



# “Acquisition Projects in the Automotive Industry - Technology Transfer, Product Development and Quality Implications”

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## 2 acquisition project cases

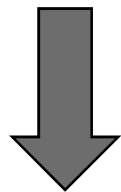
**Tritec Motors Ltda by  
Fiat Powertrain  
Technologies (FPT).**

**Volvo Car Corporation by  
Zhejiang Geely Holding  
Group**

### Case timelines

**1996**

**(Tritec Established by  
BMW and Chrysler)**

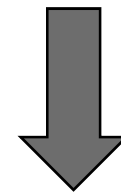


**2015**

**(with Breno Nunes,  
Aston University)**

**1999**

**(Volvo Cars acquired  
by Ford Motor Co)**



**2015**

**(with Tzong-Ru Lee  
National Chung Hsing University  
and Michel Leseure  
University of Chichester)**

- **Summary of the cases**
- **The motivation for the acquisition**
- **The financial aspects**
- **The practical aspects**
- **The national policy frameworks**
- **Technology transfer**
- **Product development**
- **Quality implications**

## Summary of the Tritec case

### Context

- Tritec engine originally designed by Chrysler and based on its original 2 litre engine for the Neon, launched in 1996. Three versions: 1.4 litre, 1.6 litre, and supercharged 1.6 litre.
- Tritec Motors Ltda created from a joint venture in 1996 between BMW and Chrysler
- DaimlerChrysler - formed in November 1998 (merger of Daimler-Benz and the Chrysler Corporation). It therefore becomes involved in a joint venture with its biggest competitor (Mercedes Benz vs BMW)
- Daimler withdraws from DaimlerChrysler in May 2007. Fiat buys controlling share of Chrysler June 2009. Gains full ownership December 2013. Fiat Chrysler Automobiles (FCA) established 2014.

### The Tritec project:

- Start of construction 1998 / Completion of manufacturing facilities January 1999
- First engine September 1999. Capacity of factory 400,000 units per year
- Tritec engines used in Chrysler Neon / PT Cruiser and BMW Mini
- BMW sells its 50 percent stake in Tritec to Chrysler Group July 2007.
- Chrysler tries to sell the Tritec plant. Chinese companies rumoured to be interested.
- Fiat acquires Tritec in March 2008. Becomes part of Fiat Powertrain Technologies (FPT).

## Summary of the Volvo case

### Context

- February 1999 Ford buys Swedish owned Volvo Cars with a view to having common vehicle platforms, engineering architecture and design capacity for Volvo, Jaguar (bought in 1989), and the Lincoln luxury US brand.
- April 2001 Changan Ford Automobile Co established in Chongqing, China, as a 50-50 joint venture between Ford Motor Company and Chang'an Automobile Group. Initial production is Ford Fiesta, Modeo and Maverick SUV.
- 2006 Ford begins making Volvo cars in Chongqing, Sichuan Province. Production in 2009 was 8,900 S80s and 6,200 S40s.
- 2010 Ford sells Volvo Cars to Zhejiang Geely Holding Group.

### The Geely Volvo project:

- Volvo Cars retains its headquarters and manufacturing presence in Sweden and Belgium.
- Volvo and Ford maintain close component and supply relationships to allow continuity of production.
- Volvo remains officially a foreign company in China, so is required to operate there as part of a joint venture.
- 2013 opens JV assembly plant in Chengdu, Sichuan Province (with plans to export from 2015). Production ceases in Chongqing. JV engine plant also opened in Zhangjiakou, Hebei and second JV assembly plant in Daqing, Heilongjiang Province (from 2014).

