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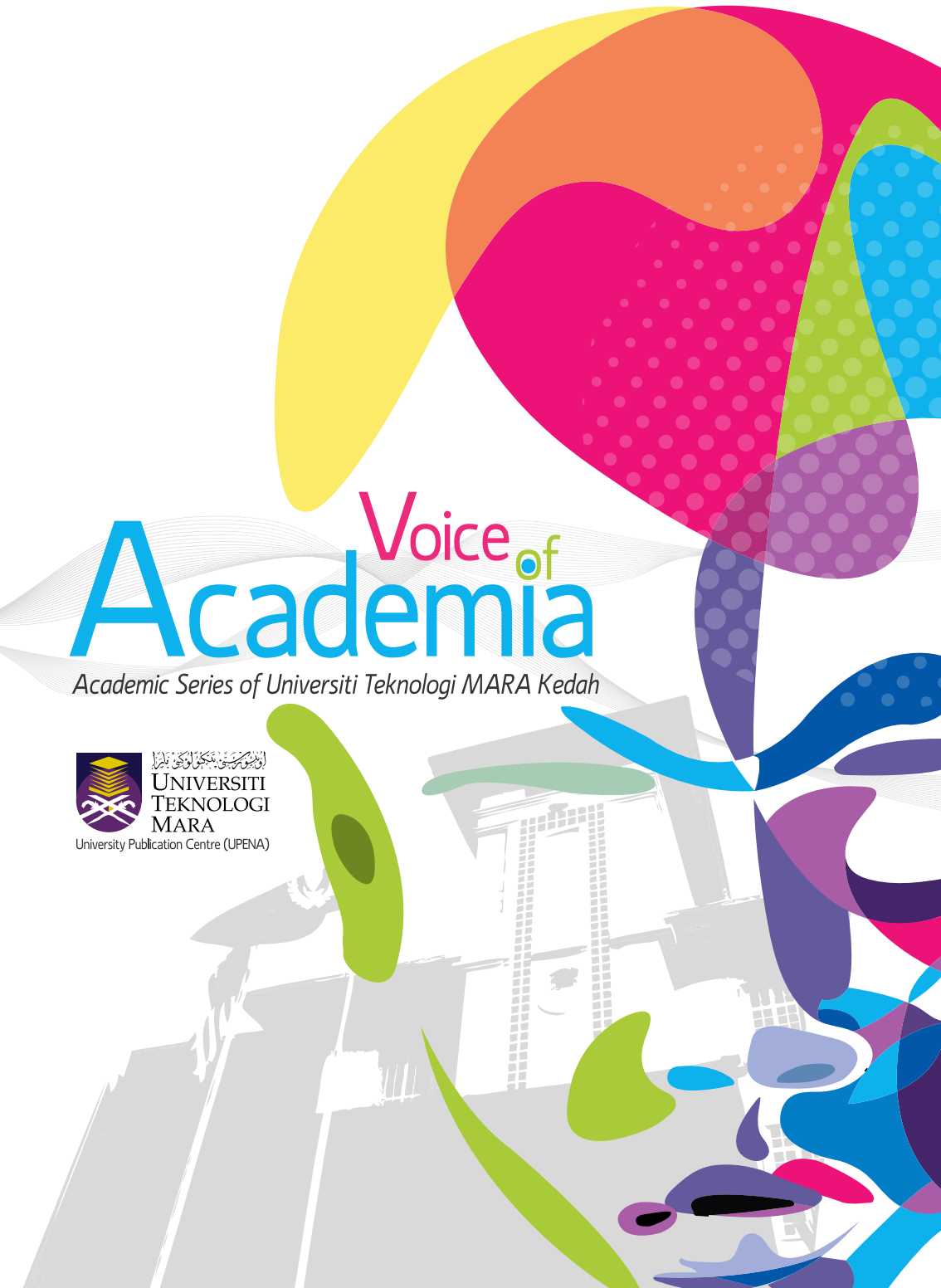

