

# **VOLVO CARS' SURVIVAL VS. APPLE'S WINS: AN INNOVATOR'S BELIEFS ON ITS PATH TO SUSTAINABILITY**

*Yee-Tien Fu, Associate Professor, Dept. of International Business, National Cheng-Chi University, Taipei 11623, ROC, 011-886-2-2939-3091 Ext 81249, iamtedfu@gmail.com*

## **ABSTRACT**

We studied and discovered how global economics, exchange rates and outsourcing choices originated from the core value system have crafted the financial and technological trajectories of world-class enterprises of Volvo and Apple in a highly contrasting yet informative way. We contrast their approaches, achievements, and challenges in terms of customer retention, profitability enhancement, and sustainability. Though being in different industries and of varying market structures, both Volvo Cars and Apple Computers are leaders in technology aesthetics, research and development, manufacturability, and perceived quality control. Volvo Cars' quality, productivity and business image are achieved internally while Apple's success was gained from delegating the manufacturing and assembly tasks to external quality achievers. After the change of ownership from U.S. Ford to China's Geely, Volvo's new cars were still launched on schedule. However, the financial disclosure on the website had been abbreviated. Volvo allows customers to pick the manufacturing location of their cars, e.g., Sweden, Belgium. Volvo has also started to follow the trend (set by Mercedes, BMW, and the like) of manufacturing: manufacture/assembly where the markets are. Volvo seemed to have received China's leadership attention as a heavyweight player of China's 2025 manufacturing for excellence campaign. Volvo car's flexibility and new relationship network are helping the company bail itself out from a decreasing market share in the luxury car market.

Our main theme is to analyze Volvo's embarrassing dilemma of not being able to break-even while gradually losing its competitive edge on safety superiority under the technology spillover and catching-up effects. By contrasting with Apple's blockbuster success from outsourcing while maneuvering currencies advantages; and possibly exploiting tariff reduction benefit via free-trade-agreement arrangements, we delve into the root troubles for Volvo Cars: high production, labor, and material costs which are further aggravated by the pricey (overvalued) Sweden Kroner.

We believe that the study of Apple and Volvo Cars sheds light on the cooperation and competition norms for the forthcoming paradigm-shift waves of the West encountering the East. We present each case with a point of view on technological evolution with its synchronization with the advancement of global financial landscape and economic competition terms. Regarding Volvo's dual objective of being a for-profit manufacturer and a not-solely-for-profit research and development laboratories at the same time, we propose respective short-to-intermediate and long-term strategies with a borrowed solution concepts from United States higher education [1]: embracing output mix of not-profitable programs with profitable programs. In short term, cross-subsidization applies; in long term, the rule of "producing, assembling and calibrating" where the market is prevails.

**Key Words:** Big Data, Demographics, Sustainability, Managing Globally, Acting Locally, Corporate Governance, Global Outsourcing, Off-shoring, Relationship Marketing.

## **INTRODUCTION**

We first study the successes of Volvo Cars and the challenges it has faced. We then study Apple's sustainability as a contrast. Finally we analyze what Volvo Cars may learn from Apple to achieve a success on profitability and sustainability.

Our main theme is to analyze Volvo Cars, a world-class private company with splendid R&D achievements and potentials of achieving best auto safety among other technology specifications; its dilemma of not being able to break-even by increasing sales volume while gradually losing its product safety edges due to the spillover and catch-up effects in an era of technological advancement and infrastructure upgrades (e.g., on U.S. "intelligent" superhighways). We delve into the deep roots (e.g., exchange rates) and discover possible strategies of alleviating Volvo Cars' problems. We therefore devised effective strategies at the level of commanding heights for Volvo Cars. Our research may explain and contrast certain key perspectives from respective eastern and western cultural backgrounds (in particular, from Volvo Cars journey with American Ford and then with Chinese Geely, and Apple's legendary partnership with American Foxconn and Taiwan ROC's Hong-Hai), when the world corporates are engaging in a strengthened transition and paradigm shift.