## Motivation for the acquisition (Tritec by Fiat Power Train Technologies)

"Chrysler Group has assumed the responsibility for exploring long-term options for the Tritec operations whereby all possible alternatives for continuing the business for the long run are under analysis. This may include a sale of the facility to a third party .... The company will replace the motors with those built through its engine partnership with French carmaker PSA". (BMW announcement July 2007)

"Acquiring the Campo Largo manufacturing facility will enable us to reach two main strategic goals: first, to attract an even larger number of non-captive customers for this product. Secondly, to widen our product portfolio, offering a new extremely modern and competitive product range ... FPT's investments in the Campo Largo plant are expected to make it into Latin America's major production center for mid-size engines, satisfying the needs of both the local and export markets". (Fiat Power Train Technologies Press Release March 2008)

"Chrysler has faced scrutiny over whether it can ride out a downturn in US auto sales that many analysts expect to stretch through 2009. The automaker has sold over USD 500 million in assets, including land around its headquarters in Auburn Hills, Michigan, and its Tritec engine plant in Brazil". (Press comment on Chrysler August 2008)

## Motivation for the acquisition

(Volvo Cars by Geely)

“Ten years on and with Volvo, the last of the once-proud Premium Automotive Group network being prepared for sale by the financially crippled Ford Motor Company, the whole adventure looks nothing short of dangerous hubris. The trouble was Ford said initially it would keep the products distinctive, but gain synergies in the backroom operations. It wasn't enough and by the time they really had started to share engines, components, floor pans and engineering, it was too late”. (Article in the Telegraph December 2008)

“The sale of Volvo will allow us to further sharpen our focus on building the Ford brand around the world and continue to deliver on our One Ford plan serving our customers with the very best cars and trucks in the world”. (Ford CEO March 2010)

“For Ford, its failed attempt to build a European-led range of premier marques has been a drain of both cash and management time. This is still true of Volvo, even though it is no longer doing as badly as it was in the depths of the economic downturn”. (Economist March 2010)

“This is a historic day for Geely, which is extremely proud to have acquired Volvo Cars. This famous Swedish premium brand will remain true to its core values of safety, quality, environmental care and modern Scandinavian design as it strengthens the existing European and North American markets and expands its presence in China and other emerging markets”. (Chairman of Geely Holding Group March 2010)

## The financial aspects

- Cost to BMW and Chrysler for establishing Tritec (1997 to 1999)  
= USD 659 million
- Cost to Fiat for buying Tritec (2008)  
= BRL 250 million = USD 150 million
- ***23% of original cost*** (Fiat profit in 2008 = USD 5.1 billion)
- Cost to Ford of buying Volvo Cars (1999)  
= USD 6.45 billion
- Cost to Geely of buying Volvo Cars (2010)  
= USD 1.8 billion
- ***28% of original cost*** (Geely profit in 2010 = USD 284 million)



## The practical aspects

FPT acquired a 1.27 million sq metres site (only 31% used), modern production equipment, capacity of 400,000 units per year and a well-regarded engine design (although in need of upgrading). FPT has a plant in Betim producing over 1.2 million engines and transmissions each year. The Fiat assembly plant in Betim produces 740,000 vehicles per year.

Geely acquired 2 assembly plants in Sweden (one due for closure), 2 overseas assembly plants (in Belgium and Malaysia), 2 R&D centres (in Sweden and Denmark), a design centre in California and 3 component manufacturing plants in Sweden.

+ sales under Ford of 324,000 cars in 2009 for USD 12.4 billion revenue, but USD 662 million loss. It also acquired an iconic brand.

## The national policy framework - China

- Automotive Industry Development Policy 2004 (brought China in line with WTO obligations).
- China regards automotive as a “pillar industry”, so control over ownership is retained and there is a desire to develop domestic manufacturers.
- Foreign investment in vehicle assembly capped at 50% (more than 50% permitted of project is geared to exports and located in an export processing zone). Component producers not subject to 50% limit.
- Number of permitted joint ventures limited to 2 per category (cars, commercial vehicles, motorcycles).
- Licences are required to manufacture vehicles in a particular category
- R&D expenses tax deductible.
- Minimum investment size of CNY 2 million (approx USD 300 million).
- 2009 - policy revised but concerns remain about China’s commitments as a member of the WTO, especially with respect to domestic content rules, protection of non-Chinese firms’ intellectual property rights, and technology transfer requirements.

## The national policy framework - Brazil

- First car built in 1925 (Chevrolet).
- Industry regulated by the Associação Nacional dos Fabricantes de Veículos Automotores (Anfavea), created in 1956.
- No controls on ownership, but imports initially restricted (lifted in mid 1990s).
- Most of the large global companies are now present in Brazil.
- Domestic companies are making for specialised markets (e.g. off-road vehicles, beach buggies, buses).
- Mercosur trade agreement creates a larger regional market for Brazil's automotive industry.
- Inovar-Auto (from 2013) incentivises investments in vehicle efficiency, national production, R&D, and automotive technology through taxes and concessions on industrialized products (IPI).

