THE IMPACT OF OFFSHORE MANUFACTURING ON QUALITY PERCEPTIONS

Mark W. Speece
Yukiko Kawahara
Chip E. Miller

INTRODUCTION

As competition in world markets intensifies, moving production offshore has been one key strategy of many firms in industrial countries, including those in Japan and the USA. Some offshore manufacturing is undertaken to ensure market access, as is often the case when firms from one industrial country set up plants in another industrial country. For example, much Japanese manufacturing in the US, and some US manufacturing in Japan, is mainly for market access.

However, often companies manufacturer offshore to lower costs, allowing products to be more price competitive in international markets. This is often the case when industrial country firms set up factories in (Newly Industrialised Countries) NICs or developing countries. Even products manufactured offshore in an industrial country may ultimately be sold internationally. For example, Japanese auto factories in the USA export some cars to Japan.

Offshore manufacturing may bring about changes in product quality. Quality may decline when manufacturing with a less skilled work force, or may increase with access to better skills or manufacturing technology. But regardless of whether product quality changes by objective measures, perceptions may change. USA products generally enjoy a high quality image throughout the world relative to those from most other countries. But this quality image may well change wher the product is manufactured offshore.

Similarly, Japanese factories maintain some of the highest quality control standards in the world, so Japanese manufacturing anywhere outside of Japan can potentially face quality problems. Japanese managers have certainly been more successful than those from many other industrial countries at maintaining quality in offshore plants. But consumers throughout the world have gained an image of the high quality of products carrying the "Made in Japan" label.

Production managers cannot do much about changes in consumer perception when products are produced offshore. This is not a production problem, it is a marketing issue. These perceptions can be influenced by knowledge of where the brand comes from or where the product was manufactured, something called

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Dr. Mark W. Speece, School of Management, Asian Institute of Technology, Bangkok, Thailand.

Dr. Yukiko Kawahara, Department of Japanese Studies, Chinese University of Hong Kong, Shatin, NT, Hong Kong.

Dr. Chip E. Miller, Department of Marketing, Pacific Lutheran University, Tacoma, Washington.

the country-of-origin effect. Many products which carry USA or Japanese brands are actually made in NICs. Others are made in Japan or North America, respectively. It is becoming critical to understand how country-of-origin influences consumer perceptions of specific products in specific markets.

This study specifically investigates use of "made-in" country-of-origin information as a quality cue for a USA and a Japanese brand. We look at how consumers rate quality of a (hypothetical) calculator when informed that it is a Japanese brand, but was manufactured in either Japan, Korea, or the US Another version of the questionnaire asked the same questions, but for a USA brand, manufactured either in the USA, Japan, or Korea. The survey was conducted in the US, Korea, and the Philippines. These represent key markets in the Industrial West, the NICs, and the developing countries of East Asia.

THE COUNTRY-OF-ORIGIN PHENOMENON

The country-of-origin effect has received much attention, as evidenced by extensive bibliographies in review articles (Bilkey and Ness 1982; Johannson 1989) and other recent work (Akaah and Yaprak 1993; Cordell 1991, 1992, 1993; Ettenson and Gaeth 1991; Hong and Wyer 1990; Hong and Yi 1992; Roth and Romeo 1992; Wall, Liefeld, and Heslop 1991). But much country-of-origin work has compared perceptions for relatively advanced products made in industrial countries. Favourite products include computers and VCRs, (Hong and Wyer 1989), autos, (Akaah and Yaprak 1993; Erickson, Johansson, and Chao 1984; Ettenson and Gaeth 1991; Johansson and Erickson 1985), TVs and autos (Han 1989; Han and Terpstra 1988).

Some recent work has begun to include products from NICs and LDCs in the analysis. For example, Han and Terpstra (1988) and Han (1989) include South Korean TVs and autos, while Hong and Wyer (1989) include South Korean and Mexican PCs and VCRs. But South Korea, and certainly Mexico, are not really well enough established in these kinds of market to realistically see how competitive they will be in the long term. Work focused on big ticket, relatively complex items does not offer much insight to companies marketing more common, less costly products, where NIC products are more likely to be well established in the market.

