

ARTICLE`s TITLE STRENGTH AND WEAKNESS OF CHINESE ENGINEERING KNOWLEDGE BASE ECONOMY.

Engr.Mansoor-ul-Hassan

B.SC (Industrial Engineering & Management), M.SC (Manufacturing Engineering), MBA (Human Resources Management), MBA (Marketing)

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Abstract

The main aim of this research paper is to analyze and observe the progress and its factors of Chinese economical growth in the field of engineering manufacturing industries. This article is point out of strength and weakness of engineering knowledge base economy. What are the secrets of Chinese success in the field of engineering?

The Chinese products are big thread to other nation and very big producer of world level. Weakness and strength of Chinese economy is analyzed after practical experience with Chinese goods and services. The article will be helpful for china, user and international partner to promote its goods in every field of life. The rapid growth of Chinese products is a painful to Europe, Japan and USA.

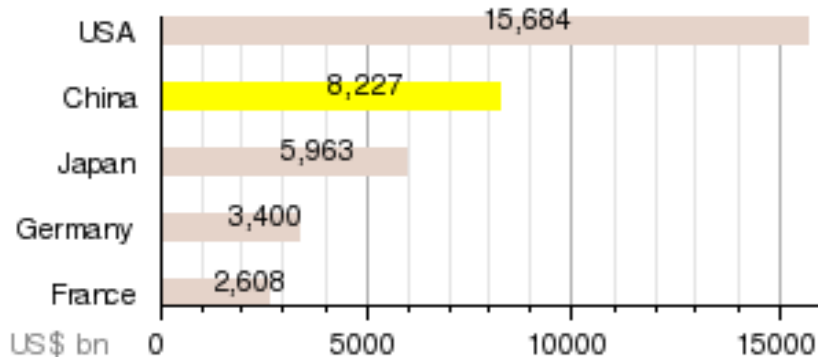
Keywords: Failure and success of chinese economy

Introduction

The **People's Republic of China**, is a sovereign state located in East Asia. It is the world's most populous country, with a population of over 1.35 billion. Since 1949 the government, under socialist political and economic system, has been responsible for planning and managing the national economy.

Since the introduction of economic reforms in 1978, China has become one of the world's fastest-growing major economies. As of 2013, it is the world's second-largest economy by both nominal total GDP and purchasing power parity (PPP), and is also the world's largest exporter and importer of goods. China is a recognized nuclear weapons state and has the world's largest standing army, with the second-largest defense budget.^[18] The PRC has been a United Nations member since 1971, when it replaced the ROC as a permanent member of the U.N. Security

Council. China is also a member of numerous formal and informal multilateral organizations, including the WTO, APEC, BRICS, the Shanghai Cooperation Organisation, the BCIM and the G-20. China is a regional power within Asia and has been characterized as a potential superpower by a number of commentators.



STRENGTH OF CHINA

1. National Economy

The Chinese is based on national economy with sincere and dedicated nation under a wise leadership. This is very strength. A world Private company cannot compete with any national company of china with help of huge financial support. The Chinese international firms have won many projects on base of financial support from country. The Chinese firms have completed many projects with own finance but the payment after completion of project due to only national economy. Any international private company cannot fulfill a complete project with own finance with zero advance and payment recover after completion of project. It is only possible due to national economy and country owns your back. The state has too many resources as compeer to a private company. The Hawaii telecom company has won many projects on base national economy as compare to Ericsson, Nortel, Siemens, and Nokia etc. The Chinese bank gave to much financial support to all firms in bulk and unlimited with very low interest. The national economy is best strength of china to win any type of project and business at international level which cannot compete any other country in the world.

2. STRONG MANUFACTURING BASE

A giant Chinese manufacturing strength is very important and unbelievable as compare to other country.

The manufacturing firm can manufacture any type of product within define production cost and quality depend of the order to complete in any country. The Chinese firms are very liberal in their brand and customers can

use their own brand in their native country for marketing. The china is biggest import and export in this time for manufacturing goods and purchased whole scrap from whole world for re-engineering. The Chinese manufacturing firms can manufacture the products on the demand of customers' limitations according to market with help of technical expert.

The manufacturing Industry and construction account for about 48% of China's GDP. China ranks second worldwide in industrial output. Major industries include mining and ore processing; iron and steel; aluminum; coal; machinery; armaments; textiles and apparel; petroleum; cement; chemical; fertilizers; food processing; automobiles and other transportation equipment including rail cars and locomotives, ships, and aircraft; consumer products including footwear, toys, and electronics; telecommunications & information technology.

