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# Impact of Country-of-Origin Dimensions on Product Quality and Design Quality Perceptions

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*This article examines the multidimensional constructs of the country concept and how they impact consumer evaluations of product and design qualities. Specifically, country-of-assembly, country-of-design, and parts-source country are incorporated into the research design. The results reveal that whereas country-of-assembly and country-of-parts only affect the product quality perception and country-of-design only affects the design quality perception, parts-source country moderates the design quality perception effect when the product is indicated as assembled in Mexico. This result has significant implications for manufacturers and marketers of hybrid products, particularly when outsourcing of different aspects of the production process were to be considered.* J BUSN RES 1998. 42: 1–6. © *1998 Elsevier Science Inc.*

As firms continue to pursue global market expansion strategies, outsourcing of various aspects in the production process has shown a marked increase. In addition to taking advantage of lower labor wage rates prevailing in many developing countries to manufacture component parts, they have also increasingly outsourced various design and engineering tasks by either enlisting the services of professional talents in collaborating foreign partner firms or establishing design centers overseas.

These activities have clearly contributed to greater complexities in multinational production operations as well as tensions in the domestic workplace. They have spawned numerous products of a hybrid variety where no one firm in a single country can claim to be the sole manufacturer of the products. In this environment, the traditional notion in the country-of-origin (COO) literature, which mostly assumes that a product can be exclusively associated with one country, is no longer easy to justify.

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It has been recognized that consumers may sometimes use other informational cues such as a product's brand as a surrogate for the country information regardless of where the product is actually made. For instance, the consumer may perceive the Sony Walkman as Japanese even if the product may have been assembled in Malaysia. This has received some support in the literature (Chao and Rajendran, 1993; Maronick, 1995). It should be noted, however, that a heightened consumer global awareness and sensitivity to the increasing prevalence of hybrid products in the marketplace may help to diminish this perception.

This article first reviews the COO literature, outlining limitations as well as some of the contributions to this stream of research. A new approach to the study of COO effects is delineated, which is followed by a description of methodology used in this study. Lastly, the empirical results and managerial implications are presented.

## Literature Review

In recent years, researchers of COO effects have recognized the limitations of using single-cue models in earlier studies and introduced more sophisticated multiple-cue models to this stream of research (see Papadopoulos and Heslop, 1993; Samiee, 1994). When used by consumers as a cue for stereotyping, it has generally been acknowledged that the COO information can potentially lead to some distortions in consumer product evaluations, especially if only the COO information is presented in a single-cue context.

Multiple-cue models incorporating various intrinsic and extrinsic cues have shown the efficacy of informational cues other than the COO cue in moderating the COO effects. Erickson, Johansson, and Chao (1984) showed that whereas COO had significant effects on attribute beliefs, its effects on attitude were indirect through beliefs. Han (1989) further demonstrated that the COO informational cue serves as a halo, affecting brand attitude indirectly through belief or it

may serve as a summary construct to impact brand attitude directly. Product familiarity appears to mediate the cognitive processing of the COO and product attribute information in perception and preference formation.

Product warranty has been shown to moderate the COO effects by compensating for a poorly perceived country stereotyping in consumer product evaluations (Schooler, Wildt, and Jones, 1987; Thorelli, Lim, and Ye, 1989). Whereas brand reputations have also been shown to achieve a similar effect (Cordell, 1992; Leclerc, Schmitt, and Dubé, 1994), other studies have shown the dominance of COO effects over brand effects (Han and Terpstra, 1988; Li, 1992; Nes and Bilkey, 1993; Tse and Gorn, 1993). For instance, a Sony stereo assembled in Malaysia may not be viewed quite as favorably by consumers as a Sony stereo made in Japan. It has been further demonstrated that store reputations can be used to effectively overcome negative COO images (Chao, 1989a,b; Davis, Kern, and Sternquist, 1990). A television set from a newly industrialized country may be viewed more positively if it is shown as distributed through a more prestigious retailer than a less prestigious retailer. However, if the product is shown to be made in the United States, the retailer's reputation is no longer as important as an indicator of product quality or attribute claim credibility.

