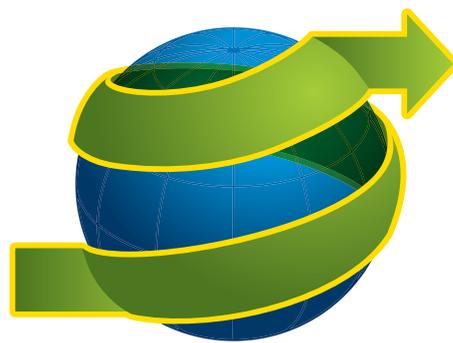


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WHAT IS THE MARKET FOR CHINESE VOLVOS? - QUALITY AND RELIABILITY PERCEPTIONS WITHIN THE CONTEXT OF TECHNOLOGY TRANSFER

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Abstract

Impressions about the quality and reliability of products can depend as much on perceptions concerning brand and country of origin (quality cues) as on the evidence of hard data regarding performance and failure (quality attributes). Although the distinction between quality cues and quality attributes is a traditional area of research in marketing, and more specifically in the study of customer behaviour and preferences, it has not previously been investigated within the context of international technology transfer. In this paper we first use research in the machine tool sector to illustrate this country-of origin effect formation process based on surveys among UK and Chinese companies with experience of technology transfer and use of end-products. We then explore the implications for Volvo as an established Western automotive brand that has been acquired by the Chinese company Geely Automobile Holdings, and which is transferring design and manufacturing technology to enable production of new models in China as well as Europe. This uses a survey in Taiwan to establish opinions about Swedish-made and Chinese-made Volvos across a range of purchasing factors. The results reveal some important differences of opinion among nearly all these various factors.

Introduction

Impressions about the quality and reliability of products can depend as much on perceptions concerning brand and country of origin as on the evidence of hard data regarding performance and failure. In the marketing literature, such perceptions are often designated as quality “cues”, which are defined as stimuli received through the senses that convey information about the quality of products or services prior to consumption (Amirani and Baker, 1995; Steenkamp, 1990). On the other hand, hard data about quality and reliability,

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which gives rise to quality “attributes”, is often only available to consumers after consumption and use.

An implicit assumption here is that international technology transfer is stimulated by gaps in quality attributes, i.e. countries with lower quality technology tend to import better quality technology. So, over time, the consequence of importing technology becomes the creation of a country-of-origin (COO) quality cue (Srinivasan, Jain and Sikand, 2004).

The COO effect is clearly evidenced from the information contained in Table 1, which shows the results of research carried out by Gallup on behalf of the American Society for Quality Control concerning perceptions of product quality from different countries of origin (ASQC/Gallup, 1991). The survey was conducted among about 1000 US, 1000 German and 1500 Japanese consumers. From Table 1a it can be seen that there is a clear consensus between United States, Japanese and German customers that Japan produces the best quality televisions and video recorders. However, from Table 1b the perception among the same 3 sets of consumers is that the best quality cars come from their own country.

**Table 1. Perceptions of different nationalities’ product quality
(Percentage of respondents choosing each country of origin)**

Table 1a. ‘Best quality’ TVs & VCRs (Source: ASQC/Gallup, 1991)

Country of origin	United States customers	Japanese customers	German customers
United States	28	2	2
Japan	66	91	59
Germany	1	1	37
Don’t know	5	6	2

Table 1b. ‘Best quality’ cars

Country of origin	United States customers	Japanese customers	German customers
United States	41	1	2
Japan	36	71	18
Germany	18	23	78
Don’t know	5	5	2

Against this background, in our paper we first use the machine tool sector to illustrate how this country-of-origin effect formation process is facilitated through the transfer of foreign technology and availability of foreign brands to China as a consequence of international cooperation. We then explore the implications for Volvo as an established Western brand that has been acquired completely by the Chinese company Geely Automobile Holdings. It could be argued that this acquisition is more expensive than a standard form of technology transfer of the type used for machine tools, so how can the price premium paid for a brand be justified over the value of the technology embedded in the acquisition transaction?