## Technology transfer

Reasons for acquiring and transferring technology are:

- New processes and cost reduction
- New products and access to new markets
- Product improvement (performance and quality)

Achieved by transferring:

- Hardware
- Software
- Humanware

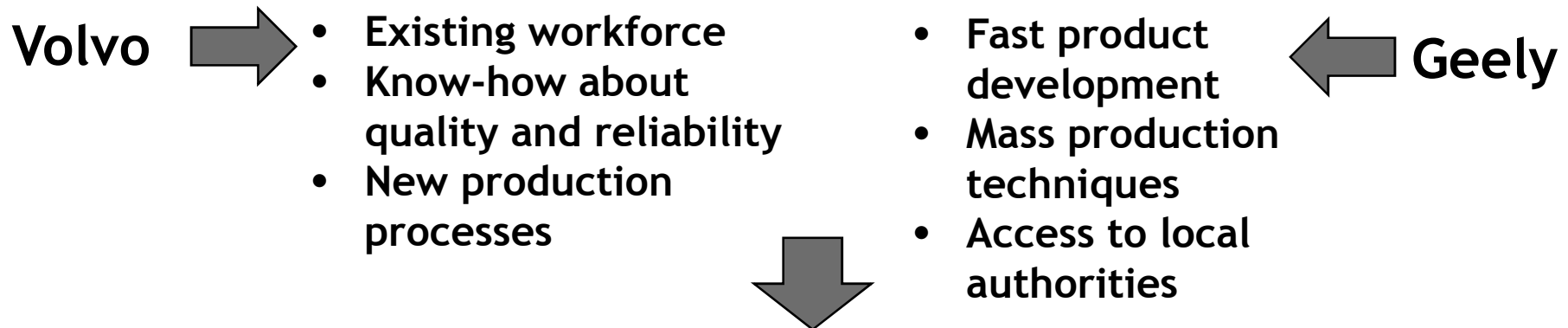
(possible expatriate mobility with international transfers)