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Warranty and its Effect towards Customer Satisfaction in Malaysia's Electronic Industry

Mohd Rizaimy Shaharudin (Corresponding author)
Faculty of Business Management, Universiti Teknologi MARA,
P.O Box 187, 08400 Merbok, Kedah, Malaysia
Tel : +604-4562162 E-mail: rizaimy@kedah.uitm.edu.my

Maznah Wan Omar
Faculty of Business management, Universiti Teknologi MARA
Peti Surat 187, 08400 Merbok, Kedah, Malaysia
Tel: +604-4562277 E-mail: maznah199@kedah.uitm.edu.my

Anita Abu Hassan
Faculty of Business Management, Universiti Teknologi MARA,
P.O Box 187, 08400 Merbok, Kedah, Malaysia
Tel : +604-4562133 E-mail: anita397@kedah.uitm.edu.my

Azyyati Anuar
Faculty of Business Management, Universiti Teknologi MARA,
P.O Box 187, 08400 Merbok, Kedah, Malaysia
Tel : +604-4562142 E-mail: azyyati@kedah.uitm.edu.my

ABSTRACT

This study aims to determine the factors affecting customer satisfaction in after-sales service. It helps to extend the understanding on warranty and its influence towards customers' satisfaction, an important element in retaining a profitable business relationship with the customer. To date, there have been very minimal studies conducted on the after-sales service in business organizations particularly the electronic industry in Malaysia. Therefore, from the data presented in this study, it can be expected that the findings can benefit both the industrial community and the academia by giving a new source of ideas and information. Results indicated to confirm on the earlier literature that there was a strong relationship between warranty and customer satisfaction in either the consumer or the business market environment. Future research should focus on the similar study of factors affecting customer satisfaction in after-sales service in other prominent industries such as automotive, construction and other manufacturing as well as service sectors.

Keywords: After-sales Service, Delivery, Installation, Warranty, Satisfaction.

1. Introduction

Most of the business organizations today are not aware of the after-sales service factors and its impact towards customer satisfaction. Vitasek (2005) described after-sales service as a service that has been given to the customer after the products have been delivered. The same services are sometimes called "fields services", when they are organized in the main characteristics that are located at a customers' site (Simmons, 2001). After-sales service is often referred to product support services where all activities will support the sold product (Lele & Karmarkar, 1983).

It is noteworthy to point out that after-sales service plays a key role in supporting marketing activities to enhance customer loyalty, and thus increase profitability in the long term (Saccani, Songini, & Gaiardelli, 2006). According to Alexander, Dayal, Dempsey & Vander Ark (2002) and Wise and Baumgarter, (1999) profit margins can be generated higher by delivering the after-sales service compared to product sold without it. It may generate at least three times turnover of the original purchase during a given product lifecycle. After-sales services represent one of the few constant connections customers have with a brand (Gallagher, Mitchke & Rogers, 2005), while Lewis, Portioli, & Slack (2004) pointed out how it affects the brand image of a firm.

Failing to realize the importance of the factors can lead to a disastrous and threatening business relationship. Dissatisfied customers will turn to competitors who can offer better after-sales services. Profitable business relationship is not something that a company can take easily as it requires enormous effort and cost to build it (Shaharudin, Yusof, Elias & Mansor, 2009). According to Rigopoulou, Chaniotakis, Lymperopoulos & Siomkos (2008) installation and delivery are the keys to the after-sales service that have an influence on the customer. Buyers of products want assurance that the product will perform satisfactorily over its useful life when operated properly. This is achieved through post-sale support such as installation, warranties, extended warranties, maintenance service contracts, provision of spares, training programs, product upgrades and etc (Murthy, Solem, & Roren, 2004).