Country-of-origin effect in machine tool technology transfer

Previous research about international technology transfer in the machine tool sector has also found evidence about the importance of COO (Bennett and Zhao 2004). Here, case study investigations and surveys were carried out among three groups: i) UK companies that had transferred or were potential transferors of machine tool technology to China; ii) Chinese machine tool manufacturers that had imported or planned to import foreign technology; and iii) Manufacturing companies in China that used Chinese and foreign, as well as co-produced machines (Bennett, Vaidya and Zhao, 1999).

From the surveys it was found that UK and Chinese manufacturers and Chinese users of machine tools all recognised quality and reliability as being important for ensuring the commercial success of technology transfer and the capture of additional value downstream in the value chain. The results also showed that the CNC machine tools made in China using transferred foreign technology carried a price premium over Chinese machines based on local technology. But the price premium carried by imported machines was even higher, and this difference was appreciated by Chinese users even more than UK and Chinese machine tool companies (see top part of Table 2). What is more, this difference in perceived price difference was even greater for special purpose machines, which for this type of machine was appreciated more by the UK machine tool companies than either of the Chinese groups (see bottom part of Table 2). From these results it can be deduced that country of origin had a strong, but similar influence on the Chinese groups regardless of whether the technology was standardised or specialised. In other words, country of origin and brand were more important than engineering content. On the other hand, foreign machine tool companies recognised the importance of engineering content in special purpose machines, so considered its value (and hence price) to be commensurately higher.

Table 2. Country of origin effect on the price of machine tools sold in China

	<i>Price difference compared with equivalent Chinese machine tools expected by:</i>		
	<i>UK machine tool companies</i>	<i>Chinese machine tool companies</i>	<i>Chinese users</i>
General purpose CNC machines:			
Chinese machines based on foreign technology	27% higher	34% higher	33 % higher
Imported foreign machines	82% higher	84% higher	87 % higher
Special purpose CNC machines:			
Chinese machines based on foreign technology	79% higher	57% higher	46 % higher
Imported foreign machines	334% higher	130% higher	112 % higher

Closer examination through the case studies revealed a number of important differences concerning the perceptions and reality of quality and reliability between the groups as well as the perceived risks associated with technology transfer. These differences had a strong influence on a number of factors including the value assigned to the technology under the transfer arrangement, the form and method of transfer, and the long-term success of partnership agreements.

These findings clearly have potential significance for companies that are considering the strategic options for exporting products made in home country plants, setting up local production in overseas markets, and transferring technology to subsidiaries, joint ventures, partners and licensees. It is especially for important in the case of the car industry, which often forms the cornerstone of industrial development in emerging economies (Bennett and Vaidya, 2005). The markets of such economies, particularly in East Asia and Latin America, have proved very attractive to established automotive manufacturers, especially as the more mature markets have flattened and declined. Therefore they need to have strategies that will be adequately informed about the various risks of transfer as well as the opportunities for sales in new foreign markets (Cha, 1995).

Introduction to China's car industry

Until the late 1970s China was making fewer than 3,000 passenger cars a year - barely enough to ferry the political elite between banquets. However, by 2001, when China joined the WTO, its car output was 2.35 million and in 2011 it had increased to around 14.5 million. The six largest car manufacturers by volume are SAIC (Shanghai Automotive Industry Corporation), Dongfeng, FAW (First Automotive Works), Changan, BAIC (Beijing Automotive Industry Corporation) and GAC (Guangzhou Automobile Group Co). China is now the world's biggest car market, with sales of 18.5 million compared with 13.1 million in the USA.

China has also become a serious exporter of cars. In 1989 it exported just six vehicles, but now some of China's leading manufacturers - including SAIC, Geely, Chery, JAC (Jianghuai Automobile Co) and Great Wall - are beginning to establish their brands overseas, especially in fast-growing emerging economies such as in the South East Asian and Latin American countries. In 2011 they exported almost 900,000 cars.

Japan and South Korea established their car making industries by shutting foreigners out of their domestic markets, giving domestic brands a captive audience to practise on. China let in the foreign carmakers, but on condition that they worked in partnership with local companies – there are around 100 domestic car manufacturers. The idea was that the Chinese makers would learn the knack of producing world-beating cars and then be in a position of developing independently.