## Technology transfer in Tritec - FPT



**eTorQ flex fuel engine**

## Technology transfer in Volvo - Geely



Chengdu plant making long-wheelbase S60L

## Further product development

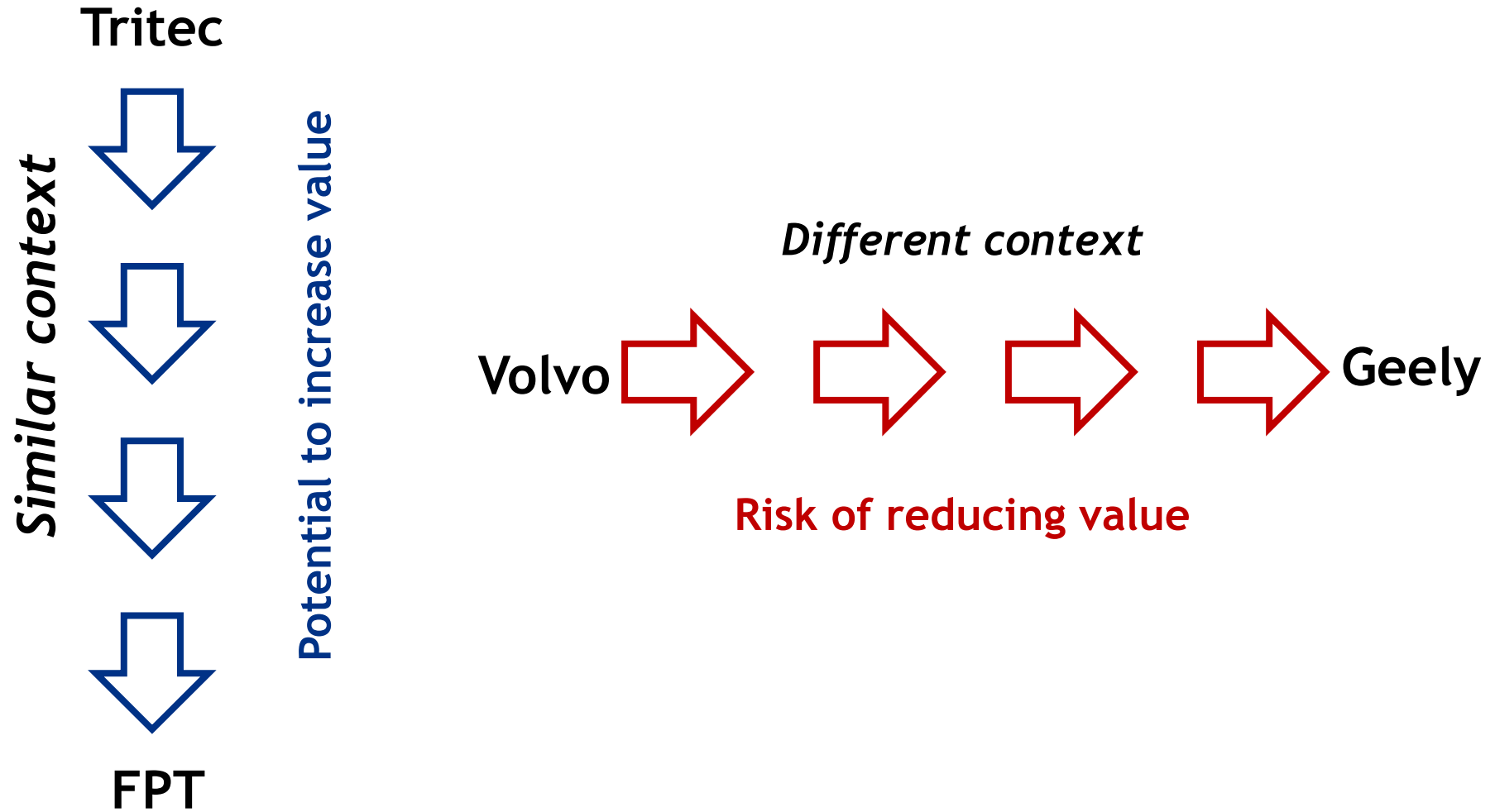
### FPT Campo Largo

- eTorQ engine developed for use in 2015 Jeep Renegade to be assembled at new FCA plant in Pernambuco State.
- eTorQ flex engine continuation of development for 2015 Fiat Linea, Grand Siena, Idea Adventure, Strada Trekking, Palio Weekend.
- Further opportunities for new engines.
- Other opportunities powertrain products.

### Volvo and Geely

- New joint R&D centres in Shanghai and Gothenburg.
- 2016 XC90 will be first Volvo since Geely acquisition to have no Ford components
- First car maker to install hybrid diesel engines in production cars .
- Joint research, development and manufacturing of electric drive systems for automobiles.

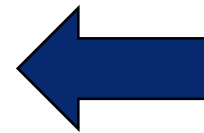
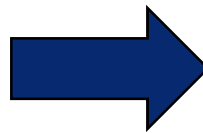
# Quality implications





## The Tritec - FPT gap

BMW established 1916  
Chrysler established 1925

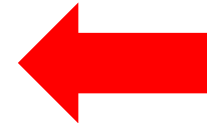


Fiat established 1899  
Fiat in Brazil since 1976 and  
made the first mass produced  
car to run on ethanol

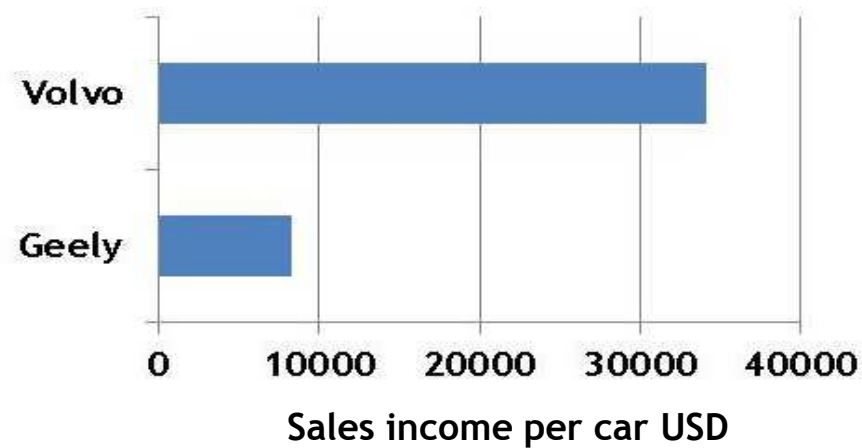
# The Volvo - Geely gap



Volvo established 1915



Geely established 1986 (refrigerators)  
 First motorcycle 1994  
 First commercial vehicle 1998  
 First car 2001



