

THE RELATIONSHIP BETWEEN PURCHASE DECISIONS AND QUALITY ASSESSMENT OF OFFICE FURNITURE

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ABSTRACT

The use of multiple attributes to measure attitudes and predisposition to certain behavior in marketing was developed in the 1970s in studies aimed at identifying determinant attributes. Rising concerns over quality in the 1980s saw similar use of attributes to define quality. Some authors of these latter studies infer that quality and determinant attributes are one and the same; however, no studies were found that directly examined this relationship. This study was undertaken to examine the determinant attribute/quality attribute relationship in office furniture. More than 260 purchasing executives nationwide participated in rating 26 product and dealer/manufacturer attributes on the basis of their influence on purchase decisions and on the basis of their use in assessing quality. Respondents rated attributes on importance and on the degree of difference in a particular attribute among the products and services available to them.

The three most important attributes respondents used to rate quality were: (1) absence of defects, (2) delivery on schedule, and (3) structural integrity. The three most important attributes influencing purchase decisions were: (1) absence of defects, (2) structural integrity, and (3) reliability.

Results indicate a very high correlation between purchase decisions and quality assessment in the relative rankings of the 26 attributes. However, the results suggest that purchasing executives place more importance on attributes in the purchase decision but may perceive bigger differences in the attributes when assessing quality.

Keywords: Determinant attributes, service, purchasing executives.

INTRODUCTION

The use of multiple attributes to measure attitudes or predisposition to certain behavior in marketing is said to have emanated from the psychometric literature of Rosenberg and Fishbein (Wilkie and Pessemier 1973). The purpose of most of the early studies and many of the more recent studies employing multiple attributes in marketing was to identify attributes that were determinant—that is, those that determine purchase decisions (Alpert 1971).

Examples of studies employing multiple attributes used in this general context are found in Beckwith and Lehmann (1973), Heeler et al. (1979), Lehmann and O'Shaughnessy (1974), Myers and Alpert (1968), Swan and Combs (1976), Wilkie and Pessemier (1973), and Wind et al. (1978). However, these studies never drew a parallel between attributes that determine purchases and attributes that determine quality.

Quality is an issue of increasing national in-

terest and importance, and it is the focus of more recent marketing literature employing multiple attributes. In contrast to determinant attribute literature, quality literature contains numerous statements indicating a relationship between higher quality and purchase decisions. However, except for studies employing the PIMS (Profit Impact of Marketing Strategies) database, formal examination of the relationship between quality and purchase decisions has been limited. Even PIMS-based studies have not directly addressed the relationship of quality and purchase decisions. Rather, the PIMS studies have found a positive correlation between quality and market share, ROI (Return on Investment), and profitability. Many authors cite this relationship, implying that quality “sells.”

Several authors mention explicitly the influence of higher quality on purchase decisions. None, however, cite empirical work directly linking quality to sales. Gale and Buzzell (1989) state that conformance quality is often one of the key attributes that count in the purchase decision and that relative perceived quality covers all nonprice attributes that count in the purchase decision. Garvin (1988) stated that today’s customers are more sensitive to quality and more likely to direct their purchases accordingly, suggesting that over time high quality should translate into an increased repurchase rate for products.

Jacobson and Aaker (1987) in discussing quality suggest that it is measured through intrinsic characteristics and associated services that are thought important in decisions to purchase. Takeuchi and Quelch (1983) state that perceived quality of customer service is an increasingly important factor in the purchase decision.

Wheatley and Chiu (1977) and Garvin (1984b) have inferred that studies of factors affecting purchase decisions have, *ipso facto*, assessed quality. In attempting to justify an investigation of the effect of income and educational level on perceptions of quality, Wheatley and Chiu (1977) cite previous literature where these variables were found to

affect purchase decisions. They deduced from these findings that quality assessment and quality perceptions were also influenced by income and education. Quoting from Wheatley and Chiu (1977, p. 182): “Studies . . . suggest that income level influences decisions to purchase and apparently assessments of quality” and “. . . found that education level seemed to affect purchase decisions and, by implication, quality perceptions.” Note the use of “apparently” and “by implication.”

Garvin (1984b), too, infers that studies on determinants of buying behavior and customer satisfaction have been studies of determinants of quality. This can be deduced from his suggestion that among four academic disciplines considering quality, the consideration of marketing has been from the vantage point of determinants of buying behavior and customer satisfaction (Garvin 1984b).