3. STATE SINCERE ECONOMICAL STRATEGY & POLICY

China has become a preferred destination for the relocation of global manufacturing facilities. Its strength as an export platform has contributed to incomes and employment in China. The state-owned sector still accounts for about 40% of GDP. In recent years, authorities have been giving greater attention to the management of state assets — both in the financial market as well as among state-owned-enterprises — and progress has been noteworthy. China, therefore, still imports significant quantities of specialized steels. Overall industrial output has grown at an average rate of more than 10 percent per year, having surpassed all other sectors in economic growth and degree of modernization. Industrial output growth 1978-2006 Some heavy industries and products deemed to be of national strategic importance remain state-owned, but an increasing proportion of lighter and consumer-oriented manufacturing firms are privately held or are private-state joint ventures.

Since the 1950s, the trend away from the agricultural sector toward industrialization has been dramatic, and is a result of both policy changes and free market mechanisms. During the 1950s and 1960s, heavy industry received most attention and consequently grew twice as rapidly as agriculture. After the reforms of 1978, more attention to the agricultural sector as well as a move away from heavy industry toward light resulted in agricultural output almost doubling with only marginal increases for industry.

Before 1978, state-owned and collectively owned enterprises represented 77.6 percent and 22.4 percent respectively of China's exclusively public-ownership economy. The policy of reform and opening-up has given extensive scope to the common development of various economic sectors. Individual and private industrial enterprises and enterprises have mushroomed with investment from outside mainland China.

4. DECISION ON TECHNICAL GROUND BY PROFESSIONAL PERSON

The china is giving too much value, respect and important technical person engineers, scientists and economist on base of action depend upon thinking by Islamic theory. Rest of world, they are not giving proper value, benefits and important in national economical policy and strategy. Many under developing and developed are making their policy according to nationalism.

The nation and state have too much resources and wealth as compare to a private company which cannot compete in front of public limited company. The technical, professional, engineers, scientists and technician are people to develop the nation and its economy under the engineering base economy and engineering manufacturing goods. The technical decision should taking on pure technical base without interference of political pressure.

Domestically, modernization and economic growth has been the focus of the reformist policies introduced by Deng Xiaoping, and in attempting to achieve this, the leadership has implemented the Four Modernizations Program that lays special emphasis on the fields of agriculture, industry, education, science and technology, and defense.

5. PHILOSOPHY OF CHINA UNBELIEVABLE GROWTH

The Chinese forefather implemented a saving and efficient utilization of nation resources for achieving huge goals and objectives at national level. The leaders adopted a simple living standard like, house, running the bicycle whole nation and passing life within the limitation of resources. They did not took the load and enjoy the life on the money others like Pakistan. The whole nation and its leaders decided to do something outstanding after saving the money and best utilization of national resources in field of science and technology under sincere, honesty and dedication like Japanese.

They made the plan, policy and strategy to compete and manufacture at world level though very cheap product as compare to Europe and USA. They are started manufacturing small items like lock three cycles at very cheap in internal level. They have manufacturing the cheapest lock and said close all world companies with also our china lock. The world industries will be closed in future due to very cheap Chinese product and closing lock will also make in china. This is level of thinking and wisdom of whole Chinese united nation for achieving unbelievable goals and objective by MBO techniques at national level.

6. PHILOSOPHY OF CHEAP GOODS AND SERVICES AT INTERNATIONAL LEVEL

Philosophy of cheap goods and service at intentional level means to defeat and compete the quality, expensive goods and service with the help of forefather's philosophy and wisdom.

They have introduced the new philosophy of disposal items and through it after used in small items. The countries and companies cannot compete in low price, service and manufacturing facilities running under very cheap utilities. They have made the world largest Hydro-Dam three Gorges which can produce 22,500 MW electricity.

They government gave too much benefits and service for local and international companies to manufacturing the goods in china with best available best service and cheap utilities. Now the maximum world products are manufactured and came through china due to best manufacturing environment. The price of goods and service is two to three time less as compare to other international world brand from every small item to heavy machinery and equipment.

