

Shan-Zhai: alternative manufacturing – making the unaffordable affordable

Evolving on the fringes of China's industrial heartland and regarded with some suspicion by the established players, Shan-Zhai manufacturing has nevertheless grown into a multi-million dollar business, that could lead to new insights for Western manufacturing.

What is 'Shan-Zhai'?

China has long been known as the world's workshop, making products for global brands, high on manpower and production expertise, but perhaps low on innovation and development skills. Shan-Zhai could be seen as evidence that China's capabilities are developing and the country's industrial sector is becoming increasingly sophisticated.

Shan-Zhai is a term familiar to millions of Chinese. Its origins stem from the medieval period, when it came to embody a desire for local autonomy and a rebellious attitude towards the emperor. Now mobile phone developers have adopted Shan-Zhai as an ethos for manufacturing – and thanks to the experience garnered by working for large scale Original Equipment Manufacturers (OEMs), many Shan-Zhai developers along the mobile phone supply chain have begun to reap the benefits by developing their own product designs and production capabilities.

In this new version of Shan-Zhai the traditional concept of autonomy has taken the form of a degree of commercial independence. The Shan-Zhai idea of rebellion has evolved into a desire to take on global corporations by producing copies of world-leading mobile brands. Shan-Zhai manufacturing is also typified by the rapid production cycle of the products – concept to delivery is often achieved within weeks.

Origins of 'Shan-Zhai'

Shan-Zhai grew out of the special enterprise



Shan-Zhai developers actively seek to create demand. This outlook has led to some unexpected products, such as the mobile which doubles as a cigarette pack, the phone camera with bolt-on telephoto lens and the Apple iPhone clone, the Hi-phone made by Orange.

The Shan-Zhai firms are also developing phones with multi-Sims, new mobile interactive platforms, the ability to project images or test currency and it's this focus on innovation coupled with its rapid manufacturing processes may pose the greatest threat to established major companies.

The essence of Shan-Zhai

- Be prepared to take risks
- Try to meet every customer demand
- Create your own market
- If you can think it you can make it
- Making the unaffordable affordable
- Providing luxuries for the masses
- Glocol not global
- Community not corporation
- Grass roots not top down

zone of Shenzhen – created around 30 years ago as part of a series of economic reforms by former Chinese leader Deng Xiaoping. The measures – known as 'Socialism with Chinese characteristics' were designed to encourage foreign investment into the country.

The aim was to help develop the Chinese economy, providing it with knowledge of manufacturing from the ground up. Due to its proximity to Hong Kong, Shenzhen was named as one of the pioneer zones. Formerly a small fishing village, it has been transformed into a major city in the last thirty years. It swiftly became a hub for finance and hi-tech industry. It is home to some of the PRC's major corporations – such as telecommunications firm Huawei and internet portal Tencent – as well as factories specialising in manufacturing electronics and, latterly, mobile telecommunications and personal computing.

Since the reforms were introduced the Chinese economy has grown consistently by around 10% each year. International investment and its relatively low cost base have seen Shenzhen become a major part of China's hi-tech sector. Thirty years of manufacturing has led to the creation of a major talent pool of designers, manufacturers and technologists – a sophisticated manufacturing infrastructure eagerly waiting for commercial opportunities.

The enabling network

Shan-Zhai firms have also taken advantage of the 'enabling network', a term referring to a loosely affiliated group of companies which specialise in different activities in the manufacturing value-chain. This means that a company with specialised knowledge in production can use the expertise of another company specialising in design

or R&D to create new products. For example, in 2005 Taiwanese firm MTK developed a new 'total solution chip'. For the first time, an independent company was able to provide a single chip which would give a similar operating platform and comprehensive functionality to that used by OEMs and supplied by many major chip providers. It meant the cost of developing a mobile phone from the ground up was no longer prohibitively expensive. Developers could create their own product, without having to fund costly R&D or face the threat of legal action for infringing intellectual property rights.

This has allowed Shan-Zhai firms have captured a significant share of the domestic Chinese market. They've achieved this in the last two years by offering alternative brands at less than half the price of the genuine product.