However, according to Murthy et al. (2004) customer dissatisfaction can arise due to poor performance of the purchased item and/or the

quality of warranty service provided by the manufacturer. In either case, it results in a negative impact on the overall business performance. This may lead to unsatisfactory customers switching to a competitor or the company losing potential new customers due to negative word-of-mouth effect. The consequences of poor warranty servicing is more difficult and costly to rectify and hence it is very important that the manufacturer avoids this occurrence in the first instance. Since non-conforming items have a higher failure rate, they tend to fail early and this affects consumer satisfaction. One way of overcoming this is through a consumer incentive warranty policy (Murthy, Djamaludin & Wilson, 1995). Offering better warranty terms convey greater assurance to buyers and can result in greater sales. This implies that product warranty logistic is very important from the customer satisfaction as well as from the manufacturer's profitability point of view (Murthy et al., 2004).

From the review of literature, it was discovered that most of the study area of interest are conducted extensively in the consumer market settings rather than business market. This has created the interest to study the possibility of the effects on the Malaysian business environment especially to the unexplored of electronic industry. Therefore, the objective of the study is to discover towards what extend the warranty factors are affecting customer satisfaction in the electronic industry in Malaysia.

1.1 Product Warranty

Warranty is a period of which a product is guaranteed by the manufacturer on its functionality and free from defects. A warranty is a contractual agreement between a manufacturer (seller) and a consumer (buyer) which requires the manufacturer to rectify all failures occurring within the warranty period (Jack & Schouten, 2000). Warranty is costly to the seller. However, in order to attract more sales, warranty has put the seller in a no choice situation especially for convenience products when the consumers are less participative prior to the purchase. In this case, warranty serves as a signal to the overall product quality and become a deciding factor to purchase in store where 70%-80% of the customer's purchase decisions are made.

Product warranty is a signal of quality at which a specific remedy such as repair or replacement will be carried out by the manufacturer in the

event that the product or service fails to meet the warranty. A warranty is a contract between a manufacturer and the consumer. The warranty specifies that the manufacturer agrees to repair or replace the failed product for the predetermined warranty period (Yun, 1997). A breach of warranty occurs when the promise is broken, i.e. a product is defective or not as should be expected by a reasonable buyer. Nonetheless, most of the past researches on warranty have found warranty as a signal of quality regardless of the origin manufacturer's location (Spence, 1977; Gal-Or, 1989; Lutz, 1989) or whether the product is foreign-made (Lee, Kim & Miller, 1992).

Numerous researches in the past have long implicating the significant role played by warranty (Kim & Park, 2008). For example, Shimp and Willliam (1982) studied on the effects of warranty and warrantor's reputation on consumer perceptions especially on the innovative product concepts. Bouilding and Kirmani (1993) analyzed whether the choice of warranty is consistent with the cues underpinning the theory of predictions. Tan, Lee and Lim (2001) examined the use of warranty and warrantor reputations to reduce consumers' negative perceptions about hybrid products. Furthermore, according to Priest (1981), a warranty is like an insurance policy and also a repair contract. The warranty usage is based on the demand and cost assessment by the customer. If the warrantor can provide repairs at a lower cost than the buyer, the warranty will be more comprehensive. In contrast, if the buyer can provide the repair at a lower cost than the warrantor, the warranty will be less extensive (Kelley, 1988).

1.2 Relationship between warranty and customer satisfaction

According to Oumlil (2008), a product warranty has three uses. The first is to act as a competitive tool by increasing the customers' perception on the product reliability which could eventually lead to the higher confidence level in making the purchasing decision (Feldman, 1976). The second factor is to gain the market share (Soberman, 2003) and the third is to limit the cost of after sales especially in the situation where the products have defects or failed to perform according to its function in the market (Jain, 1990; Kelly, 1988).

Past researchers have indicated that a product's warranty implies on the signal of reliability. According to Wiener (1985), the economic theory predicts that a product warranty is an accurate signal of its reliability, but

there is no empirical evidence that supports this. Consumers always believe that a superior warranty will be associated with greater quality and less risk (Oumlil, 2008). In a study by Lele and Sheth (1987) and Loomba (1996), customers are satisfied when their purchasing risks are getting lower due to the benefits of warranty. A good quality product can guarantee for a continuous demand if the value of the product exceed the expectation and satisfaction of the customer (Shaharudin, Hassan, Mansor, Elias, Harun & Aziz, 2010). Some manufacturers may even offer extended warranty periods to gain competitive advantage in the market (Goffin, 1999).