Phillips et al. (1983) contend that in view of the potential importance of quality, it is surprising that so little attention has been paid to it by marketing scholars. They suggest that this is because it has been so difficult to measure. But have we, perhaps, as Garvin (1984b) and Wheatley and Chiu (1977) would seem to suggest, been measuring quality all along via studies of determinant attributes? Heeler et al. (1979, p. 60) make an interesting observation that may be appropriate to the quality/purchase relationship when they suggest that “because of the increasing diversity of the directions taken by researchers in marketing, it is becoming more common for researchers operating from different conceptual bases to be measuring the same concept.” Is quality just another conceptual base of determinant attributes?

To shed some light on the quality/purchase relationship in forest products, the authors conducted a study in which 26 product and dealer/manufacturer attributes of office furniture were rated on the basis of their influence on the purchase decision and on the basis of their influence on quality assessment. The office furniture industry has increased in importance, in both real and relative terms, not only

TABLE 1. Selected statistics on office furniture and wood household furniture industries, 1972 and 1987 (U.S. Department of Commerce 1972-1987).

Industry	Year		Percent change 1972 to 1987
	1972	1987	
Number of establishments			
Office	433	974	124.9
Wood household	2,348	2,910	23.9
Total employment (1,000)			
Office	39.0	80.3	105.9
Wood household	133.9	135.2	1.0
Value of shipments (\$ mil.)			
Office	1,103.6	7,554.9	584.6
Wood household	2,870.0	7,929.3	176.3
Value added (\$ mil.)			
Office	659.9	4,763.0	621.8
Wood household	1,556.9	4,254.7	173.3
Capital expenditures (\$ mil.)			
Office	31.8	282.6	788.7
Wood household	93.8	195.3	108.2

as a direct employer but also as a user of wood and wood-based materials. The importance of the office furniture industry when compared to the household furniture industry increased appreciably between 1972 and 1987. Performance of the office furniture industry outpaced that of the household furniture industry for growth in number of establishments, total employment, value of shipments, value-added, and capital expenditures (Table 1). At the same time, the use of solid wood and wood-based materials in office furniture manufacture also increased (Table 2). In 1967, the office furniture industry used a dollar amount of wood material equal to 5.2% of that used by the household furniture industry. By 1977, wood use in office furniture manufacture as a percent of that used in wood household furniture manufacture doubled to 11.7%. Relative use continued to increase, doubling to 23.4% by 1987. In addition, for the first time office furniture manufacturers actually used more hardwood plywood (35% more) than did the manufacturers of wood household furniture.

TABLE 2. Wood material use by office and wood household furniture manufacturers, in millions of current dollars, 1967, 1977, and 1987 (U.S. Department of Commerce 1967-1987a, b).

Material	Industry	
	Office	Wood household
..... 1967		
Hardwood lumber	14.0	208.8
Softwood lumber	1.5	36.5
Hardwood veneer	7.4	104.9
Hardwood plywood	1.2	17.4
Softwood plywood	3.4	61.1
Particleboard	2.5	23.6
Other wood	0.2	129.5
Total wood	30.2	581.8
..... 1977		
Hardwood lumber	40.1	337.6
Softwood lumber	4.3	119.2
Hardwood veneer	23.8	62.9
Hardwood plywood	1.2	12.4
Softwood plywood	18.9	70.8
Particleboard	14.1	78.4
Other wood	7.1	252.6
Total wood	109.5	933.9
..... 1987		
Hardwood lumber	126.6	533.9
Softwood lumber	15.4	176.9
Hardwood veneer	50.0	108.1
Hardwood plywood	30.6	22.6
Softwood plywood	91.2	141.0
Particleboard	102.6	291.0
Other wood	21.4	595.6
Total wood	437.8	1,869.1

OBJECTIVES

The objectives of this study were to explore the relationship between attributes that influence purchase decisions and those used to assess quality, and to define the key attributes for office furniture purchases.

APPROACH

The study utilized survey responses from two independent samples in which respondents were asked to rate identical attribute lists. One sample was asked to rate attributes according to their importance in office furniture purchases and to rate attributes on the extent

to which differences exist in the market. The second sample was asked to rate attributes according to their importance in assessing office furniture quality and to rate the degree to which differences exist in the market.