Some work has focused on lower tech products, often an apparel item. Wall, Heslop, and Hofstra (1988) and Wall, Liefeld, and Heslop (1991) showed that consumers rate quality of clothing from NIC countries below that of North American and European clothing. Khachaturian and Morganosky (1990) found that stores stocking US and Italian apparel products received more favourable ratings than stores carrying products from China, Korea, and Costa Rica. Some researchers use a whole set of different products, from a wide variety of countries. But they mainly look at overall patterns of response, and do not discuss individual products or countries in any detail (e.g. Eroglu and Machleit 1989; Sadafumi 1990; Cordell 1991, 1992, 1993; Roth and Romeo 1992).

Still, even these studies may not indicate much about other industries where NIC production is common. Lower priced consumer electronics products have been one of the strongest industries in the NICs, but studies have not addressed these kinds of products much. And understanding country-of-origin perceptions probably requires a painstaking product by product approach. The perceptions seem to depend heavily on product class (Kaynak and Cavusgil 1983; Eroglu and Machleit 1989; Hooley, Shipley, and Krieger 1988; Wall, Liefeld, and Heslop 1991).

More importantly, until recently there have been only a few Korean (or other NIC) brands on the market. Most Korean products are actually industrial country brands manufactured offshore. But country-of-origin research rarely separates country-of-brand from country-of-manufacture. For example, it usually assumes that the Korean product in the questionnaire is both made in Korea and a Korean brand. The research rarely addresses the issue of perceptions of a USA or Japanese brand which was made in a NIC, despite the fact that consumers increasingly view country-of-brand separately from country-of-manufacture in the age of "hybrid" products (Ettenson and Gaeth 1991).

Another important issue in the increasingly global marketplace is how consumers in different countries view country-of-origin information. Most surveys have been done in North America or Europe. A few have included Japanese consumers (e.g., Erickson, Johansson, and Chao 1984, Johansson and Erickson 1985), but only rarely other non-western countries (e.g., Hong and Yi 1992; Akaah and Yaprak 1992). The few studies which do compare across different countries show that country-of-origin effects can vary (e.g., Hong and Yi 1992; Han and Terpstra 1988; Khachaturian and Morganosky 1990). To be useful to international marketing practitioners, country-of-origin research will need to be done in many countries with many products.

Such previous research suggests several simple hypotheses:

H_1 : Consumers in different countries differ in how important they think country-of-manufacture is.

H_2 : Consumers in different countries use country-of-manufacture differently, quite apart from how important it is to them.

H_3 : Because of H_1 and H_2, consumers in different countries will rate products from one country differently, and the impact on product images from offshore production will also differ.

Because of H_3, managers need data on how knowledge about country of manufacture affects perceptions from each country where the product is marketed. There is no easy, general overview which can give an accurate picture. From a managerial standpoint, then, country-of-origin research must still fill many gaps before it becomes useful for marketing specific products in specific countries. This work tries to help fill one small gap. It looks at a low-priced consumer electronics product (calculators), manufactured off-shore

by a USA and a Japanese company. We compare consumers in three key types of markets: North America, NIC, and developing country.

RESEARCH DESIGN

The questionnaire was designed to measure perceptions of USA and Japanese brands manufactured in Japan, the US and Korea. This gives information on perceptions toward home-country manufacture, manufacture in another industrial country, and production in a NIC. The questionnaire presented a generic calculator, in black and white line drawing. There was no brand identification, and no accompanying text or verbal description. This was done to insure that respondents all had similar ideas about what kind of calculator they were judging. The only information available to respondents was the picture itself and information presented later in the questionnaire.

Respondents were asked first to rank how important various attributes were to them in product selection. Then, on one set of questionnaires, the home country of the manufacturer was revealed to be Japan, and respondents were asked in three separate questions to evaluate how good or bad the calculator was on each of the attributes. The first set asked them to assume that the calculator was actually manufactured in Japan. In the next two sets, they evaluated quality of the attributes for the calculator manufactured offshore in each of the other two countries represented in the survey. A second version of the questionnaire was exactly the same, except that the home country of the manufacturer was the USA. Perceptions were measured first for USA manufactured, then for offshore produced calculators.