Ettenson, Wagner, and Gaeth (1988) found that the fiber content and price dominated the COO effects in consumer preferences of clothing products. Product types have also been demonstrated to influence the efficacy of COO effects on consumer product evaluations (Eroglu and Machleit, 1989; Wall, Liefield, and Heslop, 1991). Chao and Gupta (1995) further demonstrated that the COO effects are not only product specific, but within the automobile product category, also model type specific.

Although it has been generally acknowledged that the hybrid product phenomenon needs some research attention (Leclerc, Schmitt, and Dubé, 1994; Samiee 1994), very few research studies designed to address this issue have been reported in the literature. Chao (1993), in an experimental study, manipulated the country-of-design, country-of-assembly and price of the television set, and reported that the country-of-design had a significant impact on product-quality perception when price was taken into consideration. The price-quality relationship also appeared to be country specific with Japan as a design country enjoying a distinct advantage over the United States or Taiwan. Ahmed, d'Astous, and d'Alméida (1994) also reported significant effects of country-of-design and country-of-assembly on perceived quality and purchase value of a typical African garment named "pagne." Data from this research were collected in the Ivory Coast, Africa.

Tse and Lee (1993) tested the effects of components (CC) and assembly (CA) country-of-origins in the presence of a global brand on consumer product evaluations of a stereo system both before and after product experience. It was found that the brand effect dominated the CC and CA effects both before and after product experience even though CC effects remained significant for some of the product attribute evaluations before product experience and CA effects also remained significant for some of the product attribute evaluations after product experience.

## Study Objectives

As multinational companies continue to pursue outsourcing as an important component of their global strategy, one important issue to be addressed is the extent to which consumer product evaluations can be influenced by the "parts content" label. The American Automobile Labeling Act of 1992 passed by the U.S. Congress requires that all cars, trucks, and minivans sold by U.S. dealers must display a "parts content" label showing the percentage of parts in excess of 15% that are supplied by foreign sources. This Act implicitly assumes that consumers find such information useful in product evaluations. With the exception of Tse and Lee's study (1993), empirical results to confirm or disconfirm this assumption are lacking in the literature.

The purpose of this research is to extend previous hybrid product research by incorporating the parts content into the research design. Of particular interest in this study is the extent to which various dimensions of the country construct may interact to produce differential impacts on design quality and product quality perceptions. Congruity theory elucidated by Osgood and Tannenbaum (1955) would predict such interaction, particularly when incongruency exists. Jacoby and Mazursky (1984) reported that incongruency between a prestigious brand and a less prestigious store resulted in an improvement in the store image at the expense of the brand image.

Recently, Shimp, Samiee, and Madden (1993) framed the country/brand image congruency in terms of the country equity and brand equity concepts. Results reported by Seaton and Vogel (1985), Johansson and Nebenzahl (1986), and Jo (1996) appear to be consistent with this framework. Leclerc, Schmitt, and Dubé (1994), on the other hand, did not find the country/brand image congruency to influence consumer evaluations of several products from different countries. This result should be viewed with some caution, because only developed countries were included in the study instead of developed and developing countries reported in most previous research. Both studies (Shimp et al., 1993; Leclerc et al., 1994), however, relied on the single country/product concept in which a product was exclusively associated with one country.

Following the country image congruency concept, congruency among the three elements of the COO information should be expected to produce the least equivocal consumer product evaluation outcomes. For example, a product designed and assembled in a country using parts supplied from the same country with positive images on all three dimensions is likely to be perceived to be congruent and is likely to be evaluated as a higher quality product. Conversely, a product designed

and assembled in a country using parts supplied from the same country with negative images on all three dimensions would also be perceived to be congruent but is likely to be evaluated as a lower quality product. The predictions based on a total congruency among all the three elements of the COO concept are compatible with results reported in the traditional COO literature, which normally assumes implicitly that the "made in" label on a product implies the entire product to be made in the country, including the product design, assembly, and the parts sourced. The following hypotheses are thus generated.

*H1:* A product designed and assembled in a country using parts from the same country with positive images will be perceived by the consumer as a higher quality product.

*H2:* A product designed and assembled in a country using parts from the same country with negative images will be perceived by the consumer as a lower quality product.