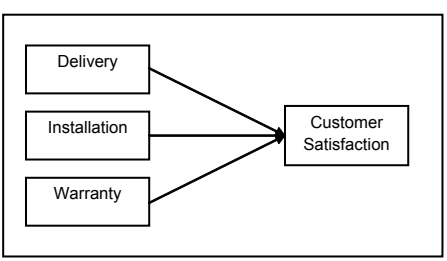
Furthermore, according to Murthy et al. (2004) customer dissatisfaction can arise due to poor performance of the purchase item and/or the quality of warranty service provided by the manufacturer. The customer dissatisfaction can be minimized due to its effective warranty logistics such as the response time to warranty claim, the time to rectify a failed item, delay resulting from lack of spares, workshop resources and so on.

According to Jack and Murthy (2004) customer satisfaction with a purchased product depends on its performance under warranty and during the remainder of its useful life. Manufacturers can use specific servicing strategies to reduce warranty costs without considering the effects of customer dissatisfaction.

Consumers are influenced by warranty as it can provide assurances of product quality and value (Feldman, 1976) by inducing a self confident customer (Armstrong, Kendall & Russ 1975) and increasing the customer's satisfaction by reducing the post purchase dissonance (Darden, William & Rao, 1977). This implies that product warranty logistic is very important from the customer satisfaction as well as from the manufacturer's profitability point of view (Murthy et al., 2004).

From the review of literature, Figure 1 depicted the proposed theoretical framework of the study:

Figure 1: Proposed Theoretical Framework



2. Research Methodology

2.1 Hypothesis Development

Given the preceding discussion, the following hypotheses are being proposed:

H1. There is no significant difference between deliveries towards customer satisfaction.
H2. There is no significant difference between installations towards customer satisfaction.
H3. There is no significant difference between warranties towards customer satisfaction.

2.2 Research Design

This research is a quantitative research where sources of information are gathered from the questionnaire. The instrument utilized was through the self-administered questionnaire containing closed-ended and scales to matrix questions. This study is interested in describing the characteristics of a population or phenomenon, thus the study is a descriptive study. This study also used hypotheses testing to determine the influence of delivery, installation and warranty towards customer satisfaction. The type of sampling is probability sampling. Data collected were based on stratified sampling since the respondents were selected mainly from Engineering, Marketing and Purchasing Department from each of the Permintex Electronic Sdn. Bhd. (PESB) customer. The population decided was 329 from the total of 47 customers around Peninsular Malaysia multiply by 7 respondents for each PESB customer. Out of the total population, 100 respondents were expected to respond to the research survey. Pre-testing of the questionnaire was made during the pilot study. The scale was piloted amongst a sample of twenty (20) private workers and university students.

2.3 Data Analysis Method

For the purpose of this study, the researcher used the Statistical Software Package for Social Sciences (SPSS) Version 17 to compute all the data gathered from the questionnaire. The techniques of analysis used in this study were descriptive (mean, standard deviation) and inferential analysis

(regression) to sum up the data collected. The questionnaire used is adopted from the questionnaires developed by past researchers and PESB. In order to help describe the sample characteristics in the data analysis report, demographic data (Section A) such as age, gender, ethnicity, working experience and job tenure are included in the questionnaire. These data are structured in a range of response option, rather than seeking exact figures. In the subsequent section, all the study variable scales are measured using the Likert scale varying from 1 to 7 (highly disagree to highly agree). The variable 'Delivery' was constructed in five measurement items, 'installation' was constructed in five measurement items, and 'warranty' and 'customer satisfaction' in four measurement items respectively. Pre-testing of the questionnaire was made during the pilot study.

3. Results and Discussion

This section presents the findings of this study. The data are interpreted using the mean, factor analysis and regression methods of SPSS.