Typically the large Sino-foreign joint ventures that became established were named after their home city followed by the foreign partner name. Two of the oldest joint ventures that were formed in the 1980s were Shanghai Volkswagen and Beijing Jeep. Other more recent examples are Shanghai GM, FAW Volkswagen, Beijing Benz and Changan Ford. All these large joint ventures involve Chinese state-owned enterprises (SOEs). The plan of the Chinese

Government was that they should eventually become self-sufficient and consolidate leaving just a handful of very large companies that could compete on the world stage with leading car manufacturers such as Toyota, General Motors and Volkswagen Group. According to Dunne (2011), China's simple 3-step strategy was:

Step 1. Form joint ventures with leading global carmakers.

Step 2. Absorb the foreign partners' technologies related to car design, engineering and manufacturing.

Step 3. Build cars under China's own brand names.

Within the context of this strategy the path for foreign companies involved in the large joint ventures has been far from smooth and trouble free due to concerns about numerous issues such as ownership sharing, management, technology transfer and IPR, foreign exchange regulations etc. (Mann, 1989; Dunne 2011).

However, the car industry in China has not evolved in the way intended by the strategy outlined above. At the same time as the large joint ventures were being built-up, a number of smaller car companies emerged across China; some established by local government, some private, and others "township enterprises". Many were unofficial and did not have the necessary licence to produce cars. Nevertheless, although they could not sell throughout China, these companies were often tolerated and allowed to compete at a local level. So, many flourished while others failed. Some of these smaller companies have grown rapidly and become nationally and internationally significant so they now rival the large joint ventures (Nanyao, 2012). Examples include BYD (originally a manufacturer of batteries for cell phones that has ambitions to be a leader in electric cars); Chery, a state-enterprise that was not originally authorised to make cars but found a way round the regulations and is now one of the largest car manufacturers with both domestic and international sales; and Geely, a private company founded by a Chinese self-made entrepreneur who started by making home appliances.

Background to Geely

The company name Geely Automobile comes from the Chinese "Jílì Qìchē" (吉利汽车), which means "Lucky Car". Its origins can be traced back to 1986 when a private company was established in Zhejiang Province by Mr Li Shufu with finance from family members. The first products were refrigerators, followed by motorcycle parts, and in 1994 it acquired a state-owned enterprise making complete motor cycles. Then in 1998 the company started to make small commercial vehicles. This brought it the expertise for assembling motor vehicles and extended its ambition to become a car manufacturer. However, as explained in the previous section, Geely needed an official licence from the Chinese Government. The opportunity came to made its breakthrough into the industry when it acquired a licence to manufacture a small car based on an existing vehicle made by Tianjin Automotive Company (now part of the larger First Automotive Works - or FAW), which had developed its own car, the TJ "Xiali" from the Daihatsu Charade under a technology transfer agreement. Geely's version of this car, the Geely HQ (or "Haoqing") proved very popular as a low-cost family vehicle during the early 2000s as the Chinese economy started to grow rapidly.

After these small beginnings Geely grew rapidly and in 2005 became the first Chinese company to exhibit at the Frankfurt Automotive Show, displaying 5 models. In 2007 Geely formed a joint venture with the UK company, Manganese Bronze, for making the traditional London taxis and later acquired the whole company. Geely introduced other brands aimed at different market sectors, such as “Emgrand”, “Englon”, “Gleagle”. By 2010 Geely was making 415,000 vehicles per annum and accounted for 2% of the Chinese market.

Background to Volvo

Volvo was established in 1915, in Gothenburg, Sweden, by SKF (Svenska Kullagerfabriken – the Swedish Bearings Factory). The name Volvo derives from the Latin "I roll". It did not produce any cars until 1927 when it launched the first model, the Volvo ÖV 4, also known as "Jakob". Production started slowly, with only 280 cars being made that year (Volvo Cars History, 2013). Then in 1928 it started producing trucks. Eventually, Volvo became a large group making a wide range of products, including cars, trucks, buses, construction equipment, boat engines and aircraft engines.