Various studies to address the issue of the number of country image dimensions reflected through consumer product quality evaluations have been reported in the literature (Crawford and Garland, 1988; Howard, 1989; Roth and Romeo, 1992; Martin and Eroglu, 1993). The multidimensionality of the country construct and its impact on consumer product evaluations, however, have largely been ignored. As the design quality and product quality pertain to two different aspects of the quality dimension, the hybrid product phenomenon is ideally suited to the testing of the validity of multiple quality dimensions in consumer product evaluations. Nations are likely to differ with respect to their design and assembly capabilities. For instance, Germany is well known for her product engineering and therefore products incorporating German engineering are likely to be perceived as high quality products. However, Germany may not be as well known for product design. Hence, German designs may not be rated quite as high. Conversely, Denmark is better known for her design quality, and therefore Danish products may be rated higher on design quality than product quality.

Because the design quality relates to a different dimension than the product quality dimension, incongruency between country images pertaining to assembly and component parts should only be expected to moderate consumer evaluations of the product quality and not the design quality. A poorer product quality perception due to association of the product with a negative assembly COO location stereotype may be enhanced by a more positive parts COO location sterotype. Similarly, a poorer product quality perception due to association of the product with a negative parts COO location stereotype may be compensated by a more positive assembly COO location stereotype. The following hypotheses can be tested.

*H3:* The magnitude of the COO assembly effect on the product quality perception will be moderated by the COO parts location effect.

*H4:* The magnitude of the COO design effect on the product quality perception will not be moderated by the COO assembly effect or the COO parts location effect.

*H5:* The magnitude of the COO design effect on design quality perception will not be moderated by the COO assembly effect or the COO parts location effect.

## Methodology

Each respondent was presented a black and white ad copy showing a picture of the product: a 27-inch stereo television set and a list of product features. The assembly, design, and parts locations were manipulated while controlling the brand name and price information. The Magnavox brand name and a price of $379.00 were chosen. The ad was used in a $2 \times 2 \times 2$ between-subjects design. Two levels each were specified for the assembly, design, and parts locations: the United States and Mexico. Mexico was chosen because many U.S. companies have taken advantage of the North American Free Trade Agreements (NAFTA) by setting up manufacturing facilities in Mexico.

Data were collected from student subjects in a medium-sized midwestern university in the United States. They were mostly junior and senior students in their early twenties who would probably be quite familiar with the product category under study. They represent a segment of the young adult population for which a television set is a product of interest. Furthermore, they are often purchasers of television sets. The last question in the questionnaire asked the respondents about the purpose of the study. Those who guessed the true purpose of the study were eliminated from the data set. To ensure equal sample sizes for all treatments, some questionnaires were randomly removed, yielding a total sample of 360 with 45 subjects in each treatment cell.

Various quality dimensions have been identified as relevant for consumers in product evaluations. These dimensions have also been noted to vary by products (Roth and Romeo, 1992). For instance, design and prestige may be important for consumers when evaluating shoes from Italy, but not so when evaluating beer. They summarized from previous research four distinct dimensions used by consumers in evaluating products. These consist of innovativeness, design, prestige, and workmanship. Innovativeness has been measured by technology or engineering advances. Design has been measured by appearance, style, colors, or variety. Prestige has been represented by exclusivitiy, status, or brand name reputation. Workmanship has been represented by reliability, durability, craftsmanship, or manufacturing quality. The first three dimensions appear to pertain to the various aspects of design quality, and the last dimension appears to pertain to the various aspects of product quality. It has further been confirmed in Han and Terpstra's study (1988) that consumer evaluations of automobiles and television sets on innovation,

prestige, and workmanship varied according to the product's country designations.

Due to the nature of this study which incorporated "designed in" country location and "assembled in" country location as two independent variables, the design-quality perception dimension and the product-quality perception dimension should be, similar to the Han and Terpstra's study, relevant evaluation criteria used by consumers as the product used in this study is the same as one of the two products used in their study. The scales were reconstructed from the literature described previously and have been used in Chao's study (1993).

