
Product awareness	1	Safe to be consumed
	2	Knowledge of hygiene production process
	3	ISO label or Indonesians National Standard/SNI label
Value perception	1	Benefits of consumption
	2	Economic value
Trust	1	Good image of product
	2	Integrity/appropriateness between label and real products
Innovation	1	Eye catching cup model
	2	Cup pattern design
	3	Symmetry picture in cup cover/packaging cover
	4	Water volume adequateness

3.2   Research sample

Purposive random sampling is applied in order to investigate the response of XYZ consumers which are located in Curug city, Tangerang county, West Java, Indonesia. The respondent's information including the names and addresses of XYZ consumers are gained from the distributors and retailers of XYZ in Curug city, West Java. A total of 150 consumers were selected as respondents. All the respondents had been using XYZ products.

3.3   Data Collection

The questionnaires are distributed to the consumers who had been using XYZ products in Curug city, West Java [15]. The questionnaires are directed to inquire into the respondents' perspectives comprising of product awareness, value perception, trust, and innovations with respect to XYZ product.

4.   Result and Discussion

4.1   Demographic profile

The 150 questionnaires are disseminated to the consumers listed in the directories mentioned above. Eventually, a total of 110 questionnaires are filled in and returned, generating a response rate of 73.33% [15]. Table 2 displays a summary of the respondents' descriptive statistics.

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Table 2. Demographic characteristics of respondents

Demographic characteristics	Level	Frequency	Percentage (%)
Gender	Female	46	41.82%
	Male	64	58.18%
Age	<25	40	36.36%
	25-40	33	30%
	41-55	29	26.36%
	>55	8	7.28%
Marital status	Yes	47	42.73%
	No	63	57.27%
Education background	Elementary school	5	4.55%
	Junior high school	13	11.82%
	Senior high school	39	35.45%
	Bachelor degree	43	39.10%
	Master degree	7	6.36%
	Doctoral degree	3	2.72%

Among the respondents, 46 were female (41.82%) and 64 were male (58.18%). Most of the respondents were approximately 73 (66.36%), below 40 years of age. Sixty-three (57.27%) respondents have not been married yet. The majority, 92 (83.63%), have at least senior high school educational background.

4.2   Confirmatory factor analysis

Confirmatory factor analysis (CFA) is applied to test the hypotheses regarding the proposed model. AMOS 18.0 is used to analyse the data and examine the relationships between the constructs and the measurement items or indicators. The CFA indicates how well the proposed model fits the observed sample model.

A CFA is conducted by using the 11 items that measure the 4 dimensions. Several indicators are eliminated based on the recommendations for factor loadings and measurement error. One indicator of product awareness (PA2) is removed because it has low factor loading and high error value.

Table 3 recapitulates the goodness-of-fit indices of the CFA. All the indicators fulfilled the minimum requirement of model fitness.

Table 3. Fit indices for measurement model

Fit indices		Threshold	Result
Chi-square			37.152
Degree of freedom			27
Level of significance of chi-square		$P \geq 0.05$	0.092
Chi-square/df		≤ 3	1.376
Goodness-of-fit index	GFI	≥ 0.9	0.940
Adjusted goodness of fit index	AGFI	≥ 0.85	0.878
Root mean square error of approx.	RMSEA	≤ 0.08	0.059
Comparative of fit index	CFI	≥ 0.9	0.976
Tucker-Lewis index	TLI	≥ 0.9	0.961
Root mean square residual	RMR	<= 1	0.094

The overall model's p-value is higher than 0.05. The chi-square over degree of freedom is well below the threshold (≤ 3). Thus, the overall model fitness is acceptable.

Regarding the acceptance of the overall model, each of the constructs is evaluated separately by examining their indicator loadings for statistical significance and assessing the construct's reliability and extracted variance. Table 4 represents the indicator loadings and construct reliability and extracted variance

.