7. CHINESE EMBASSY ROLE IN WHOLE WORLD

The Chinese embassy and its official played vital role for industrial and manufacturing revolution in china which is threat of whole developed countries. They got the information for industrial development and manufacturing revolution after study the business opportunity in every country of the world. They provided the very important information and guidelines to government about planning, policy and strategy for business development. They also played very active role in every level of meeting to get business from every countries.

8. WHOLE NATION EFFORT AND DEDICATION

This tremendous and unbelievable success story of china is due to only whole nation & authority collect effort for development of rapid growth economy. This is second nation success story after Japanese nation. If someone decided to achieve outstanding goals and objectives but condition is whole nation collective efforts and sincerity for single goals and targets.

The Chinese nation achieved this level of engineering in two stage policy and strategy

1. First saving the national resources and income as whole nation.
2. Secondly best utilization of saving and national income for industrial revolution.

9. CHEAP INDUSTRIAL & MANUFACTURING REVOLUTION & STRATEGY

The Chinese nation introduced a new concept of cheap industrial and manufacturing goods as compare to very expensive in cheap industrial revolution, whenever are already available in the market like Japanese, USA and Europe products. The Chinese engineers and planner decided to produce too much cheap product as compare to high quality from small and consumer able items after studying the purchasing of power of the customers country to country and its economy. This strategy is succeed only due to whole nation direction and government planning on one page and facilitate to each others for achieving the major goals and objective of national level. They designed and developed the industrial economics zone, city and industries on technical ground for achieving productivity and cost reduction with help of engineer and designers on non-agricultural land along all required facilities and cheap utilizes for good industrial environment due to great infrastructure.

10. RAPID INDUSTRIAL OUTPUT

China has achieved a rapid increase in the gross value of industrial output (used before China switched to GNP accounting in 1986), which, according to official Chinese statistics, rose by 13.3% annually between 1950 and 1979.

The coastal provinces of Jiangsu, Guangdong, Shandong, Shanghai and Zhejiang provinces together account for close to 33% of the country's total industrial output and most of its merchandise exports. One key factor in this industrial geography has been the government's establishment of several Special Economic Zones in Guangdong, Fujian and Hainan provinces, and its designation of over 14 "open coastal cities" where foreign investment in export-oriented industries was actively encouraged during the 1980s.

China's cotton textile industry is the largest in the world, producing yarn, cloth, woolen piece goods, knitting wool, silk, jute bags, and synthetic fibers. Labor-intensive light industries played a prominent role in the industrial boom of the late 1980s and early 1990s, accounting for 49% of total industrial output, but heavy industry and high technology took over in the late 1990s. In addition to garments and textiles, output from light industry includes footwear, toys, food processing, and consumer electronics. Heavy industries include iron and steel, coal, machine building, armaments, petroleum, cement, chemical fertilizers, and autos. High technology industries produce high-speed computers, 600 types of semiconductors, specialized electronic measuring instruments, and telecommunications equipment.

- **MACHINERY MANUFACTURING**

China's machinery manufacturing industry can provide complete sets of large advanced equipment, including large gas turbines, large pump storage groups, and nuclear power sets, ultra-high voltage direct-current transmission and transformer equipment, complete sets of large metallurgical, fertilizer and petro-chemical equipment, urban light rail transport equipment, and new papermaking and textile machinery.

- **THE ENERGY PRODUCTION**

Thermal, hydro and nuclear power industries are the fastest growing of all industrial sectors. At the end of 2009, the installed capacity of generators totaled 874 million kW, and the total generated electricity came to 3.2 trillion KWH, ranking second in the world. Three gorges world largest hydro-dam which can produce 22,500 MW power.

- **AUTOMOBILE**

An example of an emerging heavy industry is automobile manufacture, which has soared during the reform period. In 1975 only 139,800 automobiles were produced annually, but by 1985 production had reached 443,377, then jumped to nearly 1.1 million by 1992 and increased fairly evenly each year up until 2001, when it reached 2.3 million. In 2002 production rose to nearly 3.3 million and then jumped again the next year to 4.4 million. Domestic sales have kept pace with production.

- **STEEL PRODUCTION**

Concomitant with automotive production and other steel-consuming industries, China has been rapidly increasing its steel production. Iron ore production kept pace with steel production in the early 1990s but was soon outpaced by imported iron ore and other metals in the early 2000s. Steel production, an estimated 140 million tons in 2000, rose to more than 420 million tons by 2007.