Geely's previous attempt to move up the value chain ....



2009 Rolls Royce *Phantom*  
USD 375,000



2009 Geely *GE*  
USD 45,000



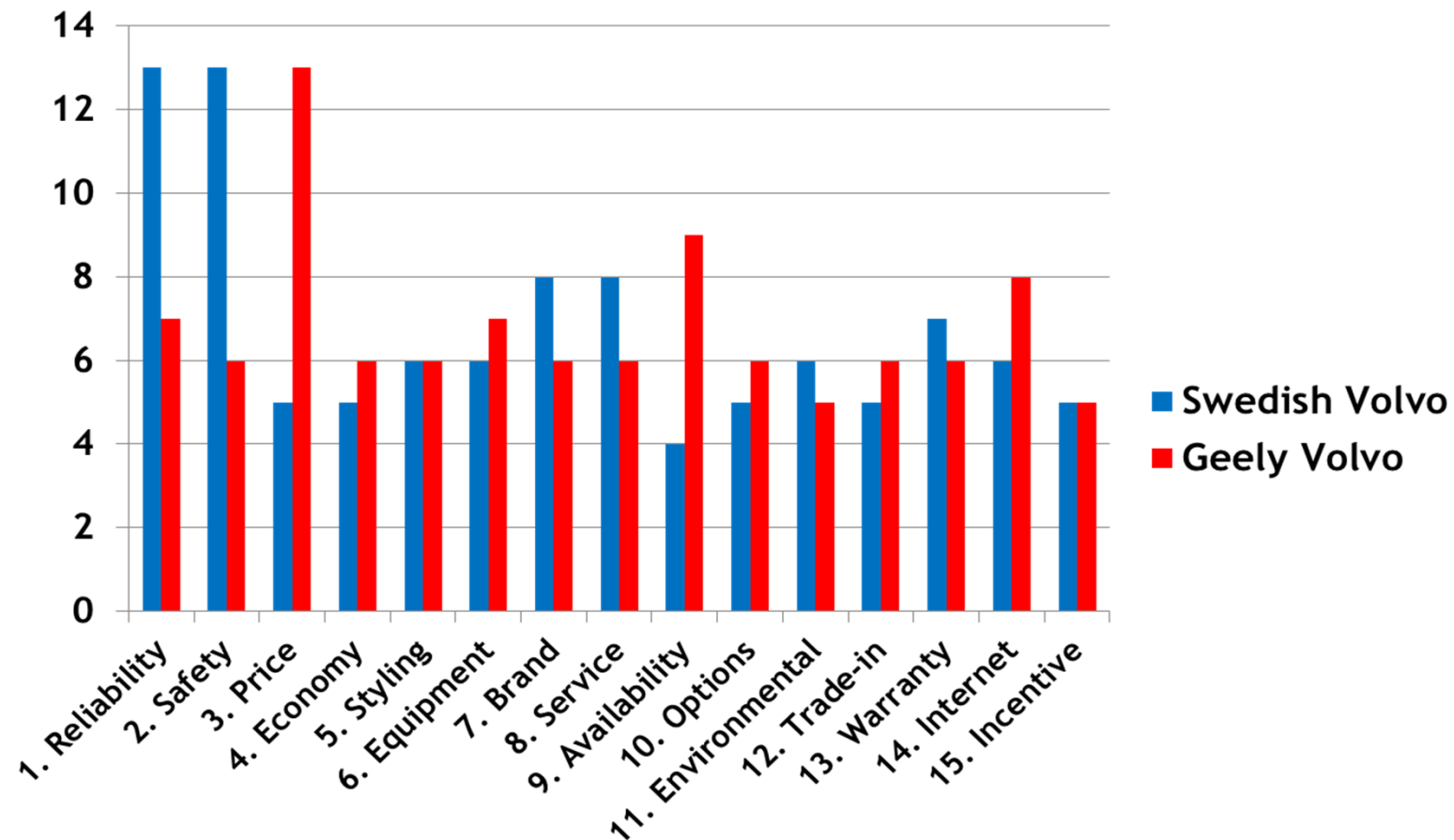
**Importance of factors in choice of car (the “cues”)  
(Capgemini research\* - % of customers saying important / very important)**