Attribute selection

Attribute selection began by compiling product and dealer/manufacturer attributes from studies concerned with the office furniture purchase decision (Anonymous 1985; Crawford et al. 1983; Anderson 1976, 1973) and from selected articles in the general marketing literature (Moriarty and Reibstein 1986; Heeler et al. 1979; Lehmann and O'Shaughnessy 1974; McAleer 1974; Alpert 1971; Ozanne and Churchill 1971; Myers and Alpert 1968). Anderson (1973) asked buyers of state office furniture to rate the following factors as to their influence on furniture selection: price, appearance, service life, maintenance requirements, delivery, salvage value, contract arrangements, and advertising. In a subsequent investigation of corporate and university furniture buyers, Anderson (1976) expanded upon his earlier inquiry. Appearance was subdivided as to style, design, harmony with existing furnishings, and harmony with existing decor. Delivery was broken into two parts—time to delivery and ability to deliver when scheduled. Maintenance was evaluated as to ease of repair of broken parts, ease of replacement of broken parts, resistance to damage, and durability of the work surface.

Crawford et al. (1983) asked buyers of office furniture to rate just six criteria: aesthetics, comfort, cost, durability, productivity, and flexibility. A Wharton School study (Anonymous 1985) stressed a number of service criteria in addition to price.

Articles in the general marketing literature provided generic attributes such as price, delivery on schedule, etc. The initial list of attributes resulting from this approach numbered 98. This list was subsequently reduced to 26. Ultimate selection was guided in large measure by Garvin's eight quality dimensions:

performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality (Garvin 1988, 1984a, b). For some dimensions, Garvin provided definitive guidelines making attribute selection relatively easy. However, for others the selection was more difficult. Garvin (1988, 1987, 1984a, b) has pointed to the difficulties in distinguishing between performance and secondary feature attributes as well as difficulties resulting from the highly subjective nature of aesthetics and perceived quality dimensions. Selection was constrained so that each of Garvin's eight quality dimensions was represented by at least three attributes. Table 3 lists the 26 attributes selected on the basis of Garvin's eight quality dimensions.

Attribute measurement

Myers and Alpert (1968) review three means for identifying determinant attributes: (1) direct questioning, (2) "ideal" attributes, and (3) dual questioning. The first two approaches rely on individuals' assessments of why they buy. The authors contend that often individuals do not really know why they choose one product over another, and that if they do, they may not always tell. These two methods are also criticized in that identification of important attributes does not take into account the degree to which competing products contain these attributes. This, Myers and Alpert (1968) contend, is a very important consideration affecting the ultimate purchase decision.

Dual questioning provides two measures, importance and difference, that when combined impact ultimate choice (Myers and Alpert 1968). In this study, respondents were asked to rate the importance of various attributes in selection and purchase decisions utilizing a 7-point Likert scale (1 = very unimportant and 7 = very important). They also rated the degree to which products or dealer/manufacturer services differ for each attribute. A 5-point Likert scale was used for this purpose (1 = no difference and 5 = big difference). Scores for importance and difference were

TABLE 3. Garvin's (1988) eight quality dimensions and attribute descriptions.

Quality dimension	Attribute descriptions
Performance	Effect on worker productivity Ability to enhance status of the user Multifunctionality of product
Features	Availability of engineering/design staff Acoustical properties Price Value
Reliability	Reliability Infrequent failure Absence of failure in first five years
Conformance	Ability of dealer/mfger to meet specifications Ability of dealer/mfger to deliver on schedule Ability of dealer/mfger to provide defect-free products
Durability	Service life Structural integrity Resistance to wear
Serviceability	Easy to maintain Dependable, competent installation staff Speed of repair service
Aesthetics	Aesthetics Compatibility with existing decor Compatibility with existing furniture Variety of styles and colors
Perceived quality	Brand name Reputation of dealer/manufacturer Previous experiences

multiplied together to arrive at a measure of determinance. Consequently, even if a particular attribute is extremely important—for example, air bags in automobiles—it becomes determinant only if consumers perceive that differences prevail among the various makes and models. Determinant attributes are those which most influence final purchase decisions (Myers and Alpert 1968). Identical dual scales were used for quality, thus enabling an examination of the relationship for determinance as well as importance.