In 1999 the company's car division (Volvo Car Corporation) was sold to Ford Motor Company. The remainder of the company, Volvo Group, remained an independent Swedish company and diversified further into financial services, logistics and IT. It also acquired a number of other companies, such as Mack Trucks in the USA, Renault trucks in France, Åkermans construction equipment in Sweden, the construction equipment division of Samsung in Korea, and the road construction equipment division of Ingersoll Rand in the USA. In 2008 Volvo Group purchased Lingong, a Chinese company making loaders and excavators.

During the early 2000s Ford Motor Company experienced severe financial difficulties and in 2006 recorded the biggest loss in its history. As part of its plan to restructure and consolidate around its core business of high volume, mid-range vehicles, it sold all the premium brands in its “Premier Automotive Group”. In 2007 Aston Martin was sold to a consortium funded by investors in Dubai, in 2008 Jaguar, Land Rover and Range Rover were sold to Tata Motors of India, and in 2010 Volvo was sold to Geely (Wang, 2011). In 2010 Volvo sold 335,000 vehicles and accounted for 1.6% of European car sales.

Before Geely acquired Volvo it was already an established brand in China, which in 2012 was its 3rd largest market after the USA and Sweden. In 2001 Ford had opened a joint-venture assembly plant with Chang'an Motors in the city of Chongqing where it made several models, including the Volvo S40 from 2006 and the Volvo S80L from 2009 (a long wheelbase version designed specifically for the Chinese market). In 2010 more than 30,000 Volvos were sold into the Chinese market. Despite being owned by Geely, Volvo is still officially a foreign company in China so cannot make cars there without having a Chinese joint venture partner and the necessary license. Therefore, in 2012 a 50-50 joint venture between Volvo and Geely (its owner) was established. At the same time Geely announced the planned production of a car in China, developed with Volvo, possibly to be launched in 2013 at a price lower than comparable cars made by Audi and BMW (SCMP, 2012).

What is the market for Volvos made in China after the acquisition by Geely?

Outside Sweden Volvo currently has factories in Belgium, Thailand and Malaysia as well as China. Under Geely, the plans for Volvo are to continue supplying “mature” markets from Sweden and Belgium, while using its other locations, including three new plants planned in China, to supply the Chinese and wider Asian markets. The question therefore arises concerning the perceptions of customers towards “Swedish Volvos” compared with “Geely Volvos”.

To address this question we used a second data set based on a survey in Taiwan to assess opinions about Swedish-made and Chinese-made Volvos across 15 purchasing factors in the areas of product, sales and service. Taiwan is part of what is sometimes called “wider China”, which also includes Hong Kong. It is different from “mainland China” by having a larger GDP per capita and a long historical exposure to high quality foreign products from the USA, Europe and Japan. It also has a long-established and well-regarded manufacturing industry that makes products including automotive components.

For some time local Taiwanese companies have cooperated with foreign manufacturers to assemble cars locally for the domestic market. These include Nissan (made by Yulon Motors), Mitsubishi (made by CMC Motor), and Ford (made by Ford Lio Ho). More recently, Yulon Motors has developed an indigenous car brand (“Luxgen”). In 2012 car sales in Taiwan were about 366,000 relative to its population of 23 million (one for every 63 people). By comparison China’s 2012 car sales were 18.5 million relative to its population of 1.34 billion (one for every 72 people) .

Volvo in Taiwan

In 2012 Volvo sold 3,720 cars in Taiwan, which ranked it 6th among the imported brands. The two largest selling imported cars are Toyota and Volkswagen, which are volume producers. Volvo’s closest competitors are Mercedes-Benz, BMW and Lexus, although its sales are some way short of those achieved by these companies (Table 3).

Volvo sells the S60, V60, XC60 and XC90 models in Taiwan. The best-selling of these are the S60 in the saloon (sedan) class and the XC60 in the sports utility vehicle (SUV) class.

During 2012 Volvo increased its marketing effort in Taiwan and engaged Jeremy Lin, a Taiwanese basketball star playing in the American NBA league, to endorse its products.