Product quality perception and design quality perception served as the dependent variables. Product quality perception was measured by four 7-point scales: poor workmanship (1) to excellent workmanship (7), not durable (1) to very durable (7), not reliable (1) to very reliable (7), and poor quality (1) to excellent quality (7). Design quality perception was measured by three 7-point scales: imitative (1) to innovative (7), common (1) to exclusive (7), and conventional (1) to stylish (7). The four items used for quality perception scores were highly correlated ($r$ values ranging between 0.77 to 0.88, $p < .01$). The mean quality perception scores were used in the data analysis. Similarly, the three items used for design quality perception scores were also highly correlated ($r$ values ranging between 0.56 and 0.78, $p < .01$). The mean design quality perception scores were used in the data analysis.

## Pretest

A separate group of 40 student subjects served as the control group. They responded to an ad without the experimental COO manipulations. The ad for this group simply showed a picture of the product and the product attribute information contained in all other experimental ads except without any of the country designations. For this group, the mean product quality rating score was 4.85 and the mean design quality rating was 3.90.

## Results and Discussions

The main effects of country-of-assembly (A) and the country-of-parts (P) on product quality perception are significant (Table 1). The effects are in the expected direction. Product quality was rated higher when the product was shown to be assembled in the United States rather than in Mexico ($A_{U.S.} = 4.95$; $A_{Mexico} = 4.52$; $p < .001$). Similarly, product quality was rated higher when the parts were shown to be from the United States rather than from Mexico ($P_{U.S.} = 4.96$; $P_{Mexico} = 4.52$; $p < .01$), confirming H1 and H2. None of the interaction effects was detected. Hence, H4 is confirmed by the fact that the country-of-design main effect is not significant, as well as the fact that none of the interaction effect is significant. This result appears to be consistent with that reported by Sauer, Young, and Unnava (1991) who, using attitude and purchase intention for a television set as the dependent variables, also failed to detect any interaction effect between country-of-assembly and the country-of-design. Furthermore, H3 is rejected by the fact that the results show no significant interaction effect. A poorly perceived product quality associated with a poorly perceived assembly COO location stereotype can not be compensated by a positive COO design location stereotype or a positive parts COO location stereotype. Whereas Tse and Lee (1993) detected a significant interaction effect between the components (CC) and assembly (CA) country-of-origins on two product attribute evaluations before product experience, they failed to detect any interaction effect between CC and CA on any attribute evaluation after product experience.

**Table 1.** ANOVA Results

| | Dependent Variables | |
|---|---|---|
| | Product Quality Perception F | Design Quality Perception F |
| Main effects: | | |
| Country-of-assembly (A) | 18.37[a] | 0.21 |
| Country-of-design (D) | 2.36 | 22.16[a] |
| Country-of-parts (P) | 18.34[a] | 0.02 |
| Interaction effects: | | |
| A × D | 0.21 | 0.19 |
| A × P | 1.81 | 0.13 |
| D × P | 0.22 | 2.41 |
| A × D × P | 2.06 | 4.46[a] |

[a] $p < .05$

The country-of-design (D) main effect on the design quality perception is significant, whereas the country-of-assembly (A) and the country-of-parts (P) main effects are not (Table 1). The significant main effect is again in the expected direction ($D_{U.S.} = 4.19$; $D_{Mexico} = 3.51$; $p < .05$). The fact that the country-of-assembly (A) and the country-of-parts (P) main effects are not significant is again not surprising, because one should expect these two factors to affect only product quality perception and not design quality perception. The country-of-design (D) main effect, however, must be qualified by a significant A × D × P three-way interaction (Table 1). The nature of this three way interaction is depicted in Figure 1. The U.S. design was consistently rated higher on design quality in all conditions ($A_{U.S.}/P_{Mexico}$, $A_{U.S.}/P_{U.S.}$, and $A_{Mexico}/P_{Mexico}$) except in the case of $A_{Mexico}/P_{U.S.}$ where the respondents rated designed in the U.S. and Mexico equally on design quality. The results show that whereas a strong country-of-design stereotype coupled with parts from the United States can not be used to overcome a weak country-of-assembly stereotype, U.S. parts can be used to mitigate a weaker country-of-design stereotype when the product was shown to be assembled in Mexico, leading to the rejection of H5.