Sample frame

The literature on industrial purchasing stresses that many persons are involved in the purchase decision process (Kohli 1989; Crow and Lindquist 1985; Ghingold 1985; Spekman and Stern 1979; Sheth 1973). Although acknowledging the involvement of others, Lehmann and O'Shaughnessy (1974, p. 36) suggest that the purchasing agent is still a key figure ". . . whose evaluation of suppliers and products is likely to influence—if not determine—the company's final choice." Others have found the role of the purchasing executive to be the "dominant factor" in the purchase decision (Patton et al. 1986; Crow and Lindquist 1985).

Consequently, the survey was confined to purchasing executives. In addition to the involvement of the purchasing executive as reported in the literature, this choice was further supported by the following considerations: (1) Only the purchasing executive is likely to have adequate experience in purchasing office furniture; (2) the purchasing executive's involvement in the purchase is assured regardless of how many other individuals may be involved; (3) only the purchasing executive is in a position to rate dealer/manufacturer service attributes adequately; and (4) the purchasing executive can be readily identified, whereas it would require special effort to locate and then survey a person(s) other than the purchasing executive who might regularly participate in office furniture purchase activities.

The survey

A total of 1,212 purchasing executives nationwide were mailed questionnaires. Names and addresses were purchased from a large commercial mailing list of purchasing executives containing over 90,000 entries. Selections were constrained so that (1) only one person was chosen per firm, (2) firms represented by the purchasing executive employed at least 100 people, (3) a name was included with each selection, and (4) an equal number of manufacturing and nonmanufacturing firms were included. Within the limits of these constraints, selections were made at random.

TABLE 4. Attribute importance means for quality and purchase.

Attribute description	Means	
	Quality assessment	Purchase decisions
Effect on worker productivity	5.58	5.83
Multifunctionality of product	4.72	5.17
Ability to enhance status of the user	4.45	4.34
Price	5.55	5.79
Acoustical properties	4.76	5.04
Value	5.76	5.92
Availability of engineering/design staff	4.69	4.68
Reliability	5.90	6.13
Infrequent failure	5.78	5.75
Absence of failure in first five years	5.55	5.79
Ability of dealer/mfger to meet specifications	5.81	5.98
Ability of dealer/mfger to deliver on schedule	6.01	6.09
Ability of dealer/mfger to provide defect-free products	6.07	6.20
Structural integrity	5.99	6.16
Resistance to wear	5.82	6.11
Service life	5.89	6.11
Easy to maintain	5.47	5.78
Speed of repair service	5.62	5.89
Dependable, competent installation staff	5.72	5.98
Aesthetics	5.23	5.31
Compatibility with existing decor	5.23	5.31
Compatibility with existing furniture	5.23	5.28
Variety of styles and colors	5.01	5.17
Brand name	3.76	3.85
Reputation of dealer/manufacturer	5.27	5.38
Previous experiences	5.26	5.46

Names were then assigned on an alternating basis to receive either a quality or purchase questionnaire.

The executives receiving the purchase questionnaire were asked to "... indicate the importance of the product and dealer/manufacturer attributes below in helping you select and purchase ...". Those receiving the quality questionnaire were asked to indicate the importance of the attributes in "... assessing the quality of ...". Thus, the only difference in the questionnaires was the emphasis on purchase decisions versus assessing quality. Both groups were asked to indicate how much difference there was in these attributes among the products or dealer/manufacturers. For example, do all products have an equal effect on worker productivity, ... are all dealer/manufacturers equally able to meet specifications. ... ?

After two mailings of the questionnaires and a separate follow-up letter in between, 268 usable responses were received. Allowing for "no forwarding address" and nonusable returns (Dillman 1978), this represented about a 26% rate of response. This was considered acceptable for this highly visible and highly queried group.

Several questions of a descriptive nature included on the questionnaire were utilized to check on nonresponse bias by comparing response on first and second wave returns (Armstrong and Overton 1977). Differences between waves have been found to point to differences between respondents and nonrespondents (Fowler 1984).

Between first and second wave respondents, no significant differences were found in years of experience, education, and firm sales. Dif-

TABLE 5. Attribute difference means for quality and purchase.

