

Chapter 2

Hon Hai/Foxconn: which way forward?

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1. Introduction

Hon Hai/Foxconn, the world's leading contract manufacturer, assembles consumer electronics products for well-known brand-names. It is also a supplier of parts and components and has strategic alliances with many other such suppliers. Despite its size (over a million employees; ranked 32 in the Fortune Global 500) and client base (Apple, HP, Sony, Nokia), remarkably little information is publicly available on the company. The company does not seek the limelight, a trait that it shares with many others operating in this industry.

Quoted on the Taiwan stock exchange, Hon Hai Precision Industry (HHPI) functions as an 'anchor company' for a conglomerate of companies.² As the case may be, HHPI is the sole, the majority or a minority shareholder in these companies and has full, partial or no control at all. Many subsidiaries use the trade name Foxconn and that is why this chapter refers to the company as Hon Hai/Foxconn. Among its many subsidiaries and affiliates are Ambit Microsystems, Cybermart, FIH Mobile, Fu Taihua Industrial, Hong Fujin Precision and Premier Image.

After a near hundredfold increase in sales in the first decade of this century Hon Hai/Foxconn's sales growth slowed down drastically. The company is facing several challenges: slowing demand growth in its core (electronics) business; a weakening link with Apple, its main customer; rising labour costs and a more assertive labour force in China, its main production location; and pressure from its shareholders.

1. Copyright 2015 Gijsbert van Liemt. The author gratefully acknowledges the comments received from Carin Håkansta and Jan Drahokoupil.

2. Bloomberg counted over 230 companies owned or controlled by Hon Hai Precision (Bloomberg.com 22.03.2013).

This chapter discusses how the company is coping with these challenges. It is organized as follows. After a short introduction on the structure of the consumer electronics industry (Section 2), the chapter provides some basic facts on Hon Hai/Foxconn (Section 3) before asking how the company managed to grow so fast (Section 4). Then it looks into the challenges the company is currently facing (Section 5) and how it is dealing with these challenges (Section 6). It ends with a conclusion (Section 7).

The chapter is entirely based on secondary sources. To present a reasonably accurate picture and in addition to what little information the company itself provides, a large number of print and online sources were consulted. Unfortunately, these rarely provide 'hard' information but typically refer to 'industry sources' or 'sources familiar with the company'. The picture that emerges is far from complete.

2. Contract manufacturing in consumer electronics

This section³ introduces the main industry players and how they interact. Several groups of players are active in the electronics hardware industry. In addition to the well-known brand-names (Apple, HP, Dell, Samsung, Sony, Lenovo) these are: original design manufacturers (ODMs), such as Quanta, Asustek, and Compal (nearly all Taiwan-based); contract manufacturers (CMs), such as Hon Hai/Foxconn, Flextronics, Pegatron and Jabil Circuit; suppliers of key components (microprocessors, visual displays, hard drives, cameras); as well as thousands of suppliers of non-key components.

Schematically, the industry is best depicted as a pyramid with the brand names at the top. A second layer consists of Hon Hai/Foxconn, other contract manufacturers, ODMs and suppliers of key components. In the third layer suppliers of sub-assemblies are found. Suppliers of simple components occupy the lowest layers.

The brand-names focus on product conception, marketing, design and the purchasing of key components, and rely on contract manufacturers for detailed design, engineering, assembly and logistics (Kawakami,

3. van Liemt (2007) and van Liemt (2007a) are important sources of this section.

2011),⁴ as specified by the brand-names. Original design manufacturers design, develop and manufacture products for the brand-names; they own the corresponding patents.

The brands compete in the end-consumer market. The contract manufacturers and original design manufacturers compete for work from the brands. The biggest contract manufacturers employ more people than the brands that have outsourced their most labour-intensive activities.

The boundaries between the different groups of players are anything but static. Except for the most successful brands and some suppliers of key components, all operate with narrow margins. Many are keen to move into higher value-added activities. Several contract manufacturers also offer design services (and so enter original design manufacturer territory). Some original design manufacturers (for example, HTC) have started selling under their own brand-name. Even brand-names are looking to expand into higher value-added activities: for example, HP is actively increasing the weight of its IT consultancy services.