Our research may explain and contrast certain key perspectives from both the eastern and the western viewpoints. The two points of view are contrasting yet complementary, as revealed from the previous ownership with American Ford and the current ownership with Chinese Geely on their respective experiences/expectations of partnering with. Obviously both previous and current owners have had granted the gifted private firm maximum autonomy. Though the practices of disclosing of financial performances of the two owners differed somewhat significantly. This comparison is useful when the global corporate world engages in a strengthened transition and paradigm shift. In the Apple success, the OEM Foxconn complements the Western design giant Apple with an Eastern production and manufacture power. The trend in Taiwan ROC is a multinational OEM (American Foxconn or Taiwan ROC's Hong-Hai) or suppliers (e.g., Taiwan ROC's Taiwan Semiconductor Manufacturing Company) often have delivered better than required technology specifications with competitive pricing.

We also discovered that Volvo Cars has been happy to act as a world premier auto safety technology laboratory or cost center, and obviously not as a regular profit center. If Volvo Cars would outsource production in low cost countries (to lower down production cost), it would have done so. We notice that Volvo has prepared to increase the profit-maximizing output but had been reluctant to risk the churning of inferior quality from countries with unknown or unsatisfactory welfare and compensation records for workers. That is, Volvo Cars had tried to gauge the production process closely in Europe to guarantee the highest conformance to its quality control standards. Volvo Cars did pay attention on efficiency or productivity track records; and has chosen Belgium as an offshore manufacturing base. However, over the past decade, Sweden Kroner had been among the most overvalued currency in the world, which made the production in Sweden most costly and the sale in North America and Europe much less competitive (due to high cost) and unprofitable (due to price ceiling set by competition). For Volvo Cars to enter luxury-car markets with overly undervalued currency (such as the Southeast Asian countries), the difficulty is even greater.

Under American Ford's umbrella and culture, Volvo Cars had strived to stay lean and mean to push up its productivity and to achieve the profit-maximizing sales. Volvo Cars had made full endogenous efforts overcoming exogenous challenges and survived somehow with great customer-perceived quality, frontier innovations on safety and fuel efficiency, positive publicity and strong customer loyalty. If it were not due to the case of un-timely global financial crises, as occurred in 2000 and in 2008 [during which Volvo Cars became most vulnerable due to the triple combinations of adverse shocks: overvalued invoice currency on production, labor and materials (representing high factors cost), deeply undervalued intangible assets (showing lowered valuation of a private company, especially on Volvo Cars' strengths in technology know-hows), and the cyclical fate of auto industry (showing poor sales volume)], Volvo must have had survived better.

## **LITERATURE REVIEW**

I. On Cross-subsidization. The practice of cross-subsidization (profitable subsidizes unprofitable under the grand value system) prevalent in the US higher education and the not-for-profit laboratories is best studied in William Massy's "Resource Allocation in Higher Education" [1].

II. On Global-outsourcing. Economic Laureate Paul Krugman said in his International Economics book chapter "Output and the Exchange Rate in the Short Run" [2, p. 486]: "While we have couched our discussion of real exchange rate and the current account in terms of consumers' responses, producers' responses are just as important and work in much the same way. When a country's currency depreciates in real terms, foreign firms will find that the country can supply intermediate production inputs more cheaply. These effects have become stronger as a result of the increasing tendency for multinational firms to locate different stages of their production process in a variety of countries. For example, the German auto manufacturer BMW can shift production from Germany to its Spartanburg, South Carolina, plant if a dollar depreciation lowers the relative cost of producing in the United States. The production shift represents an increase in world demand for U.S. labor and output."

Globalization issues, including off-shoring and outsourcing are collected in King's "International Economics Reader".