- **TRADE RELATIONS**

In recent decades, China has played an increasing role in calling for free trade areas and security pacts amongst its Asia-Pacific neighbors. In 2004, it proposed an entirely new East Asia Summit (EAS) framework as a forum for regional security issues. The EAS, which includes ASEAN Plus Three, India, Australia and New Zealand, held its inaugural summit in 2005. China is also a founding member of the Shanghai Cooperation Organization (SCO), along with Russia and the Central Asian republics. China became a member of the World Trade Organization (WTO) on 11 December 2001 and also with USA, Africa etc.

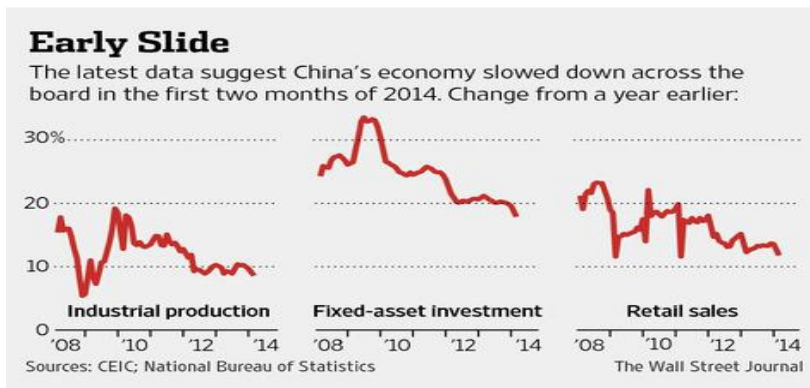
- **ECONOMY**

As of 2013, China has the world's second-largest economy in terms of nominal GDP, totaling approximately US\$9.3253 trillion according to the

National Bureau of Statistics of the People's Republic of China.^[12] If purchasing power parity (PPP) is taken into account (US\$12.405 trillion in 2012, US\$14.9614 trillion in 2013), China's economy is again second only to the United States.

WEAKNESS OF CHINESE ENGINEERING BASE ECONOMY

China's economy weakened sharply during the first two months of the year, deepening concerns that growth in the world's second-largest economy would decelerate further. The country's top leaders now have tough decisions about whether to set aside economic overhaul measures that could pinch growth in the short-term. The slowdown was across the board, including retail, manufacturing, housing and investment, as the National Bureau of Statistics released a raft of data on Thursday for January and February, which was combined to adjust for distortions from the Chinese Lunar New Year holiday. Some of the results were the weakest since the global financial crisis of 2009. "This is terrible," said Liu Li-Gang, a Hong Kong-based economist at ANZ Bank. ANZ.AU +0.33% "I wasn't expecting high figures. The main weakness and failure are Chinese production and its product due to following reasons and negligence.



1. MAIN FOCUSES ON SALES BUT NEGLECTED ALL MATTERS.

The china is doing main focus on sales activities on base of cheap price & cost at every sector consumer and industrial production like job production, batch production and job production categories. They have major advantages of cheap product due to cheap labor, material, government strategy and policy, financial support and huge cheap infrastructure utilizes. The china has implemented only policy and strategy to produce cheap product and sell it all over the world but they neglected and left the customers in all others area engineering product. This will be short term

techniques to sell in market but not long term. This strategy and policy will be successful in area of very small and consumer's items like toys, lock, pencil, garments and torch like mass production. This is very wrong and weak planning and strategy for 4S products, industrial machinery and equipment, like batch and job production. They were doing to work and policy like Japanese style in 1970 level but still too much weak in many area.

2. POOR INDUSTRIAL MANAGEMENT

The management of Chinese industries is very weak and poor to retain and sustain customers and this cheap product bubble long time. This is only possible in area of mass production. The management is going to failure in job production and batch production products due to poor and weakness management implementation. All foreign industries are doing very good work and taking full advantage of cheap labor and infrastructure utilizes in china for producing cheap and little quality product as compare to Chinese product. The manager's should review their planning and strategy about production, TQM, TQC, distributor network and after sales etc. Dr. Edward Deming is father of quality in japons with help of its 14-points which adopt Toyota and all others Japanese companies.

3. POOR DOCUMENTATION

The china companies and industries are very weak and poor in documentation at international level. Many companies are producing customers catalog in Chinese languages. There are many weakness areas in poor information about product. They do not know about last production model and its parts due to weak and poor documentation. They did not know about what they were produced last years. There is no standardization which they are producing last many years. They are using something's in one year production and next year new different parts but customers confused due to change in product every year. They are changing very rapidly in product design and parts, and even engine. There are many mistakes in parts and product due to no standardization in product long term.