Table 4. Factor loadings, construct reliability, and variance extracted

Construct/Item	AMOS factor loading	Square loading	Measurement error	Construct reliability	Variance extracted
Trust (TR)					
TR1	0.784	0.615	0.385		
TR2	0.870	0.757	0.243		
Total TR	**1.654**	**1.372**	**0.628**	**0.813**	**0.686**
Product Awareness (PA)					
PA1	0.985	0.970	0.030		
PA3	0.530	0.281	0.719		
Total PA	**1.515**	**1.251**	**0.749**	**0.754**	**0.626**
Value Perception (VP)					
VP1	0.886	0.785	0.215		
VP2	0.652	0.425	0.575		
Total VP	**1.538**	**1.210**	**0.790**	**0.749**	**0.605**
Innovation (IN)					
IN1	0.586	0.343	0.657		
IN2	0.836	0.699	0.301		
IN3	0.805	0.648	0.352		
IN4	0.580	0.336	0.664		
Total IN	**2.807**	**2.027**	**1.973**	**0.799**	**0.507**

All the loading factor indicators are above 0.5 minimum acceptance level [16]. The construct reliability of the four constructs ranged from 0.749 to 0.813, which is over the 0.7 minimum acceptable level [16]. For the extracted variance, the four constructs are over the 0.5 minimum acceptable levels. Accordingly, all the constructs achieved satisfactory levels of convergent validity. At the final phase, the discriminate validity is examined by comparing the correlations between constructs and the square roots of the average extracted variance from the individual constructs [17, 18].

Table 5 indicates that the inter-construct correlations (below the diagonal) and the square roots of the average variance extracted (on the diagonal) of the construcs. It denotes that the square roots of the average extracted variance measures of both construcs are higher than all correlations between two constructs. Thus, this confirms the discriminate validity. Therefore, it can be concluded that the overall model and constructs are acceptable.

Table 5. The correlation estimate and the square roots of average extracted variance

	Trust	Innovation	Product awareness	Value perception
Trust	0.828			
Innovation	0.465	0.712		
Product awareness	0.593	0.579	0.790	
Value perception	0.492	0.473	0.433	0.778

4.3 Model analysis

The CFA proved that the model is either reliable or valid, and thus it can be used for further detailed analysis. The common method bias is operated by using Harman's

single factor test in SPSS software. The results are displayed in Table 6.

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Table 6. The results of common method bias

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.294	42.940	42.940	4.294	42.940	42.940
2	1.297	12.967	55.907			
3	1.236	12.363	68.270			
4	.947	9.470	77.740			
5	.557	5.569	83.309			
6	.436	4.358	87.667			
7	.402	4.022	91.689			
8	.350	3.499	95.188			
9	.242	2.423	97.611			
10	.239	2.389	100.000			

It can be seen that only one factor is going to emerge. It seems that 42.940% is explained in the variance. Even though many variances are represented by single factor, otherwise it is not a majority. The factor explained is lower than 50%. Subsequently, the structural equation model is eventually examined in order to test the hypotheses. As depicted in Table 7, all the hypothesized relationships among the constructs in the theoretical model indicate a significant result.
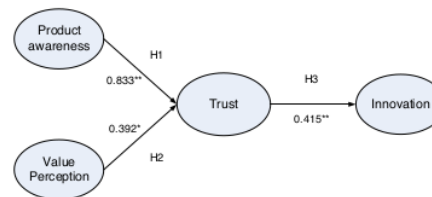
Table 7. Summary of the significance of the hypothesized relationships among the constructs

Item	P	Threshold	Result
Trust←product awareness	P	<=0.05	0.000
Trust←value perception	P	<=0.05	0.007
Innovation←Trust	P	<=0.05	0.000

4.4   Hypothesis Testing Results

The theoretical model and results of hypothesis testing are reflected in Figure 2 and Table 8. H1 postulates that the consumer product awareness

affects trust. The results reveal that the consumer product awareness is directly positively related to trust, with a path coefficient P of 0.833, which is significant at p<0.01. Thus, H1 is supported. H2 posits that the consumer value perception has significant impact on trust. The results indicate that the consumer value perception is significantly positively related to trust, with P of 0.392, which is significant at p<0.05. This leads to the acceptance of H2. Whilst H3 proposes that the consumer trust affects innovation. The results record that the consumer trust is positively related to innovation at the significant level, with a P of 0.415, which is significant at p<0.01. Hence, H3 is accepted. Table 8 summarizes the results of the hypothesis tests.