III. On Volvo's and peers' current strategies -- thinking globally and acting locally. Acting "locally" means assembling and calibrating where the "markets" are. Fu has written a series of working papers and conference papers for in-depth discussion on Volvo Cars' strengths and challenges, and Apple Computers' strengths, capabilities, and sustainability. [3]

"In an interview, [Volvo's] Chief Executive Håkan Samuelsson said Volvo is making the move to smooth out its international presence. With plants in Europe and China, the executive wants a North American factory to be closer to one of its prime markets, take advantage of attractive labor rates and protect against currency fluctuations. [4]" "Some European auto makers have been successful at capping labor costs in the U.S. Germany's Volkswagen recently opened a plant in Tennessee, and its hourly labor rate—including benefits—equals \$38 an hour. [4]" "Volvo's move stems the tide of investment aimed at Mexico, where labor rates are a fraction of the U.S. costs [yet with full] free-trade pacts. [4]"

Volvo followed Germany's Mercedes and BMW to choose US southern states over Mexico for similar reasons. They are fighting for US market shares with earnest effort in capturing the market big data and demographic data, including the preferred product image of "made in USA".

### **VOLVO'S DILEMMA ON CURRENCY OVER OFF-SHORING DECISIONS**

Over the past decade, Sweden SKR has been very strong against USD and Euro; and Volvo's insistence of manufacturing mostly in Sweden and Belgium has caused itself great disadvantages for competing against US and European premier car manufacturers. In any given year in the past decade, Sweden SKR has been overvalued significantly against US Dollars (while competing with US-made premier cars), and overvalued against Euro (while competing with Germany-made Mercedes and BMW for their sale in the United States). It has caused Volvo Cars a most disadvantageous competition against Japanese, US, and even other European premier car manufacturers. In addition, Sheer competition among luxury cars in the US markets had created the momentum of costing down (e.g., BMW assembles its X-series SUV in the States) since price has been capped by similar outlook and performance attributes, and equally shining brand names.

When Sweden SKR was significantly overvalued against USD in 2008 by 79%; Volvo Cars' net profit also dwindled to a highly negative -1,465 millions.

### **VOLVO CARS: OLD AND NEW CHAPTERS**

The leadership and governance effectively shape the corporate culture and long-term trajectory. Volvo Cars' leadership and governance is recognized. Volvo emphasizes the welfare of human-being across borders and generations, including customers, employees and mankind in general.

Volvo Cars, in many aspects possesses a set of synthesized strengths seen only at some best pharmaceutical company, aeronautics and defense-industry company, or world leading advanced laboratory; Volvo Cars (and especially Volvo Cars' R&D) deserves to be supported by all of us as a world common assets. A sustainable business model of Volvo Cars will have to strike a delicate balance between the "for-profit" profit-maximization feature of a business and the "social-benefit" utility-maximization objective of a social entrepreneur (e.g., a world premier technology laboratory). The only possibility to break-even exists in the concept of cross-subsidization of the product mix of the highly profitable with the unprofitable.

Volvo Cars, an active technology laboratory (ahead of its times) with advanced solution created for emerging problems and future innovation needs, may consider creating licensing income from the R&D results so as to continue with activities in developing frontier technologies and technology potentials for tomorrow.

Volvo may consider the following practical strategies of varying horizon to alleviate the exchange rate adversaries (e.g., by manufacturing closely to the target markets, and by entering into the growth markets):

**Aggressive Short-term Strategy:** Stick to a handful few great models (e.g., XC60, S60) with a 'standard and stream-lined features' options and common parts; mass produce with affordable labor in emerging markets to create significant profit margins. Boost sales of this profitable model till the whole company breaks-even. Engage in frugal R&D before breaking-even. Volvo Cars will like to feed market response to manufacturing department quickly to capture market desired attributes and features (e.g., aerodynamics features, stylishness) to gain growth momentum, without incurring excessive costs. This can be done more easily with a strategy of manufacturing where the markets are by gathering the market big data of demographics.