In addition to the quality ratings on each attribute for each place of manufacture, we asked for an overall quality rating for each place of manufacture. Then a base price was given for the product (US$ 20.00 or the equivalent in Korean or Philippines currency). Respondents were asked how much more or less they felt the calculator was worth, if it were manufactured off-shore in either of the other two countries. Finally, several questions were asked to determine whether respondents owned a calculator, whether they had made the purchase decision themselves, and to get demographic information.

Convenience intercept samples were taken at universities in the Philippines, Korea, and the north-west United States. Most students in the Philippines were undergraduates, but about 40 percent were graduate in the USA, and about half were in Korea. In the Philippines, about two-thirds of respondents were women, in Korea about one-third, and nearly half were women in the USA. The majority at all three universities owned calculators; in the Philippines and the USA, nearly everyone did. Of those who owned them, the vast majority made their own decision on which calculator to buy (Table 1). So college students do represent a real market segment for the product investigated here.

THE IMPORTANCE OF COUNTRY OF MANUFACTURE

A seven point scale was used to measure the importance of various attributes in the buying decision, where "1" represented "not important at all" and "7" represented "very important." Characteristics of a calculator were described by

Table 1: Characteristics of the Samples

Country			Philippines	Korea	USA
Own		(%)	96	68	98
Decide		(%)	80	46	79
Sex	M	(%)	33	66	54
	F		67	34	46
Age	18-22	(%)	84	49	60
	n		98	100	62

Note: All figures are percent, except n. Own = ownership of a calculator. Decide = made choice themselves.

Table 2: Importance of Place of Manufacture Controlling for Sex and Involvement in Purchase Decision

ANOVA Summary and Multiple Classification Analysis
Grand Mean = 5.302

Variable Category	Sig.	N	Adjusted for Independents Dev'n	Beta
OWN	0.604			
yes		218	-.02	
no		17	.20	
				.03
DECIDE	0.829	---	---	
yes		160	.02	
no		75	-.04	
				.01
SEX	0.015	---	---	
male		116	.27	
female		119	-.26	
				.15
RESPOND	0.000	---	---	
Philippines		95	.77	
Korea		79	.30	
USA		61	-1.58	
				.53
		---	---	
Multiple R Squared				.287
Multiple R				.536

Notes: None of the interactions was significant (at p=0.1). Respondents with missing data could not be processed.

nine attributes. A tenth attribute, "quality" was added as a kind of overall characteristic, and the place of manufacture was also included. Table 2 clearly shows that place of manufacture was rated differently on an absolute scale in the three countries. After controlling for ownership (OWN), involvement in the purchase decision (DECIDE) and sex, Philippines respondents think country of manufacture is much more important than do Korean or USA respondents. US respondents rate country of manufacture much less important than do respondents in the other two countries. (Adjusted deviations from the grand mean: Philippines .77, Korea .30, USA -1.58.)

Americans do not simply tend to rate everything lower on an absolute scale than do Asians. They score highly rated attributes similarly to Asians. But USA respondents rank country of manufacture lower relative to other attributes than do Philippine or Korean respondents. None of the respondents ranked place of manufacture very highly. In the Philippines, though, it ranked seventh, in Korea, ninth, and in the US, tenth. In the Philippines and Korea, place of manufacture falls within a group of other attributes which all have similar ratings. In the US, it is significantly below all other attributes but prestige, which ranks last in all countries (Table 3).