- 1. Reliability (91%)**
- 2. Safety (90%)**
- 3. Purchase price of vehicle (88%)**
- 4. Fuel economy (83%)**
- 5. Styling (78%)**
- 6. Equipment included in basic price (74%)**
- 7. Brand name (73%)**
- 8. After sales service (72%)**
- 9. Vehicle availability (70%)**
- 10. Equipment options (63%)**
- 11. Environmental factors (62%)**
- 12. Trade-in value (61%)**
- 13. Additional warranty or service credit (61%)**
- 14. Ability to research information on Internet (60%)**
- 15. Financial incentive(58%)**

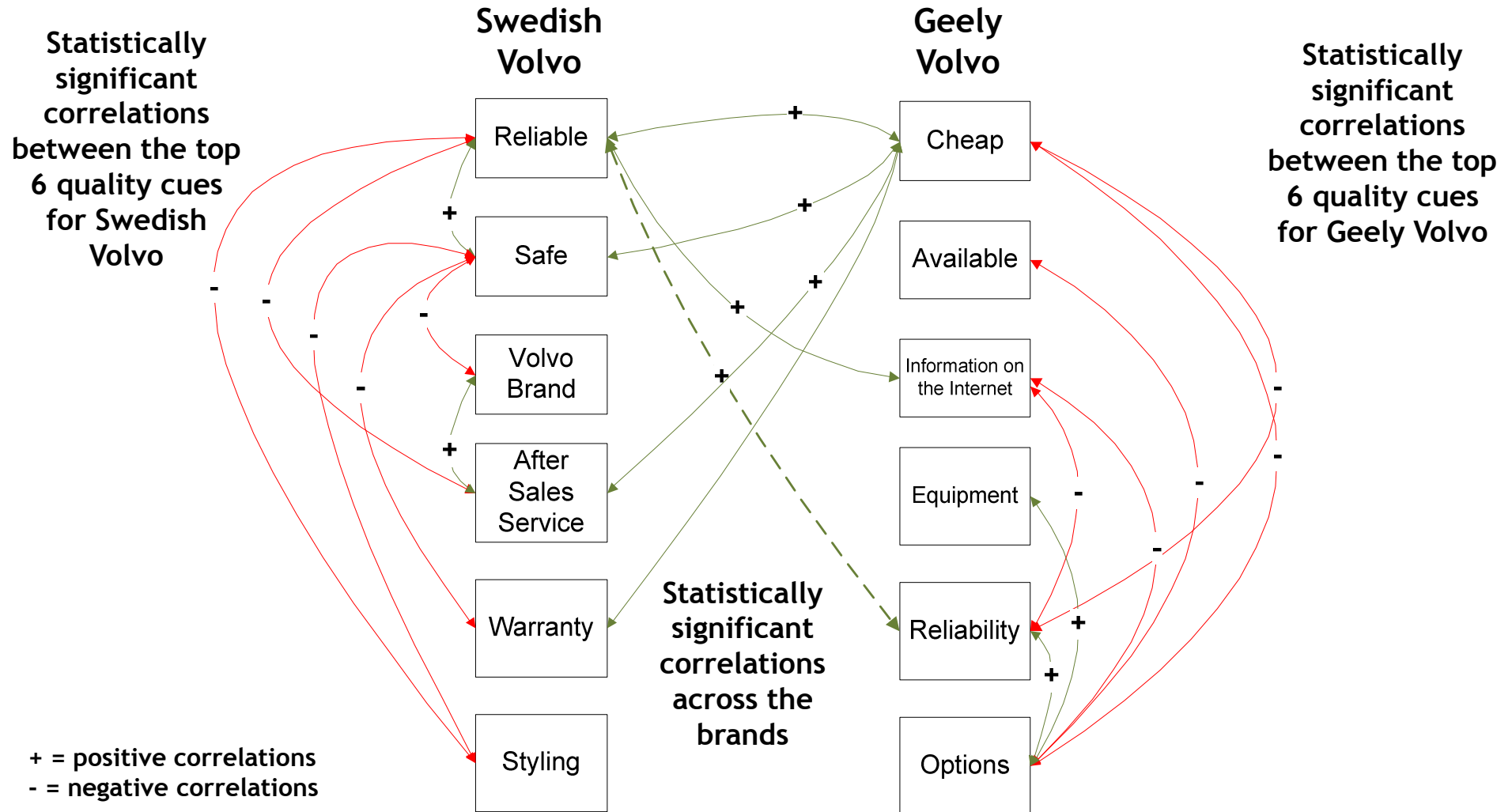
Note: differences are not very large between mature and developing markets