Table 3. Sales of imported cars in Taiwan, 2012

2012 Automobile sales in Taiwan (imports)					
Rank	Brand	Sales	Increase on 2011	Market share of total sales	Market share of import sales
1	Toyota	13,673	+4.8%	3.74%	16.10%
2	Volkswagen	12,171	+8.8%	3.33%	14.33%
3	Mercedes-Benz	11,946	+0.6%	3.26%	14.07%
4	BMW	11,490	+5.6%	3.14%	13.53%
5	Lexus	9,002	+26.0%	2.46%	10.60%
6	Volvo	3,720	+5.7%	1.02%	4.38%
	Others	22,907			
	Total	84,909			

Methodology

The survey was undertaken in Taiwan to establish opinions about Swedish-made and Chinese-made Volvos across 15 purchasing factors in the areas of product, sales and service. The factors were derived from “Cars Online”, the annual automotive study undertaken by the international consulting company, Capgemini (Cars Online, 2008). The factors were:

1. Reliability of the brand
2. Safety
3. Purchase price of the vehicle
4. Fuel economy
5. Styling
6. Equipment
7. Brand name
8. After sales service
9. Vehicle availability
10. Equipment options
11. Environmental options
12. Trade-in value
13. Additional warranty or service credit
14. Ability to research information on the Internet
15. Cash-back incentive

Respondents in Taiwan were males and females within a wide age range. They included undergraduates (aspirants) and graduates with work experience (potential buyers). The surveys were undertaken in July and August 2012.

Before responding to the questionnaire they were familiarised with the background of Geely and Volvo as companies. They were also presented with a summary of the characteristics that described them based on desk research, i.e.

Geely:

- Aggressive company
- Extensive financial resources
- Access to Chinese (and emerging) markets
- Access to Chinese authorities
- Speed of innovation
- Low cost production

Volvo:

- Historic reputation for quality and reliability – compulsory vehicle testing in Sweden since 1965 by “Bilprovningen”
- Prestige brand (although being overtaken by German luxury brands)
- Wide market coverage
- Fast growing sales in China (+55% from 2010 to 2011)
- Still officially considered a foreign company in China

Questionnaire Results and Analysis

The questionnaire was completed by 136 subjects. Demographic information about the respondents includes gender, age bracket, field of studies, and work experience. Each respondent was asked to perform a constant sum allocation along 15 product characteristics for both Volvo and Geely.

Table 4 shows the total scores, average scores, and ranks for each product characteristic. Table 4 shows different rankings for Volvo and Geely cars, and thus, suggests that each product is well differentiated in potential purchasers' minds, and this is despite the news of the acquisition.

Table 4 shows that the total score achieved by each characteristic are different. This difference exists at the individual respondents' level, as confirmed by paired samples t-tests over a normalised data set. These t-test results are shown in Table 5. These indicate the strength of the difference between the scores allocated to Volvo and to Geely. All differences are statistically significant with the exception of fuel economy, for which both brands are perceived to be poor.

In order to analyse if the respondents' demographic characteristics had an impact on their ranking, the data set was split in two groups and a one way ANOVA performed. Key results are that:

Gender does not have any statistical significant impact on responses to the different items. Age does not have an impact except for the importance of styling for Geely. Older people give more importance to the styling of a Geely product than younger people.

Table 4. Results of constant sum questionnaire

		Total score	Average	Rank
Swedish Volvo	1. Reliability of the brand	1721.267	13	1
	2. Safety	1690.428	13	2
	3. Purchase price of the vehicle	723.8418	5	10
	4. Fuel economy	680.1867	5	11
	5. Styling	828.8378	6	6
	6. Equipment	813.9496	6	7
	7. Brand name	1052.756	8	3
	8. After sales service	1019.921	8	4
	9. Vehicle availability	584.5422	4	15
	10. Equipment options	667.5927	5	12
	11. Environmental options	798.3777	6	8
	12. Trade-in value	606.7172	5	14
	13. Additional warranty or service credit	946.5932	7	5
	14. Ability to research information on the Internet	792.9945	6	9
	15. Cash-back incentive	633.7774	5	13
Geely Volvo	1. Reliability of the brand	904.0948	7	5
	2. Safety	827.2623	6	9
	3. Purchase price of the vehicle	1728.918	13	1
	4. Fuel economy	746.2233	6	12
	5. Styling	761.5613	6	11
	6. Equipment	942.6512	7	4
	7. Brand name	846.8384	6	8
	8. After sales service	851.2621	6	7
	9. Vehicle availability	1194.655	9	2
	10. Equipment options	866.0289	6	6
	11. Environmental options	685.1971	5	15
	12. Trade-in value	767.0941	6	10
	13. Additional warranty or service credit	739.0914	6	13
	14. Ability to research information on the Internet	1019.955	8	3
	15. Cash-back incentive	719.1667	5	14

Work experience has an impact on perceived reliability: Less experienced people tend to rank reliability as a more important factor than more experienced people. The difference is statistically significant for Volvo with a 99% confidence level. It is also significant for Geely, but the significance is weaker (90% confidence only).