A further complicating factor is that certain brand-names (Samsung, Sony) also supply components to their competitors. Apple and Samsung may be fierce competitors in the end-consumer market (and regularly in conflict over intellectual property issues), but Samsung also supplies Apple with key components. Indeed, while Samsung's smartphone sales in China are suffering from strong competition from the likes of Apple and Xiaomi, its semiconductor sales are booming thanks in part to demand from these very rivals (Mundy 2015).

Consumer electronics is a highly volatile business. Rapid innovation and short product cycles cause strong fluctuations in sales volumes. New products may fail to generate the demand expected; or they may be a great success, with sales volumes far exceeding expectations. In both cases it is critical that production can be adjusted rapidly up or down. How to cope with demand fluctuations is thus a principal management challenge for all players (and their workers).

4. However, some vertically integrated original brand manufacturers (OBMs) continue to do manufacturing 'in-house'. Pawlecki (in this volume) provides a more elaborate discussion of vertical integration in the electronics supply chain.

Market leaders can make good, sometimes very good profits. But those that fail to keep up can fall fast and far and even see the continuity of their operations threatened. Earlier market leaders – such as Blackberry, Motorola and Nokia – have seen their market share all but disappear. Who remembers Siemens mobile phones or IBM PCs?

Relations within the industry are complex. Negotiations between buyers and suppliers take place in great secrecy. Reportedly, they are tough and have become tougher over the years. Suppliers of key components have more bargaining power than suppliers of standard components. Whenever and wherever possible, buyers try to pass on to their suppliers the uncertainty that they encounter in the market place. The pressure on prices is constant. Naturally, suppliers resist this pressure; they also seek longer-term commitments from their customers (contracts are typically renegotiated with every new product revision).

Who selects component suppliers? Brands select and negotiate directly with their suppliers of key components. For non-key components the situation varies. Having the freedom to choose their own suppliers is an important bargaining issue for contract manufacturers, especially for a company such as Hon Hai/Foxconn, which produces many components ‘in-house’ and has strategic alliances with other suppliers.

Contract manufacturers are not a homogenous group. Many are niche players. A few specialize in large volumes. Some are specialists in medical or automotive; others in telecoms and consumer electronics. Some specialize in products with short life-cycles; others in products with longer life-cycles. A few also do design work (and thus resemble original design manufacturers). The biggest (such as Hon Hai/Foxconn) offer a broad range of services. Hon Hai/Foxconn assembles products with long life-cycles, such as games consoles but mass assembly of short-cycle consumer electronics is its main – if by no means only – business (see also the next section).

3. Hon Hai/Foxconn (HHF): the company

Among the select group of top contract manufacturers with world-wide operations, Hon Hai/Foxconn stands out for its size (it is the biggest of them all) and its rapid growth in sales and employment.

Hon Hai/Foxconn is headquartered in Taiwan, where it employs around 46,000 people. On mainland China it operates some 30 industrial parks. Its main manufacturing site in Shenzhen-Longhua ('Foxconn City') is the size of a small town with (as described by Lüthje et al., 2013) fifteen major factory buildings, each housing production for one major brand-name customer, and large-scale facilities for metal stamping and manufacturing, plastics injection moulding, cable assembly and other auxiliary functions.

Over the years, the company has expanded its activities to Brazil, Czechia, Hungary, India, Japan, Mexico, Slovakia, Turkey, the United States and Vietnam among others. Hon Hai/Foxconn employs over one million people (1,290,000 in late 2012), up from 508,000 in 2007 and 130,000 in 2004. Acquisitions are, of course, partly responsible for this rapid increase in employment (and sales).

The numbers employed are not evenly spread among locations. The large majority are employed in Taiwan and China where production sites typically employ tens, if not hundreds of thousands of people (Shenzhen: 390,000; Zhengzhou: 192,000; Chengdu: 110,000) (Mishkin and Pearson 2013). In contrast, outside China and Taiwan their number is typically counted in the hundreds or thousands: Vietnam: 10,000; Jundiaí (Brazil): 3,000; Pardubice (Czechia): 5,000; Nitra (Slovakia) fewer than 4,500 (*ibid.*; The China Post; Reuters).

Best-known for its vast numbers of assembly line workers the company also employs tens of thousands of engineers, toolmakers and other skilled workers. Research and development is concentrated in Taiwan but the group also has research centres in Japan, China and the United States.