- Poor customers manual information
- Documentation, catalogue, parts list and specification of product
- Many firm are giving in only Chinese language but not in English
- Poor information about product.
- Poor information in parts catalogue.
- Still working on picture feedback.
- Poor in parts number and identification etc.

4. POOR COMMUNICATION AT INTERNATIONAL LEVEL

Poor communication is another weakness of Chinese firm and companies at international level. There are few people which are speaking English language. There is only one non technical coordinator which communicates between customers and Chinese professional in the industries. But they are not properly communicated with each others about problems of customers many days. The customers are suffering due to this weak area of Chinese industries many days. The technical communication is very import for international business management.

5. HEAVY MACHINERY DESIGN & WEAK MANUFACTURING.

The small and consumers product are very simple and easy to product in bulk but less feature. The heavy machinery and industrial equipment is very specialized and technical product in job production. There are many example of batch and job production like Engine, locomotive, submarine, ship , aircraft, industrial equipment heavy machinery , plant, construction machinery, industrial plant and automotive. They are very still too much weak in area of design, metallurgy, manufacturing and mechanical engineering. The china is successful of first step of copy and manufacturing with bad quality on heavy machinery but with cheap price. They have to make expert in many areas of engineering after reach the first of step of engineering to produce something but still remaining to go beyond the excellence in engineering products.

6. HIGH MAINTENANCE COST

The Chinese heavy product are manufacturing on base of Russian technology, which have very high maintenance cost as compare to others international brand. The quality of industrial equipment and product is not very good but outlook very nice like makeup a lady. The maintenance is also very huge cost in future planning and disturb of work and customers. Japanese, USA and Europe product need to maintenance after 5 years but Chinese start problem within warranty period and one year. The capital cost is very cheap as compare to Japanese, Europe and USA product but maintenance problems started within one year, which is very painful to the customers.

7. QUALITY ,TQM & TQC FAILURE

The quality, total quality management and total quality control are main failure and weak area of heavy machinery and equipment in china. They are still neglected this area in job production. The many countries and customers purchased heavy machinery and equipment due to cheap capital cost with bad experience in within few years due to low quality, breakdown, and high maintenance cost at initial stage. Pakistan purchased locomotive for

Pakistan railways due to very cheap and low capital cost. But they have faced too much problem within few years due to low quality, high maintenance cost and every time breakdown. Still Pakistan is facing problems due to low quality locomotive engine and maintenance problem routine. They should be required an others Dr. Edward Deming Japan for continuous improvement in every area of industries like, quality, production and material etc.

8. POOR FEEDBACK & RESPONSE

The poor feedback and response is an others very big weakness at international level. The many Chinese firms are not giving proper response and feedback during any warranty and spare parts problems. They are not interested to get feedback and work on it for improving the product. The feedback is very important to any company for achieving the beyond excellence. The many company are ignored and neglected the feedback from customers which is very weak and failure of improvement in future. The many firms have focused only philosophy of sales and lost their position in future due to neglect and ignore point of view regarding customers.

9. POOR SERVICE AND AFTER SALES SUPPORT

This area is very important for any company which wants to retain and restore their customers. The Chinese business philosophy is to sell the product at any cost without consider service and sales support. The heavy machinery and industrial equipment cannot survive in the market without service and after service support. The batch and job production cannot furnish and survive in the market long term.

The china has too much strong in the field of sales with help of cheap cost and manufacturing of product. But they are very weak in others area which is very import and essential to develop and enhance in the international market.

10. POOR RETAIN, SUSTAIN & RESTORE CUSTOMERS

The china firm is very weak to retain and restore the customers in heavy machinery and industrial equipment long term. They are using same strategy in heavy product like consumer and small items strategy which is total wrong and just for short benefits. The customers are using the heavy machinery and equipment facing too much problem like Sales (Very Strong due to cheap capital cost but low quality), Service (very weak), Spare parts (very Weak), and Customers support (Very Weak)

The customers purchased the heavy machinery and equipment due to low capital investment at initial stage. They are facing too much problems within one years of performance like engine, gears and converter etc. The customers have faced these problems after purchase of heavy products like

slow response, bad performance, Major breakdown of product and its parts, Weak service, Wrong and delay in spare parts, Bad customer support

- Less distributors and dealers network as compare to Japanese and European companies at international level.