**significant at the 0.01 level
*significant at the 0.05 level

Figure 2. Theoretical Model and results of hypothesis testing

Table 8. Summary of the hypotheses testing results

Hypothesis	Dependent variable	Independent variable	Path coefficient	Probability	Result
H1	Trust	Product awareness	0.833	0.000	supported
H2	Trust	Value perception	0.392	0.007	supported
H3	Innovation	Trust	0.415	0.000	supported

In order to know whether there is mediation, we run a mediation test. Prior to mediation test with trust as a mediator, we test the path between product awareness and innovation. Based on the result in Table 9, the path between product awareness and innovation is significant because P-value is below the cut of value 0.05. The coefficient of beta estimate between product awareness and innovation is 0.686.

Table 9. Prior to mediation test between product awareness and innovation

			Beta Estimate	S.E	C.R.	*P*-value	Result
Innovation	←	Product awareness	0.686	0.166	4.122	***	Significant

Table 10. The result of a partial or full mediation between product awareness and innovation

			Beta Estimate	S.E	C.R.	*P*-value	Result
Trust	←	Product awareness	1.000	0.231	4.520	***	Significant
Innovation	←	Product awareness	0.390	0.166	2.347	0.019	Significant
Innovation	←	Trust	0.240	0.112	2.149	0.032	Significant

After conducting the mediation test, the coefficient of beta estimated calculation between product awareness and innovation is reduced from 0.686 to 0.390 as depicted in Table 10. The path between product awareness and innovation is also significant. It can be highlighted that the relationship between product awareness and innovation is partly mediated by trust.

Similar to product awareness, the path between value perception and innovation is also tested. Based on the result in Table 11, the path between value perception and innovation is significant because P-value is below the cut of value 0.05. The coefficient of beta estimated calculation between value perception and innovation is approximately 0.309.

Table 11. Prior to mediation test between value perception and innovation

			Beta Estimate	S.E	C.R.	*P*-value	Result
Innovation	←	Value perception	0.309	0.124	2.493	0.013	Significant

Table 12. The result of a partial or full mediation between value perception and innovation

			Beta Estimate	S.E	C.R.	*P*-value	Result
Trust	←	Value perception	0.405	0.134	3.009	0.003	Significant
Innovation	←	Value perception	0.211	0.106	1.984	0.047	Significant
Innovation	←	Trust	0.284	0.117	2.436	0.015	Significant

After carrying out the mediation test, the coefficient of beta estimated calculation between value perception and innovation is reduced from 0.309 to 0.211 as illustrated in Table 12. The path between value perception and innovation is also significant. Thus, it can be concluded that the relationship between value perception and innovation is also partly mediated by trust.

5. Conclusion and Implications

At the empirical context, this study scrutinizes a model of relational approach among product awareness, value perception, trust, and innovation. The results proves that these hypotheses H1-H3 are acceptable; clarifying that innovation performance is developed by product awareness and value perception of consumers. The consumer's value perception and product awareness promotes trust. Finally, the result also highlights the positive effects of trust on innovation. The research confirms the existence of a more complex, mediating relationship between product awareness, value perception, trust, and innovation. Trust partially mediates the relationship between product awareness and innovation. In addition, trust also partly mediates the relationship between value perception and innovation. Just product awareness and value perception of consumers are possibly adequate to influence innovation performance. These findings constitute a new contribution to the literature on marketing and innovation managements through the development of some antecedents such as product awareness and value perception to consumer's trust and innovation. The results give managerial insights to boost business performance in the competitive environment.

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