3.1 Origin and development

Hon Hai Precision Industry (HHPI) started life in 1974 in the Taipei suburb of Tucheng making plastic dials for black-and-white TVs with just a few employees. Over the years, HHPI expanded its range of products and activities from plastic moulding to include cables and connectors, Personal Computer (PC) enclosures and PC (sub-) assembly. In the 1980s and 1990s, like other contract manufacturers, Hon Hai/Foxconn benefited from the rapid increase in demand for PCs and from the trend among brand-names to outsource manufacturing.

From the mid-1990s sales growth accelerated (between 1996 and 2006 sales more than doubled every other year). In the 1990s all leading contract manufacturers grew annually in the double digits thanks to rapid growth of demand in the electronics and communications industries, and to the trend among brand-names to outsource more and more activities. Mergers and acquisitions were a further source of growth. By the turn of the century, the burst of the 'dot.com boom' affected the contract manufacturers in two contrasting ways. Lower market demand left them with considerable overcapacity due to depressed sales. But they received a growth impulse thanks to the brand-names' accelerating divestment.

By the late 1990s Hon Hai/Foxconn was still the smallest of a select group of top contract manufacturers but in the new century it benefited as no other, first, from the world-wide surge in demand for mobile phones and since 2007, from the growing popularity of Apple, its main client. By 2006, it had become the world's leading contract manufacturer. Six years later it was the dominant contract manufacturer, selling over four times as much as Flextronics, long the world's number two contract manufacturer. All in all, sales increased from USD 1.2 billion in 1998 to USD 117 billion (!) in 2011, when its rapid expansion came to a halt (2014 sales: USD 132 billion). Its profits also went up but not at the same rate. Net income margins dropped to below 2.5 per cent in 2012 from 4.6 per cent in 2007 (company information; Fortune; FT).

The company has grown through a combination of internal growth, the construction of new sites ('greenfield' investments) and mergers and acquisitions. Investments in China have typically been greenfield investments. Mergers, acquisitions and minority participations have been the preferred method in Taiwan (and, more recently, in Japan), typically as a means to acquire technology and know-how. Examples are Ambit Microsystems (acquired in 2003), Premier Image Technology (2005), Chi Mei Optoelectronics (2008) and Champ Tec Optical (2011). Outside China and Taiwan its investments were often in facilities that were divested by some major customer. Examples are Motorola (Mexico), HP (Australia), Sony (Mexico) and Cisco (Mexico). For a historic overview, see Annex 1.

Most well-known US, European, Taiwanese and, increasingly, Chinese and Japanese brand-names have made use of Hon Hai/Foxconn's services. Hon Hai/Foxconn assembles tablets for Amazon and Nokia; LCD TVs for Sharp and Sony; games consoles for Microsoft, Nintendo

and Sony; desktop PCs for HP; notebooks for Acer, Asustek, Dell, HP and Sony; (smart) phones for Amazon, Blackberry, Huawei, Motorola, Nokia, OnePlus, Sony and Xiaomi; digital still cameras (DSCs) for Fuji, Olympus and Panasonic; set-top boxes for Cisco; servers for IBM; robots for Softbank; and touch screens for Tesla.

But Apple Inc. is its main customer by far, contributing between 40 and 50 per cent to Hon Hai/Foxconn's total revenues. The iPhone is the main driver of Apple's growth and accounts for over half of its sales⁵ and an even larger share of its profits.

The successful launch of the iPhone (in 2007) and the iPad (in 2010) turbo-charged Hon Hai/Foxconn's production growth. It also made Hon Hai/Foxconn highly dependent on the success of Apple's products. Likewise, Apple depends on Hon Hai/Foxconn for the timely production and delivery of its products. From the outside, the relationship appears to be beneficial for both parties. Nonetheless, Apple now makes increasing use of other contract manufacturers. Taiwan-based Pegatron became a supplier of low-cost versions of the iPhone in 2011 and of other Apple products in 2012. For now, Hon Hai/Foxconn continues to be Apple's main assembler.⁶

4. Sources of growth

Quality, high customer orientation, and its integration with component suppliers are widely seen as Hon Hai/Foxconn's key selling points. Other competitive advantages are: operating in China; scale economies and cross-subsidization; no ambition to sell under its own brand-name; and the drive and determination of chairman Terry Gou.