Table 3: Mean Importance Ratings of Attributes by Country of Respondent

Philippines resp.			Korean respondents			USA respondents		
ATTRIB	N	MEAN	ATTRIB	N	MEAN	ATTRIB	N	MEAN
qual	98	6.74	accu	100	6.85	accu	62	6.71
dura	98	6.62	qual	100	6.69	reli	61	6.68
accu	98	6.54	spee	100	6.51	qual	61	6.45
reli	98	6.49	ease	100	6.41	ease	61	6.31
ease	98	6.10	dura	99	6.22	dura	61	5.91
work	98	6.09	warr	100	6.08	spee	61	5.85
manuf	95	5.97	reli	100	6.06	size	61	5.32
size	98	5.91	size	99	5.94	work	61	5.23
spee	98	5.83	manuf	99	5.78	warr	60	5.11
warr	98	5.71	work	99	5.72	manuf	61	3.73
pres	98	4.74	pres	99	5.25	pres	61	3.39

Notes: Differences of about 0.25 to 0.30 are significant (p=0.1).

accu = accuracy warr = warranty pres = prestige
spee = speed dura = durability work = workmanship
ease = ease of use reli = reliability qual = quality
size = size of memory manu = place of manufacture

Among the attributes, accuracy and the overall quality were both ranked among the top three by respondents from all three countries. The general pattern was also similar for other attributes, with a few differences in detail. Respondents in Korea tended to think speed of the calculator was more important relative to other attributes. Reliability ranked among middle attributes in the Philippines and Korea, but tied for most important in the US Durability ranked second in the Philippines, while it was of middle importance in the other two countries.

Workmanship ranked much lower in importance in Korea than in the Philippines and the US.

Relative to other respondents, those in Korea rated accuracy, speed, ease of use, warranty, and prestige more important on an absolute scale. They rated reliability less important. Relative to others, Philippine respondents rated accuracy and ease of use lowest, and durability and workmanship highest. USA respondents had the lowest absolute importance ratings for size of memory, warranty, durability, prestige, and workmanship. USA respondents had the highest ratings on only one attribute, reliability. Ratings on the overall quality attribute did not differ among the three countries on an absolute scale (Table 4).

Table 4: Summary of ANOVAs on Individual Attributes and Deviations from Mean due to Country of Respondent

	---------- Significance of Factors ----------				Deviations from Mean on Attribute		
Attribute	decide	sex	interactions	country of respondent	Phil	Korea	USA
accuracy	.270	.016	decXsex	.013	-.19	.22	.01
speed	.353	.231	none	.000	-.25	.49	-.26
ease/use	.578	.364	sexXres	.050	-.19	.22	.02
size/mem	.972	.548	decXsex	.036	.19	.08	-.41
warranty	.676	.067	decXres	.000	-.01	.40	-.52
durable	.653	.616	none	.000	.33	-.13	-.34
reliable	.389	.094	none	.005	.04	-.29	.32
prestige	.301	.842	none	.000	.18	.67	-1.16
workman	.977	.020	none	.002	.26	.05	-.48
quality	.721	.029	3-way	.137	.07	.03	-.15

Note: Deviations result from Multiple Classification Analysis in ANOVAs.

Negative indicates less important, positive more important relative to respondents from other countries

This evidence clearly supports H_1. Respondents from the three countries do have different views on how important country of manufacture is to them. The difference shows up both in the absolute rating of how important country of manufacture is, and in the ranking of that attribute relative to other attributes. In fact, respondents from the three countries differ on how important several of the attributes are.

Johansson and Erickson (1985) used factor analysis to uncover how country-of-origin information fits into people's perceptions. Following them, Table 5 shows that country of manufacture signals somewhat different things to respondents in the three countries. In the Philippines, people associate country of manufacture with prestige. In Korea, country of manufacture loads with ease of use. But prestige is associated with other things. In the USA, country of manufacture seems to be associated with ease of use and speed. However, the very low communality shows that the USA respondents do not really tie it closely with any of the dimensions represented by these factors.

None of the attributes with which country of manufacture loads are among those with top importance in any of the three countries. This is consistent with the fact that country of manufacture itself was not a highly important attribute. Overall, this evidence supports H_2: people in different countries are using country of manufacture information differently.