The field of study has an impact on the ranked importance of styling and environment

options. However, this pattern has little statistical validity due to the very different number of respondents across college and the patterns of answers used.

Table 5. Paired samples t-tests

Paired Samples t-test		t	df	p (2-tailed test)
Pair 1	Reliability (Volvo - Geely)	8.999	135	.000
Pair 2	Safety	10.275	135	.000
Pair 3	Purchase Price	-5.305	135	.000
Pair 4	Fuel Economy	-1.206	135	.230
Pair 5	Styling	1.997	135	.048
Pair 6	Equipment	-2.461	135	.015
Pair 7	Brand name	3.384	135	.001
Pair 8	After sales service	3.289	135	.001
Pair 9	Vehicle availability	-6.142	135	.000
Pair 10	Equipment options	2.486	135	.014
Pair 11	Environmental Options	-3.888	135	.000
Pair 12	Trade-in value	-3.435	135	.001
Pair 13	Warranty	4.155	135	.000
Pair 14	Information on the internet	-3.503	135	.001
Pair 15	Cash back Incentive	-1.993	135	.048

An analysis of correlation between scores reveals the existence of many links between the different characteristics. These correlations can be used to analyse perceived synergies and conflicts between the quality cues of a potential purchaser. For the sake of simplification, this analysis was reduced to the top 6 quality cues for each brand. The results are shown in Figure 1.

Figure 1 shows positive correlations (shown as +) and negative correlations (shown as -) between quality cues. Lines on the left-hand side display the statistically significant correlation between the top 6 quality cues for Volvo. The lines on the right-hand side show the statistically significant correlations between the top 6 quality cues for Geely. The lines in the centre of the diagram show the correlations across brands.

Figure 1 shows that Volvo top quality cues -reliable and safe- are high correlated with each other but come at the expense of styling (when considering more variables, reliability and safety also come at the expense of fuel economy and price). Geely, on the other hand, is perceived as a commodity product and thus it is important that plenty of information is provided on the internet and that the car is cheap and available on demand from customers. These characteristics come at the expense of options and reliability.

Cross-brand correlations confirm that respondents perceive the two brands as very distinct value propositions. For example, respondents who feel that reliability is an important quality cue when purchasing a Volvo think that price and availability are important quality cues for Geely.