5. 63 per cent in early 2015.

6. According to Deutsche Bank, Hon Hai/Foxconn received 79 per cent of Apple's iPhone orders in 2013, with the remaining 21 per cent allocated to Pegatron. Hon Hai/Foxconn's share was expected to fall in 2014 to 74 per cent, with 23 per cent for Pegatron and 3 per cent for Taiwan-based Wistron. For iPad assembly orders, Hon Hai/Foxconn's 69 per cent share was expected to drop to 63 per cent in 2014 with Compal getting 7 per cent and Pegatron 30 per cent (Focustaiwan 18 December 2013).

4.1 China

Hon Hai/Foxconn was early in setting up large-scale production capacity in China when labour costs were low. These costs have since increased but China's proximity to Taiwan, the size and dynamics of its domestic market and the presence of a vast number of suppliers continue to be a competitive advantage.

Thanks to generous official support China offers a high level of production flexibility. Local and provincial authorities are generally quick to provide the required permissions and infrastructure that facilitate an early production start. They help with recruiting workers; they pressure local vocational schools to place their students (including those not enrolled in technical subjects) as interns at electronics factories, even when the latter provide minimal learning opportunities (Pun et al. 2012).

Operating in China also offers a high level of labour flexibility⁷ (see Box 1).

Box 1 Labour flexibility in China

Operating in China offers producers high levels of numerical, pay and working-time flexibility. *Numerical flexibility* results from a combination of institutional factors, business strategies and government policies. China's electronics assembly plants typically employ tens of thousands of migrant workers. Because of the *hukou* household registration system it is very difficult for poor, unskilled rural migrants to obtain urban *hukou* and this limits their access to subsidized public housing, education, health care, pension and unemployment benefits. Typically, they live in company-provided dormitories on or near the production site, which facilitates production flexibility. Migrants work long hours and do monotonous work at rapid pace, often under stressful conditions. Turnover rates are high. Even employers who offer relatively good benefits have turnover rates between 30 and 60 per cent (Lüthje et al. 2013). Some 20–30 per cent of Chinese workers do not return to their factories after the Lunar New Year (Shanghai Daily 2013).

7. Duhigg et al. highlight Hon Hai/Foxconn's 'breathtaking' speed and flexibility when (Apple's former CEO) Steve Jobs insisted on fitting iPhones with scratch-resistant glass screens just weeks before launch: 'New screens began arriving at the plant near midnight. A foreman immediately roused 8,000 workers inside the company's dormitories and each employee was given a biscuit and a cup of tea, guided to a workstation and within half an hour started a 12-hour shift fitting glass screens into bevelled frames. Within 96 hours, the plant was producing over 10,000 iPhones a day...' (Duhigg et al. 2012).

Overtime pay makes up a sizeable part of overall compensation and this provides employers with both pay and *numerical flexibility*. When business is slow, employers offer less overtime work and this prompts many workers to leave on their own initiative (the employer saves on redundancy payments). Migrants are keen to work overtime because they cannot survive on their basic wage alone. But this eagerness is easily abused when, because of a sudden surge in demand, they feel pressed into working long hours that far surpass the legal maximum permitted.

New legislation⁸ has greatly improved the protection of workers' rights but the problem is enforcement. Local and provincial authorities frequently do not enforce labour laws and give priority to the demands and interests of local businesses with whom they typically have close and warm relations (Estlund et al. 2014; Xu 2013; Luthje et al. 2013; Zou 2014). Workers do not get much help from the trade union. Leading officials of the ACFU (All-China Federation of Trade Unions, the only permitted trade union) are career civil servants; enterprise-level union officials are typically recruited from the ranks of management (Estlund et al. 2014; Zou 2014). Labour NGOs have in part filled the void but these operate under close surveillance by the authorities.

4.2 Scale economies and cross-subsidization

Hon Hai/Foxconn's capacity to supply large volumes quickly constitutes a key selling point. Few competitors have the minimum scale necessary (or, indeed, the ambition) to handle the large volumes that Hon Hai/Foxconn routinely handles. Hon Hai/Foxconn can underbid its rivals thanks to huge economies of scale and to its power to negotiate lower prices from suppliers. It wins mass assembly contracts by offering to work with narrow margins.⁹ These are compensated for by the higher margins it makes on in-house produced parts and components. Put differently, Hon Hai/Foxconn views mass assembly contracts as a way to generate income from the sale of parts and components.