Table 5: Factor Loadings of Product Attributes by Country of Respondent

Rotated Factor Matrix: Philippines

	FAC 1	FAC 2	FAC 3	Communality
quality	**.805**	-.142	-.035	.670
accuracy	**.713**	.142	.226	.581
workman	**.688**	.199	-.008	.513
ease/use	**.594**	.505	.195	.647
speed	**.480**	.402	.148	.415
reliable	**.769**	.079	-.063	.603
size/mem	.018	**.812**	-.071	.665
warranty	.018	**.728**	.274	.605
durable	.415	**.543**	.060	.471
manuf	-.022	-.049	**.860**	.743
prestige	.109	.262	**.617**	.461

3 factors account for 58.0 percent of variance

Rotated Factor Matrix: Korea

	FAC 1	FAC 2	FAC 3	Communality
accuracy	**.812**	.152	.059	.686
speed	**.678**	.056	.534	.749
quality	**.707**	.325	.014	.607
durable	.186	**.820**	.140	.727
prestige	-.048	**.763**	.383	.731
reliable	.270	**.740**	.152	.644
workman	.179	**.731**	.143	.587
warranty	.515	**.662**	-.076	.710
size/mem	.136	**.479**	.168	.276
ease/use	.240	.147	**.795**	.712
manuf	-.093	.318	**.649**	.531

3 factors account for 63.3 percent of variance

Rotated Factor Matrix: USA

	FAC 1	FAC 2	FAC 3	Communality
reliable	**.777**	.109	.002	.616
durable	**.714**	.308	-.076	.611
accuracy	**.701**	-.114	.180	.537
quality	**.691**	. 043	.260	.547
size/mem	.033	**.770**	.338	.709
prestige	-.210	**.748**	.172	.633
warranty	.306	**.747**	-.304	.740
workman	.458	**.726**	-.049	.740
ease/use	.238	.056	**.742**	.610
speed	.358	.126	**.651**	.568
manuf	-.099	.005	**.501**	.260

3 factors account for 59.8 percent of variance

Of course, marketing managers know that different segments within a market are concerned with different attributes, and may use the attributes differently. Support for H_1 and H_2, then, as well as differences on other attributes, simply shows that commonly accepted segmentation concepts are valid internationally.

Table 6: Summary of Deviations due to Country of Respondent on Attributes of Calculators Manufactured at Home

	Japanese Calculators Made in Japan				USA Calculators Made in USA			
	Respondents from				Respondents from			
Attribute	Phil	Korea	USA	Sig.	Phil	Korea	USA	Sig.
accuracy	.57	-.97	.24	.004	.08	-.25	.23	.549
speed	.62	-1.05	.24	.000	-.01	-.15	.23	.674
ease/use	.57	-1.09	.37	.000	.04	.13	-.25	.614
size/mem	.40	-.72	.20	.017	.11	-.02	-.08	.932
warranty	.21	-.79	.59	.008	-.20	.08	.21	.594
durable	.45	-.99	.45	.003	.09	-.43	.48	.135
reliable	.52	-.83	.14	.013	.00	-.17	.24	.661
prestige	.26	-.90	.64	.001	.02	-.36	.49	.133
workman	.34	-.78	.37	.019	-.12	-.09	.32	.495
quality	-.01	-.22	.27	.100	.28	-.39	.12	.047

Note: Deviations from Mean are results of Multiple Classification Analysis in ANOVAs, with control for DECIDE and SEX. For example, Philippines respondents rated accuracy of Japanese calculators made in Japan highest, Korean respondents rated them lowest.

For Japanese calculators, no differences among respondents on any attribute for calculators made in either Korea or USA was significant (at p=0.1).

For USA calculators, no differences among respondents were significant (at p=0.1) for calculators made in Korea. For made in Japan, many of the ANOVAs were significant, showing that USA respondents rated a USA calculator made in Japan higher than did respondents from Korea or Philippines.

IMPACT OF COUNTRY OF MANUFACTURE

Respondents in the three countries view the importance of country of manufacture and of most other attributes differently. They use the attribute information, including country of manufacture, differently. Thus, it should be expected that they may have differing views about actual products (H_3). Table 6 shows that respondents from the three countries do not agree about the quality of the Japanese brand calculator, made in Japan. For every attribute, the country of the respondent is significant (at .10) in ANOVAs which also control for involvement in the purchase decision and sex. (DECIDE and SEX were hardly ever significant).