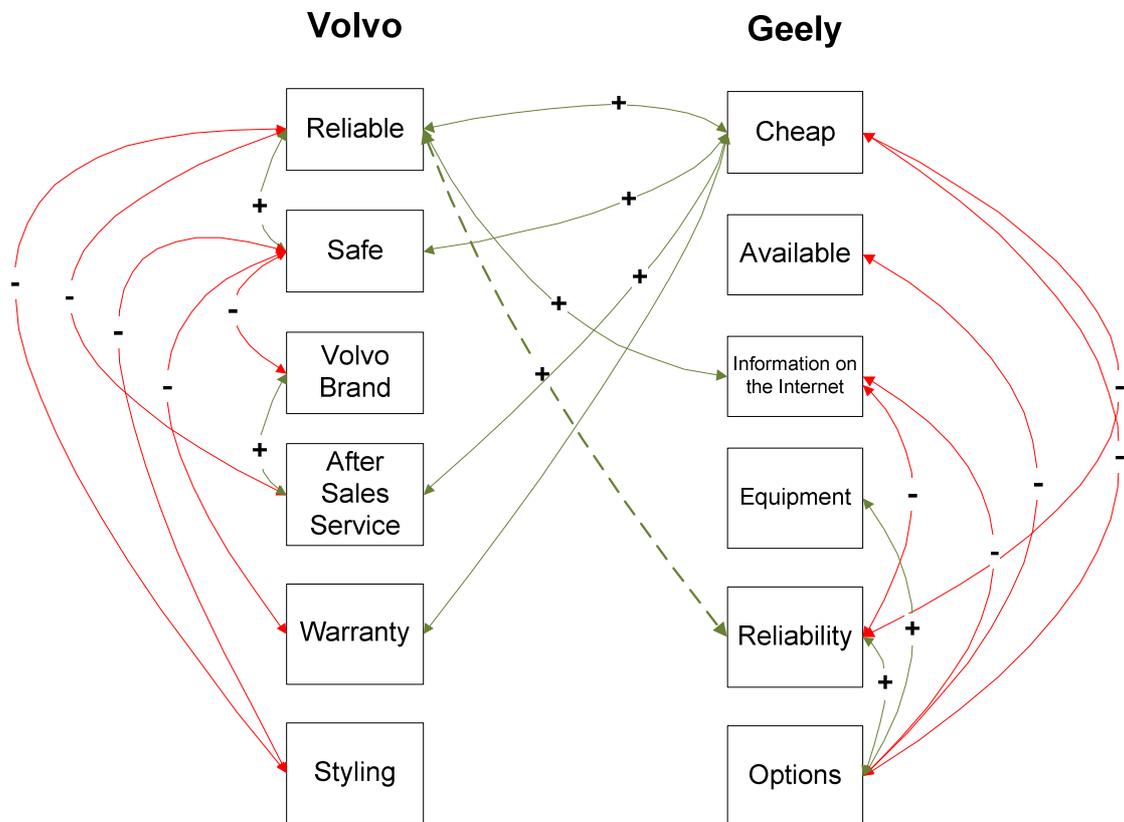


Figure 1. An analysis of correlations between the top 6 quality cues for each brand.

The existence of positive correlation between the reliability of Volvo and the reliability of Geely (shown as a dashed line in Figure 1) is worth analysing separately as reliability is the only quality cue that appears in the top 6 for each brand. Whereas other cross-brand correlation tend to create radically opposed product configurations, this line indicates that respondents who gave high scores to the importance of reliability for Volvo also gave high scores for the importance of the reliability of Geely.

When taking into account the perceived synergies, trade-offs, and the rankings of quality cues it is possible to distinguish important from desirable characteristics. For example, the results show that nobody would consider purchasing an unreliable Volvo or an expensive Geely. When thinking of the purchase of a Geely, respondents perceive that the car should be cheap and available, but these characteristics tend to conflict with the availability of equipment options offered and the reliability of the product. In other words, a cheap, available, and reliable Geely offering many options would be a perfect product configuration. This is summarised in Figure 2.

In the light of Figure 2, it is interesting to revisit the existence of a correlation between the perceived importance of reliability when purchasing a Volvo or a Geely. As explained earlier, it is the only correlation between perceptions that does not suggest opposing configurations (e.g. cheap versus expensive). As shown in Figure 2, it highlights where there is the largest value potential for technology transfer post-acquisition. Merging the two brands would not make sense as they offer to the acquirer a structured brand portfolio that targets

very different target markets (as shown in Table 4 and Figure 1). Figure 2 suggests that the notion a cheap yet reliable Geely would be, for its target market, an outstanding product. There is therefore a genuine opportunity for transferring technology about reliability between the two brands.