\* Cars Online 09/10 - Understanding Consumer Buying Behaviour in a Volatile Market, Capgemini, 2009

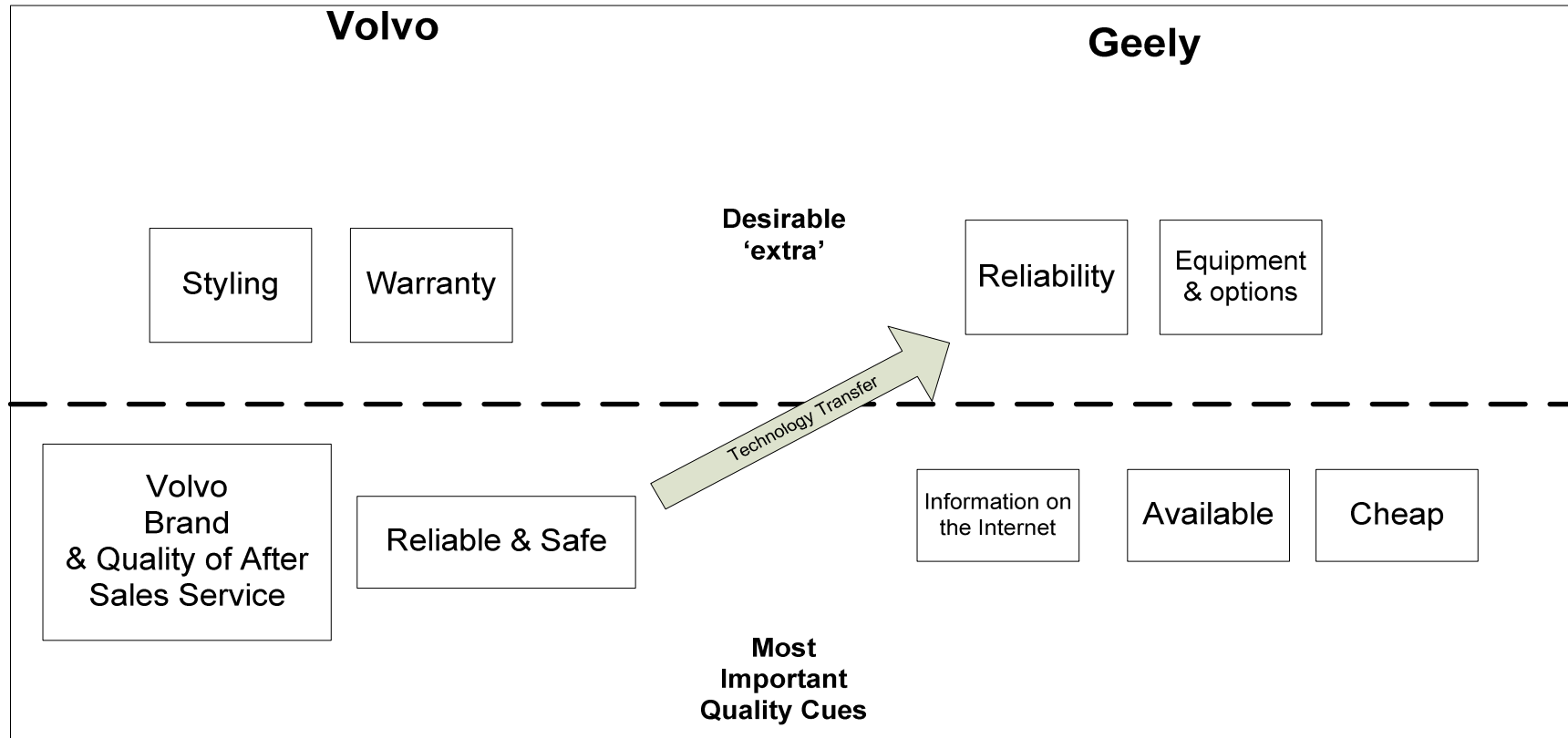
Study in Taiwan (2012) to assess quality perception's of Swedish Volvo and Geely Volvo, using the Capgemini factors (136 respondents):