8. Such as the 1994 Labour Law, the 2008 Labour Contract Law (LCL) and the 2008 Law on Labour Dispute Mediation and Arbitration (LLDMA).

9. According to JPMorgan, between 2010 and 2012 Hon Hai assembled the iPad for zero profit in an extreme, yet ultimately unsuccessful effort to persuade Apple to remain exclusive (FT, 24 June 2014).

4.3 No ambition to sell under its own brand-name

All major contract manufacturers are keen to improve their narrow profit margins. Some now sell own-branded products (for example, HTC and Acer); others produce high(er) value-added components or are diversifying away from mass assembly of electronics products. Foxconn chose to acquire (and establish strategic alliances with) manufacturers of key components.

Its long-standing policy not to compete with its customers is probably a smart strategy. It saves expenditure on branding and marketing; it avoids potential conflicts with its brand-name customers (and enhances its attractiveness as a partner); and it dampens sales fluctuations. Indeed, to Hon Hai/Foxconn it makes no great difference whether Apple, Xiaomi or OnePlus is China's market leader in smartphones, as long as all of these are assembled by the Hon Hai/Foxconn group – as they are.

4.4 Founder Terry Gou is the dominant force in the company

His drive and determination have been (and continue to be) crucial for the company's expansion (see Box 2).

Box 2 Terry Gou

Terry Gou (Gou Tai-Ming), born in 1950, a graduate of Taiwan's College of Marine Technology and Commerce, is a strategist with a good nose for new trends and a demonstrated ability to manage a complex and diverse group of companies. He has the drive and determination that characterize self-made men and is well-connected politically. He is one of Taiwan's wealthiest men (estimated net worth: 5.1 billion USD in 2013) owning a little over 12 per cent of HHPI's shares.¹⁰ His management style is not uncontroversial, however, and he has trouble coping with criticism. He has been called both 'the King of Outsourcing'¹¹ and 'the Shame of Taiwan'.¹²

10. In addition to other investments, such as stakes in Hon Hai/Foxconn's affiliates Innolux Corp. and Sharp (now Sankai) Display Products (SDP).

11. Business Week (8 July 2002).

12. Professor Huang Te-pei, one of over 150 Taiwanese academics who called for an end to sweatshops and urged the Taiwanese government to stop offering economic incentives to companies like Hon Hai Precision Industry (Taipei Times, 14 June 2010).

In characterisations, the words 'discipline', 'customer orientation' and 'drive' come up frequently: 'a strong leader with a passion for excellence' (Apple's CEO Tim Cook); 'vision and the guts to do anything in a big way' (Dell's former chief Asia procurement Max Fang¹³); 'a highly-driven individual who ... holds extreme views on how workers should be treated' (Parry et al., 2010); 'stringent work ethic that demands discipline, super efficiency and accuracy' (Taipei Times, 27 June 2005); 'running his company like an army' (Normile 2004).

5. Hon Hai/Foxconn's challenges and plans for the future

After years of tempestuous sales growth Hon Hai/Foxconn is now sailing in calmer waters. The exceptionally high growth period in which sales increased by a factor of 100, from USD 1.2 billion in 1998 to USD 117 billion in 2011 has come to a halt, to be followed by a period in which sales showed only marginal increases to reach USD 132 billion in 2014.

In fact, Hon Hai/Foxconn is facing several challenges. Some are the same as those faced by others who are active in the industry, some are company-specific. Paramount is the declining demand growth in those segments of the consumer electronics industry that have traditionally provided much of Foxconn's business. Sales have also been affected by Apple's policy of diversifying its supplier base. Most of Hon Hai/Foxconn's production is concentrated in China, where rising labour costs and a more assertive labour force constitute a third set of challenges. Enhanced shareholder pressure is a further management challenge.

In response to these challenges the company has taken a number of initiatives. It is diversifying its product and customer base. It is shifting assembly activities away from China's coastal zones (where assembly workers are increasingly hard to find) and it wants to make more use of robots. It is spinning off existing activities and expanding into new areas. We will first take a closer look at the challenges and then discuss the company's strategies.