**Short-to-Intermediate-term Strategy:** If the Chinese government considers and gestures the Volvo project to be a national shining point, the quality will need to be monitored most closely and (theoretically and naturally) sales will be maintained and achieved accordingly. China's car market is also undergoing a lot of changes. As Wall Street Journal put it: "As China cracks down on luxury foreign rides for officials, Chinese car makers like closely held Zhejiang Geely Holding Group are looking for ways into the multibillion-dollar government fleet market. [5]" "In addition, the government is spearheading a "buy China" campaign, eliminating foreign luxury car brands such as Audi from its sourcing lists. [5]" Operationally, government may cut the number of licenses issued to cars of looser safety standards; demand an upgrade on fuel efficiency requirements to retire inferior vehicles; government agencies may order a good number of Volvo cars futures (as they once did for Audi) at pre-stipulated price over a period of five to seven years. The above will help boost operating income and valuations of Volvo Cars; and will allow the Volvo Cars factories in China to concentrate on technological learning effect and quality control effort. It is also good to declare extended warranty during the transition, say, both 100,000 miles and 36 months.

**Long-term Strategy:** Build where the market is to capture the demographics intelligence by accessing the big market data; and build where the labor cost is affordable, e.g., United States' southern states. Revive Volvo's global image. Develop China as the second biggest market for Volvo (next only to United States) by building a manufacturing base with substantial production capacity in the country. Take advantage of China's supply chains emerged from being a world factory; grasp horizontal and vertical integration potential opportunities into the auto parts, car garages, and vehicle maintenance industries to utilize the excess capacity during economic recession or in a downward portion of a business cycle.

Regarding manufacture where the US market is, "Volvo later this year [2015] will break ground on a \$500 million factory, its first in the U.S., that will open in 2018 near shipping ports and Interstate [Highway] 95.[6]" "The deal could lead to 4,000 direct jobs in South Carolina.[6]"

“[Volvo] eventually will churn out as many as 100,000 vehicles annually [in its South Carolina plant].[6]”  
“Although unable to compete with Mexico on certain fronts, Southern states [in United States] remain attractive for auto makers looking to alleviate currency pressure or simplify logistics. They also offer attractive cost-of-living and operating advantages compared with Northern states [in United States], and are attracting more white-collar work.[6]”

“[Although] Volvo Car Chief Executive Håkan Samuelsson has earlier said that the U.S. will be a key destination for Chinese-made cars, something that would represent a watershed for the global automobile industry. Japanese auto makers have long sold cars in the U.S., taking advantage of currency-exchange rates and existing capacity, but Chinese-built cars are yet to break into that market. [7]” The timing for US consumers to embrace the China-made Volvo sedans does not seem to be ripe yet. It may ease the difficulty of opening up the western markets if Volvo Cars is able to capture the demographics of US consumers. Korean car manufacturers' successful experience may be studied and referenced.

### **APPLE’S BLOCKBUSTER SUCCESS WITH OEM PARTNERS FOXCONN**

One of Apple's shining achievements was done by Foxconn, which magnified Apple’s market shares across full product spectrum. Foxconn had created the sixth forces, known as the complementor (a mirror image of the competitor, or a magnifying glass), in Michael Porter’s Five Forces framework for Apple. The partnership between Apple and Foxconn had evolved beyond the so-called Brand Owner and OEM Manufacturer. The OEM role played by Foxconn is featured by its superior capacity: fastest speed, lowest cost, over-the-required technology specification, and consistent user-perceived quality. Foxconn had helped Apple create and sustain the market monopoly power of technology aesthetics in gadgets and computers. And en route this evolution, through cost minimization, the scarcity of value (of the un-resistable technology aesthetics at affordable prices of Apple's products) had made possible the fair-price indulgence of perceived luxury goods of the mass pollution across globe. Apple's superiority in design-for-manufacturability, cost control, and tremendous number of in-house technology patents is unparalleled. But as a for-profit business, Apple has chosen not to exercise its pricing power to price products than it can. Apple's product aesthetics have echoed with the phenomenon "creative destruction" coined by Schumpeter. That is, Apple's amazing six forces had paved the roads, through superior innovation, of sweeping into ashes the obsolete, inferior and ill-appeared ones. Apple had recently established a research center on display for gadgets in Taiwan ROC to further the horizontal and vertical ties with OEM and parts manufacturers in Taiwan ROC.