ECONOMIC HISTORY AND GROWTH (*Economic history of China (1949–present)*)

From its founding in 1949 until late 1978, the People's Republic of China was a Soviet-style centrally planned economy. Following Mao's death in 1976 and the consequent end of the Cultural Revolution, Deng Xiaoping and the new Chinese leadership began to reform the economy and move towards a more market-oriented mixed economy under one-party rule. Agricultural collectivization was dismantled and farmlands privatized, while foreign trade became a major new focus, leading to the creation of Special Economic Zones (SEZs). Inefficient state-owned enterprises (SOEs) were restructured and unprofitable ones were closed outright, resulting in massive job losses. Modern-day China is mainly characterized as having a market economy based on private property ownership and is one of the leading examples of state capitalism. The state still dominates in strategic "pillar" sectors such as energy production and heavy industries, but private enterprise has expanded enormously, with around 30 million private businesses recorded in 2008.

RECOMMENDATIONS AND CONCLUSION

The china has many strength and weakness in the field engineering base economy. The china has rapidly progress and growth at international level. This position will be maintained and retained in long term or not. They have adopted the philosophy and strategy of low cost and less investment due to cheap product with help of government facilities and cheap infrastructure utilizes for small items and consumers product. There are many suggestion and guidelines as below.

1. The success and failure is due to top management decision making.
2. Top management is responsible of success and failure and accepts it with open heart.
3. The individual and company level, believing management to be responsible for 99% of all problems.
4. The company & Government should be a completed and implemented, policy, plan, strategy and philosophy of management to small or large organizations in the public, private or service sectors.
5. They should be adopted towards continuous improvement of product and service after getting regular customer's feedback.

6. They should be reduced the high maintenance cost after one or two years like.
7. They should be adopted same strategy free of maintenance cost of world leader in the field of automobile and electronic.
8. The china and companies should be improved and transferred the selling concept into marketing concept.
9. They should be adopted and implemented product with 4-S strategy for achieving and competing the world brand.
10. They should be adopted to improve of delay, mistakes, quality, documentation and defective workmanship.
11. They should be adopted and improved mass inspection, statistical evidence that quality, activities, technical meeting, concurrent engineering, brainstorming and end the practice of awarding business on the basis of price.
12. The government and companies should review all industrial development, policy, planning and strategy at national external and internal element.
13. They should be adopted and found the problems and then to work continually on the system.
14. They should be focused to improve the quality of product and service inside the industries activities and outside at international.
15. They should be adopted and promoted to modern methods of training on the job before joining and after joining time to time.
16. They should be worked for welfare of worker at any cost, which real heroes of nation to return the money in the country from other countries.
17. They should be adopted modern methods of supervision of production workers, service worker and the responsibility of all must be changed from numbers to quality and productivity.
18. They should be analyzed and removed the fear, so that everyone may work effectively for the company.
19. All employees, workers and management should be participated in decision making at all level.
20. They should be used the concurrent engineering and brainstorming between departments with positive attitude to resolve the problems.
21. The companies should be published healthy material, technical material, goals, quality policy, posters and slogans for promotion, motivation and enhance workforce.
22. They should be removed all non productivity activities and non standard style of product and work.
23. They have should be improved and promoted the documentation and communication in both way of commercial and technical area

24. They should be helped and trained the employees, worker and management from proper program of education and retraining time to time for achieving the beyond the excellence.
25. The government and companies' level should be insisted to create a structure in top management that will push on the above points every day. Then, you can retain and sustain your customers with help of good quality product, service, spare parts, customer support with best and excellent style of professionalism.

The china and its companies' policy and strategy should rectify to work and improve the above weakness for competition with all international brands. They have achieved the first step of engineering to develop the very cheap product and main focus on selling concept after neglected all area of marketing and 4S business strategy. The customers have purchased all Chinese products due to only low price without considering other area of business. Now the customers have practical experience with Chinese product and faced bad behavior and response about above area of weakness.

If the china and its companies want to retain and sustain the customers long term, when they have to improved the weak area on urgent basis. They should be shifted their policy from selling concept to marketing concept along improvement of all neglect area to satisfy the customers as king. Then,

"CLOSE THE ALL INTERNATIONAL INDUSTRIES WITH ALSO CHEAP
LOCK OF CHINA"

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