Koreans are much less impressed with Japanese quality. They rated every individual attribute substantially lower than did respondents from the Philippines or USA. But these strongly lower ratings do not translate into strong feelings about overall quality. Koreans rated overall quality of Japanese made Japanese calculators lower than did other respondents, but the magnitude of the difference was much smaller than on individual attributes.

On most individual attributes, respondents from the Philippines rated the Japanese calculator produced in Japan highest relative to other respondents. But again, this did not translate into a strong rating on overall quality. USA respondents were generally in the middle on individual attributes, but they rated the calculators highest on overall quality. Apparently, the Japanese have been most successful in the USA at promoting the overall quality of their products. On the other hand, there were no significant differences among respondents on individual attributes of the USA calculator which is made in the USA. However, on overall quality, Koreans rated the USA calculator manufactured in the USA somewhat lower than did other respondents. Philippines respondents rated it slightly better than did USA respondents.

Once the calculators were manufactured offshore, differences among the three countries on the quality of Japanese calculators disappeared. There were no significant differences (at $p=0.1$) among respondents on any attribute about how a Japanese calculator made in USA should be rated, or about how one made in Korea should be rated. However, for the USA calculator, USA respondents gave the made in Japan version higher scores on many attributes than did Philippine or Korean respondents. They did not differ on scores for the made in Korea version.

For managers, one of the most critical questions will be how quality perceptions change when production is moved offshore. Table 7 summarises the changes in rating on attributes of off-shore produced calculators compared to the one made at home. For the Japanese calculator manufactured in Korea, respondents almost always rate it lower on every individual attribute and on overall quality. Koreans are the most sceptical that Japanese companies can maintain product quality when manufacturing in Korea.

Ratings by Korean respondents on individual attributes decline very strongly compared to ratings from other respondents. But their view of overall quality does not drop quite so strongly, so that it is comparable to the ratings on overall quality by others. On the other hand, ratings on the individual attributes drop only slightly (and rarely significantly) among Philippine and USA respondents. But ratings of overall quality drop more drastically.

Koreans are also sceptical that Japanese firms can maintain product quality when manufacturing in the USA. They rate every individual attribute strongly lower compared to the made in Japan calculator. But overall quality does not drop as strongly as the individual attributes might indicate. Philippine and USA respondents may think USA manufacture improves the individual attributes of the calculator. (However, most increases are not significant.) But this does not translate into perception of improvement when they think of overall quality. That drops for USA manufacture. None of the respondents, though, think overall quality drops as much for USA manufacture as for Korean.

Offshore manufacture is not nearly as large a problem for USA calculators, if judged only from individual attributes. Ratings drop on most attributes for Korean manufacture, but only slightly (and rarely significantly) on most of them.

However, the overall quality perception for Korean manufactured USA brands does drop substantially. Manufacture in Japan brings improved ratings for the USA calculator on most attributes, with stronger improvement in the Philippines and Korea. However, this does not translate into much improvement on overall quality.

Table 7: Average Differentials of Attributes for Off-Shore Manufacture

Japanese calculators

Attribute	Manufactured in Korea — Respondents			Manufactured in USA — Respondents		
	Phil	Korea	USA	Phil	Korea	USA
accuracy	-0.122	-1.820	-0.129	0.102	-1.020	0.096
speed	-0.265	-1.660	-0.193	0.122	-1.000	0.129
ease/use	-0.224	-1.700	0.064	0.040	-0.940	0.193
size/mem	-0.040	-1.600	-0.064	0.204	-0.714	0.419
warranty	-0.244	-1.400	-0.096	0.000	-1.020	0.645
durable	-0.326	-2.020	-0.193	0.040	-0.960	0.354
reliable	-0.224	-2.040	-0.387	-0.204	-1.300	-0.166
prestige	-0.244	-1.820	0.032	0.204	-1.080	0.516
workman	-0.428	-1.720	-0.387	-0.081	-1.100	-0.129
quality	-1.428	-1.220	-1.387	-0.571	-0.700	-0.516