This was helped by Shenzhen's unique position within China. Around 30% of the 1.17bn mobile handsets produced in 2008 were made in this area. This means there is a concentration of mobile telecom expertise within the city and surrounding region which the developers have been able to draw upon to help manufacture their products.

Other growth factors

Shan-Zhai has also been boosted by the relaxation of the regulatory framework within the PRC. In 2007 the central government dismissed the licence requirement for producing mobile phones. The move was designed to make the mobile market more competitive and meant that manufacturers would be granted permission to introduce new handsets as long as they met quality control standards.

At the same time that central government relaxed regulations, local government also grew more tolerant towards small scale mobile phone manufacturers. This ensured local legislators could benefit from tax revenues. A further incentive for Shan-Zhai manufacturers was the new Intellectual Property Rights Protection (IPR), which the Communist Party of China also termed 'innovation with Chinese characteristics'. The policy is designed to accelerate the culture of innovation within China, as well as ensuring foreign companies would not be dissuaded from further investment.

Threat to OEMs

Shan-Zhai manufacturing allows rapid product creation. The use of the enabling network means these small firms have a competitive advantage over large scale OEMs like Nokia, Motorola and Sony-Ericson. Something Nokia employed 200 engineers to do in six months – namely



design, manufacturer and sell a new product – can now be done by a handful of staff in a small workshop in a matter of days, mainly because of the MTK total solution chip. The production is outsourced to a local manufacturer and the phones are produced at low cost.

Why the interest in Shan-Zhai?

Shan-Zhai has the potential to offer insights for UK and international manufacturing, such as:

- Providing excellent illustrations of how open innovation, the use of enabling networks and the rapid exchange of knowledge have accelerated the manufacturing process.
- Encouraging developed nations and established companies to reconsider the relationship between manufacturing and brand. The Shan-Zhai phenomenon clearly demonstrates that if a nation or region has sophisticated manufacturing capabilities, it is easier to capture emerging opportunities and create alternative brands in new markets.
- Providing examples of best practice for establishing enabling networks – involving and working with numerous different companies.
- Highlighting the role played by a loose coalition of companies (such as contract manufacturing service providers and supply chain downstream distributors) who join forces over a single commercial opportunity. This is an illustration of the impact of what the IfM has defined as a Global Manufacturing Virtual Network (GMVN).
- Demonstrating the benefits of clustering – Shan Zhai firms have taken advantage of the expertise and capability on their doorstep to take control (at least domestically) of an entire sector. Creating business clusters (such as Silicon Valley or Cambridge Technophole) encourages new product development and creates a vibrant business ecosystem.

Shan-Zhai could also provide pointers toward strategic innovation – the process of using value chains to create better business models, involving manufacturing processes which dramatically reduce production costs and lower prices for goods. Shan-Zhai developers have exploited new developments in their

sector, utilised the skill base from the technology cluster on their doorstep and have been able to take advantage of factory slack to manufacture their products.

Next steps

An IfM research project will seek to further describe the Shan-Zhai ethos and methodology more fully. It aims to answer several questions:

- What is the definition of a Shan-Zhai manufacturer?
- Is Shan-Zhai a disruptive process? Does it challenge traditional ways of doing things?
- Can Shan-Zhai be classified as an emerging industry? From a strategy perspective, can it be seen as a unique way of thinking, or a unique way of structuring resources?
- Does it have policy implications? Could western governments adopt similar approaches when dealing with emerging industry, or seeking to encourage manufacturing clusters?
- How can we nurture a region or cluster to create momentum for new opportunities?
- Can 'best practice' guidelines be established for working with the GMVN remotely?
- Can industrialisation be seen as an evolutionary process – how to start/position, grow, mature, create sustainable industry?

The project also hopes to look at the interactions between individual firms within Shan-Zhai networks.

Briefing background

The topics illustrated in this briefing come from the findings of IfM study tours to China involving students from the Industrial Systems Manufacturing and Management (ISMM) course and the IfM PhD programme. The tours visited the enterprise zones around the Pearl River Delta Region, Yangtze River Delta Region, Beijing/Tianjin region, as well as Taiwan.

The main industrial focus of the tours was on mobile telecommunications and its increasing convergence with the computing industry.

Further information

Contact Dr Yongjiang Shi
Email: ys@eng.cam.ac.uk