# Analysis of correlations between the top 6 quality cues for each brand



# Possible future direction for technology transfer between Volvo and Geely



## Discussion

What are the main similarities and differences between the Tritec - FPT and Volvo - Geely acquisitions?

Are there any lessons from the cases that can be applied to Brazil's automotive industry generally?

What benefits and risks with technology transfer projects are illustrated by the cases?

How can product development projects be enhanced through the acquisitions described in the cases?

What are the principal quality attributes of cars made in Brazil?

What challenges from China may there be in the future?  
(see the numbers ...)



2014 PRODUCTION STATISTICS

Country	Cars	Commercial vehicles	Total	% change
China	19,919,795	3,803,095	23,722,890	7.3%
USA	4,253,098	7,407,601	11,660,699	5.4%
Japan	8,277,070	1,497,488	9,774,558	1.5%
Germany	5,604,026	303,522	5,907,548	3.3%
South Korea	4,124,116	400,816	4,524,932	0.1%
India	3,158,215	681,945	3,840,160	-1.5%
Mexico	1,915,709	1,449,597	3,365,306	10.2%
Brazil	2,314,789	831,329	3,146,118	-15.3%
Spain	1,898,342	504,636	2,402,978	11.1%
Canada	913,533	1,480,357	2,393,890	0.6%
Russia	1,683,677	202,969	1,886,646	-13.6%
Thailand	742,678	1,137,329	1,880,007	-23.5%
France	1,495,000	322,000	1,817,000	4.4%
UK	1,528,148	70,731	1,598,879	0.1%
Indonesia	1,011,260	287,263	1,298,523	7.6%
Czech Rep.	1,246,506	4,714	1,251,220	10.4%
Turkey	733,439	437,006	1,170,445	4.0%
Iran	925,975	164,871	1,090,846	46.7%
Slovakia	993,000	0	993,000	1.8%
Italy	401,317	296,547	697,864	6.0%
Others	554,845	107,240	662,085	2.9%

Argentina	363,711	253,618	617,329	-22.0%
Malaysia	547,150	49,450	596,600	-0.8%
Poland	473,000	120,904	593,904	0.6%
South Africa	277,491	288,592	566,083	3.7%
Belgium	481,637	35,195	516,832	2.6%
Romania	391,422	0	391,422	-4.8%
Taiwan	332,629	46,594	379,223	12.0%
Uzbekistan	245,660	0	245,660	-0.4%
Hungary	224,630	2,400	227,030	2.1%
Australia	145,607	34,704	180,311	-16.5%
Portugal	117,744	43,765	161,509	4.9%
Austria	136,000	18,340	154,340	-7.3%
Sweden	154,173	N.A.	154,173	-4.3%
Slovenia	118,533	58	118,591	26.5%
Finland	45,000	35	45,035	484.6%
Netherlands	0	29,807	29,807	2.1%
Ukraine	25,941	2,810	28,751	-43.0%
Egypt	17,830	9,190	27,020	-30.8%
Serbia	9,980	695	10,675	-2.1%
<b>Total</b>	<b>67,525,346</b>	<b>22,222,084</b>	<b>87,507,027</b>	<b>2.6%</b>

**Thank you**  
**Obrigado**  
**Tack så mycket**  
**谢谢**

**David Bennett**  
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