### **APPLE’S TECHNOLOGY KNOW-HOW AND COST STRUCTURE—SOURCING FOR APPLE’S SUSTAINABILITY**

Apple’s strategy is threefold: technology sourcing through international know-how sourcing from United States, Japan and Germany; profit maximization via technology aesthetics (with monopoly power) and cost minimization through global OEM manufacturing and assembly. According to the "Outsourcing Choices" in Economic Briefing Section on Time Magazine dated May 16, 2011, the following is one realization of Apple’s cost structure via iPhone--for a US\$500 price, Japan gets US\$61, Germany gets US\$30, South Korea gets US\$23, and Apple nets US\$321.

“Though invented in the U.S., the iPhone is manufactured in China, so, ironically, iPhones sold in the U.S. add to the trade deficit with the Middle Kingdom. Yet China contributes almost nothing to the value of an iPhone; it does little more than assemble parts from elsewhere. A host of other countries, including the U.S., benefit more from producing the world's hottest gadget.” The iPad pie were grabbed by Japan, Germany, South Korea, Taiwan, China, etc. of the decreasing order, with the paramount portion of the pie left to Apple and its shareholders.

## CONCLUSION: WHAT CAN VOLVO LEARN FROM APPLE'S SUSTAINABILITY

It's indeed true that car industry and computer industry are very different. Cars are durables but computers become obsolete almost right after purchase. Hence our inferences are of limited value when the established technology aesthetics and sustainability issues were contrasted across the two representative players in their respective domains. In essence, Apple has found and deployed its magnifying glass (Foxconn or Hong-Hai) to mass-produce the prototype; Volvo Cars is on its way of doing so. In addition, Volvo falls a long way behind of Apple in term of agility and flexibility in grasping timing of sourcing globally and producing and assembling globally at (or near) the destination markets.

Our research indicated that Volvo may learn from Apple's experience by partnering with top quality manufacturers to produce and promote sales in China with competitive price and extended warranty, so as to achieve market share, economy of scale and targeted profit margin with Geely's domestic influence, sale's channels and horizontal and vertical relationships. The units manufactured in and sold within China (and neighboring/cross-border markets) may help cross-subsidize any loss incurred (due to exchange rate disparities between the location of manufacturing and the destination of sales) in the units manufactured in Sweden and for sale in Europe and North America, for example. Volvo's new plan to manufacture/assemble and sell 100,000 cars per year in United States illustrated visionary grasping of demographic big data, consumer behavior, figuring out the customers' perceived quality of products made in United States, and additional flexibility and strategic content.

In essence, Apple has found and deployed Foxconn to mass-produce the prototypes; Volvo Cars is on its way of doing so. In addition, Volvo Cars falls way behind Apple in term of agility and flexibility in grasping timing of sourcing globally and capturing demographic big data in producing and assembling "locally" at (or near) where the markets are. Apple foresees the market needs with ready technology and solutions and has harvested blockbuster successes. Apple has set an example of being profitable and sustainable! However, Apple's products are durable and the recycling of previous generations' product had started to cannibalize the sale of Apple's current product and had started to slow down Apple's growth. This, among other reasons, had caused Apple's stock price to decrease. Volvo Cars now has achieved aligned incentives on cost-cutting; and is expected to recourse to profit-making and prosperity. Volvo has recently demonstrated superior flexibility in lowering down labor cost while making US customers pleased by manufacturing and calibrating to the market in South Carolina; and maneuvered political skills in pushing Volvo into China's future government vehicle fleet possibilities.

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