13. Both quoted in Balfour et al. (2010).

Worldwide demand growth for personal computers (PCs), tablets and smart phones is slowing down after many years of impressive growth. World PC sales peaked in 2012 and are forecasted to continue to decline (worldwide 2014 sales volume declined by over 15 per cent). World tablet sales are stagnating (2014 sales volumes were 3.2 per cent lower than in 2013). Demand for smartphones is still growing but at lower levels than before. In addition, sales growth of smartphones takes place mainly in emerging markets where sales prices are below those in mature markets. But even these emerging markets are not expected to show more than 16 per cent annual growth in the years to come.¹⁴

Apple Inc. and the Hon Hai/Foxconn group work closely together and will continue to do so in the future. Hon Hai/Foxconn assembles most of Apple's products and supplies many components used in Apple's products. But Apple is careful not to become overly dependent on Hon Hai/Foxconn and that is why it is making increasing use of other contract manufacturers.

In 2014/15 Apple's sales reached a record high thanks to the iPhone 6, but it is unclear whether this momentum can be maintained. iPhones constitute well over half of Apple's sales and profits; any slowdown in iPhone sales would affect the company and its suppliers hard. Short term, a lower share of higher iPhone sales may make no great difference in Hon Hai/Foxconn's business volume. Long term, Apple's strategy of also using other assemblers may well prove to be a blessing in disguise as it forces Hon Hai/Foxconn to look for and develop other business opportunities (see also the next section).

China's declining and ageing labour force (Cai et al. 2012) is making it more difficult to attract migrant workers to assembly operations in China's coastal zones. In addition, the new labour laws, together with NGO campaigns to raise workers' awareness of their rights, have made the workers more confident when facing their employers. The latest generation of migrants is less inclined to work as much overtime as previous generations were and this affects working time flexibility.

HHPI long ago ceased to be a growth stock; the company's share price performance has been mediocre in recent years. Investors have expressed concerns about the fact that chairman Gou does not have an obvious successor (not unreasonable given his dominant role in the company) and

14. Source: IDC.

about HHPI's business model (notably its financial reporting, working conditions, board composition and lack of transparency¹⁵), prompting an uncharacteristically defensive reaction from Chairman Gou.¹⁶

6. Dealing with the challenges

Hon Hai/Foxconn has taken a number of strategic steps in response to the above challenges. It is diversifying its product and customer base (as it has done throughout its existence), relocating production, accelerating automation, spinning off activities and expanding into a whole range of new areas.

Diversify the product base

Hon Hai/Foxconn regularly invests in new and existing ventures (see Annex 1). But for an outside observer it is next to impossible to say whether any such initiative is Hon Hai/Foxconn's own idea (because it foresees a new, attractive business opportunity), or whether it is connected to a new project or product for one of its clients.¹⁷ Displays are clearly seen as a growth area; the company now manufactures displays for smartphones, tablets, laptops, all-in-one (AIO) desktops, and TVs; for business, medical and educational uses; and for video walls. Cameras are another.

Diversify the customer base

This is, and always has been, an ongoing process. Examples of 'new' Hon Hai/Foxconn clients are China's mobile phone brands Xiaomi and OnePlus, US electric automaker Tesla and Nokia (for tablets).

Shift production location

Within China, Hon Hai/Foxconn has moved production away from the coastal zones to inland locations, such as Zhengzhou and Chengdu. The company is planning to build a large manufacturing facility in Indonesia. Expansion in India is also on the cards.

And then there is 'reshoring'. Several US business leaders have committed themselves to 'bring back' jobs to America. Big electronics brands are leaning on their contract manufacturers to relocate business to the United

15. see: www.robeco.com, 2 July 2014.

16. 'Please be patient ... I am also a shareholder, so if it's bad for Hon Hai, it's also bad for me' (quoted in FT, 26 June 2014).

17. Or both.

States. Hon Hai/Foxconn plans to produce cables and connectors in Harrisburg, Pennsylvania using robotics and automated technologies.

Automation

Hon Hai/Foxconn has long wanted to automate its factories. Interestingly, it wanted to develop and build these robots ('Foxbots') 'in-house' and announced in 2010 that it would produce and install one million robots by 2015. But by 2013 only 20,000 Foxbots had been produced (10,000 of which are installed at Foxconn Shenzhen). While still an impressive figure, the company may have underestimated the complexities involved in making and installing Foxbots and overestimated the degree to which certain tasks can be automated.