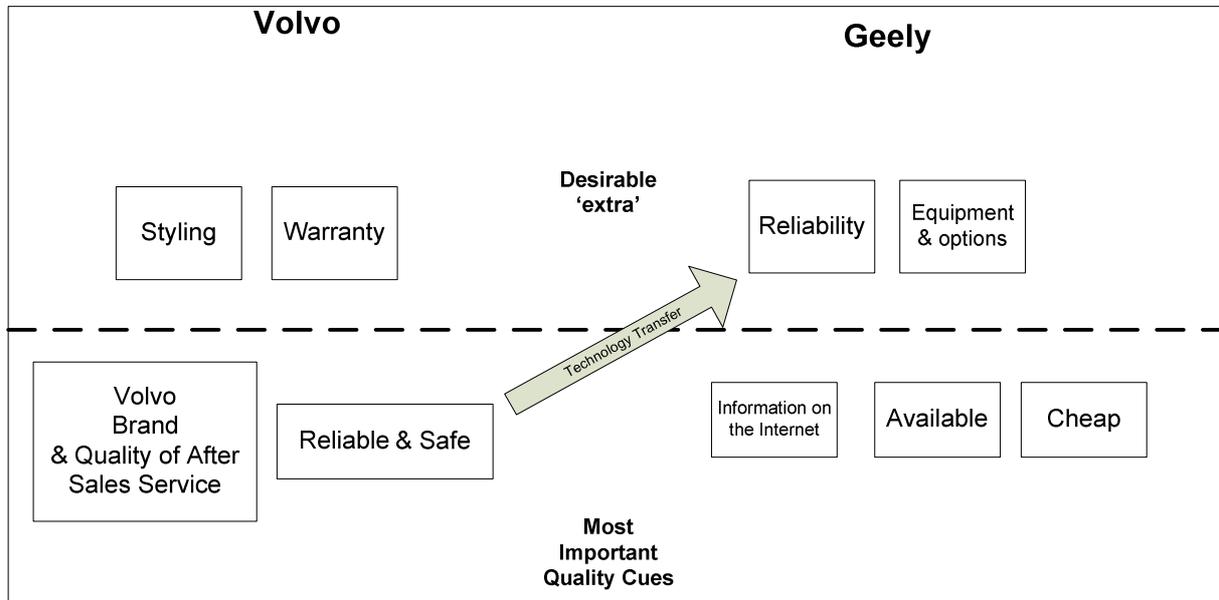


Figure 2. Perceived Product Configuration

Conclusions

Our survey analysis shows that the acquisition of Volvo by Geely is a complex transaction that encapsulates on one hand the acquisition of a structured brand portfolio (achieving differentiation within a product portfolio by taking advantage of the COO effect) and on the other hand a genuine opportunity for technology transfer without threatening the integrity of the brand portfolio. The opportunity for technology transfer goes beyond traditional process illustrated with the machine tool sector data in this paper. This traditional process was one of deriving a price premium from the absorption of a foreign technology. The results presented in this paper suggest that an increase in the price of Geely would turn away potential customers, as a low price is their most important characteristic. Instead, the know-how relating to reliability possessed by Volvo should be transferred to Geely in order to overcome the perceived price/reliability trade-off. This scenario is very similar to the positioning of the Volkswagen and Skoda brands after the German company acquired the former Czech car manufacturer in the early 1990s.

A practical implication of this paper is to question acquisitions that result in the disappearance of one of the original two brands. For example, one may wonder if the acquisition of IBM PCs by China's Lenovo could have been more valuable by keeping both brands alive?

Moreover, our findings suggest that research about technology transfer should consider more carefully marketing and customer behaviour issues. Both the COO effect and the dual portfolio/technology transfer phenomena documented in this paper show that customer perceptions of quality cues are powerful and strongly-rooted forces. Thus, there is much to be learned from research at the interface between marketing and technology transfer.

Final considerations

The survey confirms that acquisition and absorption of a foreign brand is not sufficient to avoid the COO effect in consumers' minds. Potential customers in Taiwan believe that a Swedish-made Volvo has safety and reliability at the expense of other factors, such as marketing and service performance, fuel economy, and styling. According to the survey a Chinese-made Volvo would be bought because it is cheaper, associated with good marketing and sales performance; and it is accepted that a good performance along these factors will be at the expense of reliability and safety, fuel efficiency, styling, and options. This provides a basis for positioning the brand in two different segments of the market.

However, the automotive industry is global and customer awareness is not limited by national boundaries. So, the strategy to sell a luxury brand into the Chinese market, whether in mainland China or wider China must be based on avoiding a dilution of the brand through the COO effect that can be associated with technology transfer. This is one of the most important considerations for Geely as it seeks to further penetrate the luxury market with its acquired Volvo brand and associated technology. The findings also have implications generally for manufacturers of cars and other consumer products when taking their brands to emerging markets through technology transfer to local companies with their own established brands.

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