USA calculators

Attribute	Manufactured in Korea — Respondents			Manufactured in Japan — Respondents		
	Phil	Korea	USA	Phil	Korea	USA
accuracy	-0.245	-0.082	-0.100	0.714	0.531	0.200
speed	0.143	0.163	0.067	0.857	0.776	0.300
ease/use	-0.122	0.224	-0.097	0.633	0.812	0.065
size/mem	0.204	0.041	-0.200	0.878	0.612	-0.133
warranty	-0.204	0.062	0.100	0.531	0.563	0.138
durable	-0.143	-0.729	-0.133	0.918	0.042	0.133
reliable	-0.143	-0.449	-0.500	0.510	0.490	-0.033
prestige	0.102	-0.375	-0.065	1.184	0.500	0.548
workman	-0.143	-0.408	-0.258	0.898	0.592	0.323
quality	-1.286	-0.710	-0.653	0.184	0.163	0.355

Notes: Differentials are change in rating of attribute relative to made domestically (on 7-point scale). Negative value indicates rating declined; positive indicates it improved. Differential about 0.35 - 0.40 are significant (at p=0.1).

All of this evidence supports H_3: there are different views among consumers in different countries about the quality of products from any particular country, and about how product quality changes with offshore manufacture. Offshore manufacture in Korea hurts perceptions about individual attributes and overall quality, but declines depend on country of the respondent. Overall quality suffers for the Japanese brand manufactured in USA, but only Koreans think individual attributes decline. Among Philippine and Korean respondents, the

USA brand made in Japan improves on many attributes, but overall quality does not gain much.

A NOTE ABOUT PRICE

The quality differentials noted above do not always translate consistently into price differentials. Respondents from all three countries believe that a Japanese calculator made in Korea should cost less than one made in Japan. The magnitude of the price decrease is similar, once local currency is translated into a percentage relative to the made in Japan product. Philippine and Korean respondents each think the Korean made calculator should cost about 19 percent less. Americans think it should be about 24 percent less (Table 8).

Table 8: Mean Price Differential for Off-Shore Manufacture

Japanese calculators

	Country of Respondent					
	Philippines		Korea		USA	
Country of Manufacture	peso	(%)	won	(%)	dollar	(%)
Korea	-77.4	(19.4)	-2279	(19.0)	-4.78	(23.9)
USA	189.1	(47.3)	2352	(19.6)	3.41	(17.1)
base price	400.0		12000		20.00	

USA calculators

	Country of Respondent					
	Philippines		Korea		USA	
Country of Manufacture	peso	(%)	won	(%)	dollar	(%)
Korea	-98.8	(24.7)	-1160	(9.7)	-3.22	(16.1)
Japan	26.3	(6.6)	443	(3.7)	-0.12	(0.1)
base price	400.0		12000		20.00	

Note: Respondents were asked how much more or less they would expect to pay relative to base price if the calculator were manufactured off-shore rather than in home country.

Respondents, though, expect that the USA made calculator should cost more than the one made. in Japan, which is not consistent with the lower overall quality they perceive. USA and Korean respondents think it should cost 17 to 19 percent more, respectively. Philippines think it should cost 47 percent more. It is possible that these perceptions on price differentials reflect knowledge of what products actually cost, as well as what they should cost due to the perceived quality differences. For USA calculators, respondents similarly think the Korean made version should cost less, but Koreans tended to indicate smaller discounts (10 percent). USA respondents thought it should cost 16 percent less, while in the Philippines the discount averaged 25 percent. Here, Philippines and Korean respondents were consistent in giving slight premiums (7 and 4 percent, respectively) for the slightly better quality they see for Japanese manufacture. However, USA respondents did not think a Japanese made calculator should cost anything different than a USA made one.