Nonetheless, the company is committed to continue down this path and has established alliances with robot developers. It is producing robots for third parties, such as the popular 'Pepper' robot for Softbank Robotics.

Spin off existing activities

A candidate for a separate listing on the stock exchange is Hon Hai/Foxconn's cable and connector manufacturing unit Foxconn Interconnect Technology Limited ('FIT'), formerly known as HHPI's Network Interconnection Business Group ('NWInG'). SDP, in which Mr Gou holds a 37.6 per cent stake, is another candidate. The plan to list electronics retailer Cybermart Worldwide was abandoned.

Expand into new areas

Hon Hai/Foxconn is active in electronics retailing in Taiwan and China, but it is unclear how successful these ventures are; Cybermart was sold; Media Markt China was discontinued. It is also active in both retail and B2B e-commerce.

Hon Hai/Foxconn affiliate Ambit Microsystems won a license in Taiwan's 2014 4G spectrum bidding and purchased a stake in Taiwan's Asia Pacific Telecom (APT), both at a cost of several hundred million US dollars.

Smart electronic vehicles is another new area. The electric car supply chain is generally seen as less complex than that of petrol-powered vehicles. Barriers to entry are comparatively low. Hon Hai/Foxconn already produces touch screens for Tesla Motors, as well as electric car batteries and other car parts. Hon Hai/Foxconn has ample assembly expertise and can buy in most parts, just like Tesla does.

Hon Hai/Foxconn has long placed great importance on developing an intellectual property rights portfolio. Among the firms applying for patents it is number one in Taiwan and among the top ten in the United States; it has sued top Japanese companies for alleged patent infringement; and sold to Google patents related to head-mounted displays.

Hon Hai/Foxconn has also entered other new(ish) areas such as fibre-based internet services, servers and storage, solar energy and cloud computing. It has built a low-power data centre in Guizhou Province.

7. Conclusion

In the forty years since it started operating back in 1974, Hon Hai/Foxconn has reached annual sales of USD 132 billion, attained 32nd place in the *Fortune* 'Global 500' and created jobs to over one million people, a remarkable achievement by any standards. Thanks to its high customer orientation, determined leadership, high production and worker flexibility and generous support from the authorities it has managed to benefit as no other from the outsourcing trend among makers of personal computers (PCs) and, later, the popularity of its mobile phone customers.

However, Hon Hai/Foxconn has reached a crossroads. Faced with a slowdown in demand growth for consumer electronics, a more assertive workforce in China and enhanced competition for Apple contracts and from new competitors it is diversifying and aiming to become a high-tech services company. It employs thousands of engineers and R&D personnel. However, so far the 'new' areas present a mixed picture. Some have not brought the expected success (electronics retail); others may have proved more complex than anticipated (robotics). For yet others (telecoms) it is simply too early to tell.

Assembly will continue to generate a steady stream of revenue. Employment levels have been stable since 2012. Sales growth has been modest. Profit levels have been improving, possibly an indication that the company's greater attention to margins is paying off (but little is known about the contribution of each business activity to overall profitability). As it has done in the past, there are good reasons to assume that Hon Hai/Foxconn will successfully adapt to new trends, circumstances and challenges.

Meanwhile, the gap between Hon Hai/Foxconn's high-tech ambitions and its more down-to-earth assembly operations appears to be widening, inevitably raising the question of whether the new activities – once they have reached critical mass and a steady stream of profits – should continue to operate together within one and the same company. To this pertinent question there is no easy answer, given that the cash-flow from assembly provides a source of finance for its high-tech ventures and that a high share of component sales relies on demand generated by assembly.