## Conclusions

There is an increasing prevalence of hybrid products in the U.S. marketplace. Firms engaging in marketing these products

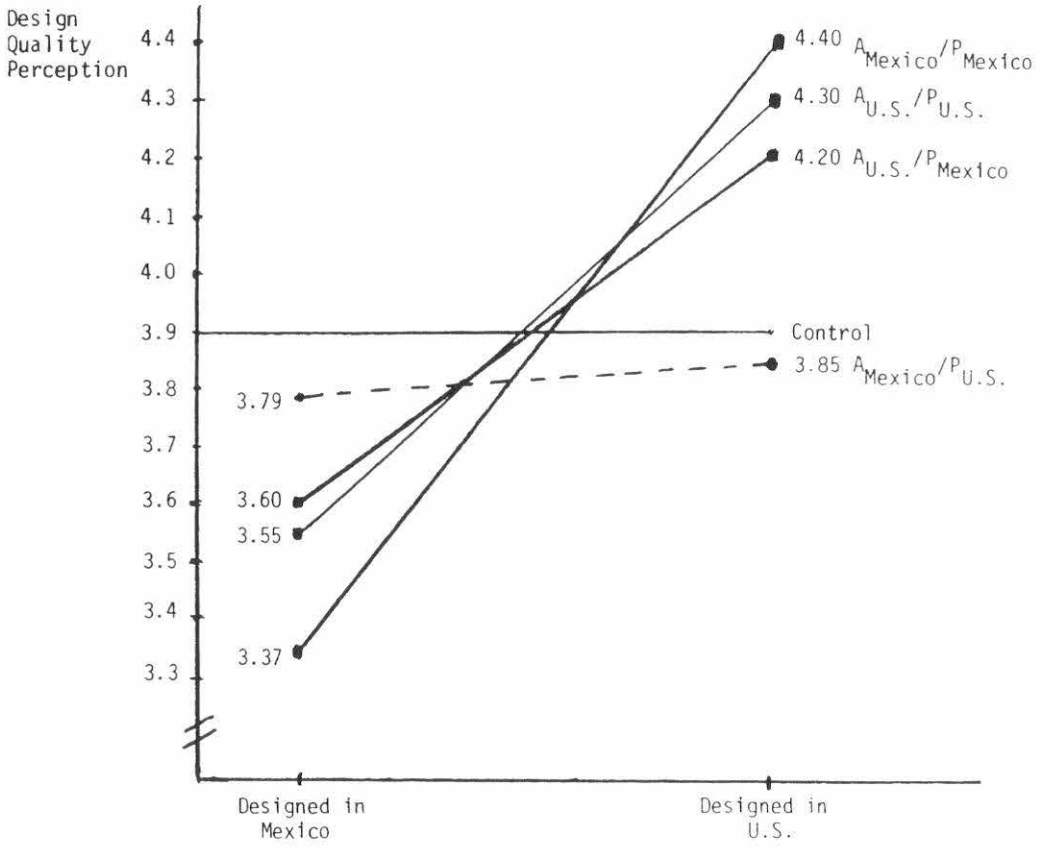


**Figure 1.** Perceived design quality for the country-of-assembly by country-of-design by country-of-parts interaction.

should pay more attention to how consumers may react to these products. Selection of a production location or parts source location overseas that does not mitigate the high product quality image in the domestic market is an important decision. Similarly, a tarnished design quality perception can also have a significantly adverse effect on consumer choice of a product.

Firms planning a global production strategy or selecting a strategic partner overseas can seek to identify the optimal combination of the three elements of the COO construct to maximize product quality and design quality perceptions. They can also choose to highlight those aspects of the country construct in ad copies or on product packages that are valued the most by the consumer. The results of this study show that U.S. parts can be highlighted to enhance the design quality perception if the product were to be designed and assembled in Mexico.

There are several limitations in this research. The sample used in this study represents a segment of young adult population in the United States; therefore, generalization of the results to other age groups in the population can not be implied. Data were collected in the midwest, and therefore the results may not be generalizable to the rest of the country. More products can be included to test the robustness of the results. Finally, different part percentages can also be examined. Presumably, the consumer may exhibit different levels of tolerance for the amounts of parts used in assembly that are sourced from different parts of the world, which in turn, may affect his/her product quality and design quality perceptions.

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