CONCLUSION

The study discussed here must be viewed with caution. The samples are small, and students are not likely to be representative of all segments in the market for calculators. Students, though, are real customers for calculators, so they do represent one actual, and important, market segment. Calculators themselves are certainly not representative of all products, and we know that many country-of-origin perceptions are product specific. Views toward calculators probably are similar to views toward other small consumer electronics products.

And views toward offshore manufactured Japanese or USA products may not be the same as views toward products made off-shore by companies from other countries. Certainly, given the quality reputation of Japanese products, it is very possible that perceptions toward products from other countries would not suffer so much when production is moved off-shore, as is the case here for USA products. These limitations simply point out the need for extensive country-of-origin research on a product by product and country by country basis so that the work can become more useful to marketing managers.

Nevertheless, this study does confirm, at least for Japanese and USA brands of calculators, that consumers in different countries do differ on the importance of country of manufacture. Indeed, they have differing views on how important many of the product attributes included in this study are. Generally, Americans think country of manufacture is much less important than do people in the Philippines or Korea. The three countries also differ on how they use country of manufacture information.

Different importance and different use of "made-in" information leads to real differences in how people actually view the product. Japanese products have acquired a high quality image in the USA, and Americans rated the overall quality of the made-in-Japan Japanese calculator higher than did other respondents. Koreans do not have nearly as high an image of Japanese products, while Philippines consumers ranked overall quality between. The Japanese image suffers among all three sets of consumers when production is moved off-shore to Korea or the USA. It suffers the most among Koreans. The decline in ratings on all individual attributes is very strong, although the decline in perceived overall quality is not quite so drastic.

Koreans are also more sceptical than others of USA overall quality, though their views on individual attributes are similar. As with Japanese brands, manufacture in Korea lowers overall quality perception of USA calculators substantially. Manufacture in Japan brings slight improvements in perceived overall quality. Among the Korean and Philippine respondents, improvements were stronger when individual attributes were considered.

Moving to a NIC to lower manufacturing costs seems to be much worse than moving production to maintain market access in an industrial country (the USA or Japan). On the made in Korea calculator, nearly every individual attribute, as well as overall quality image, declined among all respondents. Most individual

attributes improved slightly among Philippines and USA respondents for Japanese calculators made in USA. The overall quality rating still declined, though not by as much as for the Korean made one. Nearly all individual attributes, as well as overall perceptions, improved for the USA brand made in Japan. And while all consumers felt the Korean made calculator should cost less than the Japanese or USA made one, they felt that one manufactured offshore in an industrial country would cost more.

These findings have clear implications for marketing strategy by Japanese and USA firms engaged in offshore production of this kind of product. Especially when moving production to a NIC, steps must be taken to counter the worsened image. Of course, many people assume that a Japanese brand would be produced in Japan, or that a USA brand would be made in the USA. Sometimes simply ignoring the fact that it is not made in the home country can be the best strategy. Promotional themes should stress the Japaneseness, or the Americanness of the product, rather than drawing attention to where it was actually made. This may not be possible; for example, a plant or joint venture may receive considerable publicity. In that case, for Japanese products sold in the USA or Philippines, the promotional message should focus on individual attributes. These decline only slightly for production in Korea, and most actually increase slightly for the USA. But overall quality images decline substantially in either case. In Korea, though, the promotional message should focus attention on the overall product quality, not the individual attributes. Perceptions of overall quality do not decline as much as perceptions on specific attributes.

Similarly, promotional message for USA products made in Korea or Japan should also usually focus on individual attributes, even in Korea. Perceptions of individual attributes do not decline as much as overall quality perceptions among any of the respondents for Korean produced calculators. Perceptions of individual attributes in the Philippines and Korea for manufacture in Japan are actually substantially improved, even though overall quality improves only slightly. However, among Americans overall quality should be the focus of the message.

Thus, overall, the results of this study show that Japanese and USA products manufactured off-shore, in this case calculators, may face substantial problems in maintaining brand images. But not everything is equally unfavourable. Through developing a thorough understanding of how consumers perceive the products, it is possible to identify the areas of greatest weakness and relative advantages. Then, marketing strategies can be developed to downplay shortcomings and capitalise on strengths.

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