3.1. Pilot Study

Improvement has been made based on the feedback received in the pilot study by reducing the Likert scale rating from 1-7 to 1-5 in order to ease respondents' understanding and interpretation of each question.

3.2 Factor Analysis

Based on KMO measure of sampling adequacy test in Table 1, it was found that the factor analysis data value was 0.808, which falls between the ranges of being great and appropriate factor analysis data. The Bartlett's Test was utilized and the result indicates a highly significant result with $p=0.000$ ($p<0.001$), hence, the factor analysis is appropriate. Factor analysis with a varimax rotation procedure was employed to identify the underlying dimensions of product quality. In Table 2, the load values of the factors are shown. This study has utilized both exploratory and confirmatory factor analyses. The exploratory factor analysis attempts to determine the number of factors, while the confirmatory factor analysis attempts to test how well the measured variables represent the number of constructs. From the result of exploratory factor analysis, all four factors can be accepted for the rotation component matrix. For the confirmatory factor, 0.50 or a higher factor load

value is a good criterion for selection. Items with the result of less than 0.50 were omitted and disregarded from being analyzed. This reduction is possible because the attributes are related and the rating given to any one attribute is partially the result of the influence of other attributes.

Table 1 : KMO and Bartlett's Test

KMO and Bartlett's Test	**Result**
Kaiser-Meyer-Olkin. Measure of Sampling Adequacy	.808
Bartlett's Test of Sphericity (Sig.)	.000

Table 2 : Rotated Component Matrix

	Component			
	1	2	3	4
Reception of the proper invoice/delivery papers	.795	.042	.152	.031
Transfer of product to your place	.718	.039	.319	-.204
Quality of the product itself when delivered	.693	.229	.059	.294
Reliability in delivery times	.663	.252	.167	.271
Quality of the product packaging when delivered	.607	.070	-.083	.560
response time to attend to a warranty claim	.099	.858	.007	.163
the time for rectify a failed item	.113	.799	.111	.119
Flawless of the installation	.323	.526	.477	.089
Attentiveness of installation personnel in order to avoid damages	.101	.018	.812	.200
Advice and instructions given by the technicians	.179	-.001	.614	.534

Time elapsed between delivery and installation	.448	.368	.555	-.004
Accurate information about time of installation	.149	.444	.511	.147
A proper contract between the manufacturer and service agents	.043	.187	.122	.804
Explanation about contract	.094	.165	.301	.741

3.3 Reliability Analysis

From the reliability analysis in Table 3, all factors including the independent and dependent variables were found to have good reliability with all the Cronbach's Alpha results are above 0.6. The results of reliability that are under 0.6 is considered to be poor, while in the range of 7.0, the result can be acceptable and if the results show the range between 0.8, it is considered as a good result (Sekaran, 2003).

Table 3 : Reliability analysis result

Factor	Variable	Cronbach's Alpha Result
Delivery	Independent Variable	.814
Installation	Independent Variable	.749
Warranty	Independent Variable	.616
Customer Satisfaction	Dependent Variable	.875

3.4 Regression Analysis

Table 4 shows the R-Square and Durbin-Watson test results. The R-Square test result of 0.698 can be accepted for the regression analysis. The Durbin-Watson test result of 1.676, an indicator that the autocorrelation is almost

reaching to zero or there is a significant difference that exists between the dependent and independent variables (no autocorrelation). From the ANOVA in Table 5, it appears that the three predictor variables are not all equal to each other and could be used to predict the dependent variable, brand loyalty as is indicated by the F value of 73.874 and strong significance level of 0.000 ($p<0.05$). in Table 6, the results show that all of the variables are significant ($p<0.001$) with high Beta (0.355, 0.275 and 0.392) and t value (5.669, 5.047 and 4.158).The VIF value of less than 10 for all variables show that the problem of multi-collinearly have not existed and all data are mutually exclusive. As for the interpretation, the test indicates that delivery, installation and warranty have significant influence towards customer satisfaction. By examining the t statistic for all the independent variables it is apparently confirmed that delivery, installation and warranty have significant relationships with customer satisfaction due to the strong significant level ($p<0.05$), indicating that the null hypotheses are wrong and can be rejected.