Attribute description	Means	
	Quality assessment	Purchase decisions
Effect on worker productivity	3.00	2.94
Multifunctionality of product	3.08	3.08
Ability to enhance status of the user	2.95	3.96
Price	3.80	3.62
Acoustical properties	2.97	3.07
Value	3.61	3.63
Availability of engineering/design staff	3.24	3.14
Reliability	3.50	3.38
Infrequent failure	3.22	3.35
Absence of failure in first five years	3.37	3.35
Ability of dealer/mfgr to meet specifications	3.49	3.41
Ability of dealer/mfgr to deliver on schedule	3.77	3.59
Ability of dealer/mfgr to provide defect-free products	3.52	3.44
Structural integrity	3.55	3.59
Resistance to wear	3.50	3.45
Service life	3.48	3.43
Easy to maintain	3.21	3.14
Speed of repair	3.49	3.44
Dependable, competent installation staff	3.34	3.43
Aesthetics	3.25	3.28
Compatibility with existing decor	3.13	3.13
Compatibility with existing furniture	3.14	3.10
Variety of styles and colors	3.07	2.99
Brand name	3.18	3.03
Reputation of dealer/manufacturer	3.52	3.46
Previous experiences	3.30	3.30

ferences were found for the dollar amount of furniture purchased in the previous year ($P = 0.0002$) and possibly employment ($P = 0.0605$). Late respondents bought less furniture and employed fewer people on average than did early respondents. Thus, although this suggests that respondents are potentially biased toward larger furniture purchases, this should not harm the value of respondent data in that respondents may have a better knowledge base and keener interest with which to rate product and dealer/manufacturer attributes.

RESULTS

Importance score comparisons

In all, 23 of the 26 attribute mean scores were rated higher for purchase than for quality

(Table 4). This may suggest a higher degree of sensitivity when evaluating purchase decisions than when evaluating quality. Ordinarily, one would expect that on average differences would be distributed equally, that is, roughly 13 attributes rated higher for purchase and roughly 13 attributes rated higher for quality. Given this expectation, the ratio of 23 to 3 has a highly significant chi-square value of 7.69 ($P < 0.0001$).

Difference score comparisons

Seven difference scores were larger for selection and purchase and 16 were larger for quality. Three were equal (Table 5). Again, assuming no difference, we would expect roughly equal division. In this case, the chi-

TABLE 6. *Attribute determinance means for quality and purchase.*

Attribute description	Means	
	Quality assessment	Purchase decisions
Effect on worker productivity	17.17	17.54
Multifunctionality of product	15.21	16.37
Ability to enhance status of the user	13.58	13.28
Price	21.40	21.23
Acoustical properties	14.82	16.54
Value	21.03	22.04
Availability of engineering/design staff	15.42	15.38
Reliability	20.79	20.95
Infrequent failure	18.85	19.77
Absence of failure in first five years	19.17	20.03
Ability of dealer/mfger to meet specifications	20.43	21.07
Ability of dealer/mfger to deliver on schedule	22.79	22.68
Ability of dealer/mfger to provide defect-free products	21.37	21.83
Structural integrity	21.43	22.54
Resistance to wear	20.60	21.31
Service life	20.75	21.26
Easy to maintain	17.86	18.22
Speed of repair	19.97	20.83
Dependable, competent installation staff	19.44	20.95
Aesthetics	17.05	17.81
Compatibility with existing decor	16.62	17.28
Compatibility with existing furniture	16.68	17.01
Variety of styles and colors	15.42	15.80
Brand name	12.47	12.36
Reputation of dealer/manufacturer	18.93	19.29
Previous experiences	17.90	18.64

square for the 26 pairs of ratings is 1.76, just meeting the criteria of significance at the 0.05 level. This might suggest that it is easier for buyers to perceive differences when thinking in terms of quality than when thinking in terms of purchase decisions.

Determinant score comparisons

Determinant attribute scores represent the product of importance and difference ratings (Table 6). The earlier relationship in which importance ratings for purchase were consistently larger than those for quality carried through to most of the respective determinant scores as would be expected. Twenty-one of the 26 determinant scores were larger for purchase decisions than quality assessment. This

resulted in a significant chi-square value of 4.923.