Abbreviations

ACFTU	All-China Federation of Trade Unions
APT	Asian Pacific Telecom
AR	Annual Report
B2B	Business to Business
BW	Business Week
CCM	Compact Camera Modules
CEO	Chief Executive Officer
CM	Contract Manufacturer
DSC	Digital Still Camera
EICC	Electronics Industry Code of Conduct
FIH	Foxconn International Holdings (now: FIH Mobile)
FIT	Foxconn Interconnect Technology
FT	Financial Times
HHPI	Hon Hai Precision Industry
HP	Hewlett-Packard
LCD	Liquid Crystal Display
LCL	(China's) 2008 Labour Contract Law
LLDMA	(China's) 2008 Law on Labour Dispute Mediation and Arbitration
NWInG	(Foxconn's) Network Interconnection Group
ODM	Original Design Manufacturer
OBM	Original Brand Manufacturer
PC	Personal Computer
PCB	Printed Circuit Board
R&D	Research and Development
SAR	Semi-Annual report
SDP	Sakai (Sharp) Display Products
TG	Terry Gou

USD	United States Dollar
VP	Vice-President
WSJ	Wall Street Journal

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Annex 1 Hon Hai Precision Industry (HHPI) company highlights: an incomplete overview

- 1974 Starts operations in Tucheng (Taipei, Taiwan) with ten employees producing plastic dials for television sets; later on moves into TV casings, connectors and cables.
- 1988 Commences operations in Shenzhen-Longhua (Guangdong Province).
- 1991 Listed on the Taiwan stock exchange; moves into PC Chassis and Barebone.¹⁸
- 1998 Sales surpass USD 1 billion; clients include Atari, Compaq; IBM, Apple, HP and Dell.
- 2000 Becomes a Nokia supplier for plastics, metal parts and assembly.
- 2003 Acquires (Finland's) Eimo Oyj, a precision components supplier to Nokia; Motorola's mobile phone factory in Chihuahua (Mexico); and (Taiwan's) Ambit Microsystems, producer of routers and network equipment. Total sales: USD 10.7 billion.
- 2004 Surpasses Flextronics to become the world's biggest Contract Manufacturer; over 130,000 employees.
- 2005 Acquires HP's Australian computer assembly plant; invests in (Taiwan's) Chi Mei Communication Systems; joins the Electronics Industry Code of Conduct (EICC); sales reach USD 28 billion. Foxconn International Holdings is listed on the Hong Kong stock exchange.

18. Computer case with a pre-fitted motherboard and power supply (and often also other components).

- 2006 Merges with (Taiwan's) Premier Image Technology (adding 10,000 employees) to become the world's largest assembler of Digital Still Cameras (DSCs) and a leading supplier of compact camera modules (CCMs) for cell phones. Sales reach USD 40.5 billion.
- 2007 508,000 employees.
- 2008 Acquires Chi Mei Optoelectronics, Taiwan's second-largest manufacturer of LCD panels. Sales reach USD 61.8 billion.
- 2009 Chi Mei Optoelectronics merges with (Taiwan's) Innolux, assembler of flat-screen computer monitors and touch-control screens to become Chimei Innolux in 2010, and Innolux Corporation in 2012. HHPI and Terry Gou have minor stakes in the company but take over management control; acquires Sony's TV plant in Tijuana (Mexico); opens large plant outside Hanoi (Vietnam).
- 2010 Accelerates expansion in China away from the coastal zones. Starts production in Chongqing; opens the Chengdu facility with more than ten factories.
- 2011 Acquires Cisco's set-top box assembly plant in Juarez (Mexico); and (Taiwan's) Champ Tec Optical and Wcube-makers of camera lens modules for smartphones and tablets.
- 2012 Invests USD 200 million in California-based Woodman Labs Inc. maker of GoPro waterproof cameras; sales reach USD 117 bn (Flextronics USD 30 bn); 1,290,000 employees at year end (Flextronics: 200,000 employees).
- 2013 Foxbot (robot) production reaches 20,000 units. Discontinues Media Markt China, its retail joint venture with Germany's Media-Saturn Holding.

- 2014 Hon Hai/Foxconn's Ambit Microsystems wins a Taiwan 4G spectrum license and buys a stake in Taiwan's Asia Pacific Telecom (APT). Takes top Japanese companies to court for alleged patent infringement. Sells to Google patents related to head-mounted displays. Acquires a 4.9% stake in SK C&C, a leading (Republic of) Korean Information Technology (IT) services provider. Sales reach USD 132 billion (Pegatron: USD 32 billion).
- 2015 Invests USD 117 million in Softbank Robotics, a joint venture with (Japan's) Softbank and (China's) Alibaba; Invests in (China's) Ainemo, a developer of desktop family robots; establishes a joint venture with (Japan's) NEC to provide cloud services.