Table 4 : Result of R Square and Durbin-Watson Test

Model	R Square	Dutbin-Watson
1	0.698	1.676

Table 5 : Result of Annova Test

Model	F	Sig.
1	73.874	0.000

Table 6 : Result of Coefficients

Variable	Standardized Coefficients			Collinearity Statistics	
	Beta	T	Sig.	Tolerance	VIF
1 (Constant)	.392	.508	.612	.452	2.213
Delivery	.355	5.669	.000	.689	1.452
Installation	.275	5.047	.000	.610	1.640
Warranty	.392	4.158	.000	.750	1.333

3.5 Discussion

From the statistical result, it was found that delivery, installation and warranty are significantly related to the customer satisfaction. All of these factors are important in delivering an acceptable after sales service performance that will be able to make the customer satisfied and delighted. A good delivery system always derives from the pull strategy where demand 'pulls' rather than 'pushes' the product through marketing channels to final customers. Customers require products to be delivered at the right place, time and at the right price. However, companies often pay too little attention to their distribution channels, sometimes with damaging results (Kotler & Armstrong, 2010). Apparently such circumstances can threaten the existing seller-consumer relationship. Furthermore, the factor such as the flawlessness of the installation process has an influence on customer satisfaction because it can reduce damages to the product as well as gives assurance for the product's quality and reliability. Moreover, the installation task was carried out by an experienced and expert employee of the company provider, thus creating delight and satisfaction for post purchase environment. Manufacturers and retailers of capital and consumer goods cannot consider their active roles have ended with the sale (Levitt, 1983), but rather must provide their customers with a set of supporting after-sales services, such as installation packages, technical advice for use, maintenance/repair,

spare parts delivery, product upgrading, etc. Lastly, offering better warranty terms convey greater assurance to buyers and can result in greater sales. Failure to deliver proper warranty service can have a negative impact on sales and hence negate the reasons for offering the warranty in the first place. This implies that product warranty logistic is very important from customer satisfaction as well as from the manufacturer's profitability point of view (Murthy et al., 2004). Therefore, after-sales service is clearly important in satisfying consumer needs, an important factor in creating long term profitable relationship with the customer. After-sales may generate more than three times the turnover of the original purchase during a given product's life-cycle, and often provides profitability higher than product sales (Alexander et al., 2002).

4. Conclusion

As a conclusion, the three significant factors involved in after-sales service are delivery, installation and warranty. As for warranty, customers will be delighted and satisfied when the assurance of good quality products is given. Warranty acts as a signal of quality when products are guaranteed for a certain period of time. Consistent with past research outcome, the warranty factor is crucial in the after-sales service not only to the consumer market but to the business organizations as well. To the manufacturers, warranty in after-sales service is of utmost importance to build a long lasting profitable relationship with the existing customer. Such profitable relationship will create a strong loyal customer base that will give the company a competitive edge in the future.

As for the recommendation, it is important that the company adopt a good after–sales service management to enhance the effectiveness and efficiency to serve the customer. As for the warranty, it will always be an utmost importance to respond within a reasonable and acceptable period of time to the customer regarding the warranty claim. The company should not delay the claim made by a customer and try to fulfill its promises either by repairing or replacing with a new product. Furthermore, continuous improvement on warranty is required through integrated functional activities in order to produce high quality after-sales service which in turn can lead to customers' high satisfaction and confidence.

Future research should focus on the similar study of warranty affecting

customer satisfaction in after-sales service in other prominent industries such as automotive, construction and other manufacturing as well as service sectors. By doing this, hopefully we can get a clearer picture on the extended scope of after-sales service of several industries environment, which can be further examined. Eventually, a comparison can be made between the findings of the different industries so that constructible findings and conclusions can be made.

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