The theory behind determinant attributes is that for an attribute to be influential in the purchase decision, it needs not only to be important to the buyer but differences need to exist among the products and services available in the marketplace. If no differences exist (all products/services are considered to have an equal amount of the attribute or no amount of the attribute), it is impossible for the buyer to discriminate between products on the basis of attribute, regardless of how important it is considered to be. Ultimately, the decision will be determined on the basis of some other attribute(s). When using the determinant attribute approach to evaluate quality, high deter-

TABLE 7. Attribute rankings by importance, difference, and determinant mean scores for quality and purchase.

Abbreviated attribute description	Quality assessment			Purchase decisions		
	Importance (1)	Difference (2)	Determinant (3)	Importance (4)	Difference (5)	Determinant (6)
Free of defects	1	5	4	1	7	4
Deliver on schedule	2	2	1	6	3	1
Structural integrity	3	4	2	2	3	2
Reliability	4	7	6	3	12	9
Service life	5	11	7	5	9	6
Resistance to wear	6	7	8	4	6	5
Meet specifications	7	9	9	7	11	8
Infrequent failure	8	17	14	15	13	13
Value	9	3	5	9	1	3
Dependable/competent	10	13	11	7	9	10
Speed of repair	11	9	10	10	7	11
Worker productivity	12	24	17	11	26	18
Price	13	1	3	12	2	7
5-year failure absence	13	12	12	12	13	12
Easy to maintain	15	18	16	14	17	16
Reputation	16	5	13	18	5	14
Previous experience	17	14	15	16	15	15
Aesthetics	18	15	18	19	16	17
Match existing decor	18	21	20	17	19	19
Match existing furniture	18	20	19	20	20	20
Variety of styles/colors	21	23	21	21	24	23
Acoustical properties	22	25	24	23	22	21
Multifunctionality	23	22	23	21	21	22
Engineering/design staff	24	16	21	24	17	24
Enhance user status	25	26	25	25	25	25
Brand name	26	18	26	26	23	26

Spearman's rank correlation for selected scores: column (1) and column (2), $r = 0.730$; column (1) and column (3), $r = 0.918$; column (1) and column (4), $r = 0.965$; column (1) and column (6), $r = 0.934$; column (2) and column (5), $r = 0.955$; column (3) and column (4), $r = 0.907$; column (3) and column (6), $r = 0.976$; column (4) and column (5), $r = 0.716$; column (4) and column (6), $r = 0.920$.

minant attribute scores for quality imply that the attribute is both important in the assessment of quality and for use in making distinctions among products or services on the basis of quality.

According to survey respondents, the following attributes had the highest determinant scores in office furniture selection and purchase decisions: delivery on schedule, structural integrity, value, the ability to provide products free of defects, and resistance to wear. Among respondents rating attributes on the basis of quality determinance, the following ranked as most important: delivery on schedule, structural integrity, price, the ability to provide products free of defects, and value. Least important, whether rated on the basis of

assessing quality or influence on selection and purchase, were in order: brand name, enhancement of user status, and the availability of an engineering/design staff.

Comparison of relative attribute rankings

Table 7 contains attribute rankings for importance, difference, and determinant scores for quality and purchase. Spearman's rank correlation was used to evaluate the relationship between several of the ranking lists. The highest correlation was between determinant scores for quality and purchase ($r = 0.976$). Closely behind was the correlation coefficient between importance scores for quality and purchase ($r = 0.965$). The poorest correlations of all were

those between importance and difference within their respective categories.

SUMMARY AND CONCLUSIONS

This study was undertaken to better document the purchase attribute/quality attribute relationship. A combination of 26 product and dealer/manufacturer attributes for office furniture were rated by two independent subsamples of purchasing executives. One sample rated the 26 attributes on the basis of their influence in purchase decisions; the other sample rated attributes on the basis of their use in assessment of quality.

The attributes rated important to purchase decisions were generally the same ones important in assessing quality. Overall, however, importance ratings for purchase influence were consistently higher than ratings for quality. This may suggest a higher degree of sensitivity in the evaluation of attributes in purchase decisions than in quality assessments. The results also suggest that buyers may perceive quality differences in attributes between suppliers more easily than when considering differences between suppliers in the purchase decision. Determinant attribute scores were generally higher when considering purchase decisions than when evaluating quality.

In spite of some differences in magnitude, attribute ratings when used to evaluate purchase decisions and when used to assess quality were very highly correlated—indicating that, in fact, determinant attributes for purchase decisions are largely the same as attributes used to assess quality, as has often been inferred, but not directly tested, by prior studies.

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