GoodElectronics

Dragging out the best deal

How billion dollar margins are played out on the backs of electronics workers

Anthony Harris

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Summary

Understanding the financial relationships between Electronic Manufacturing Services (EMS) providers such as Flextronics, Foxconn and Jabil and the Brand Names of consumer electronics is crucial in all efforts to improve working conditions in the sector. According to Tony Harris, so far most efforts to improve workers conditions have been directed at tragedy event reaction, audits, naming and shaming and union representation yet all have fallen short of expectations. Tony Harris is retired after years of experience in the sector, and supporting the goals of the GoodElectronics Network and the makeITfair project, says whether we like it or not, money is the driving factor for all business decisions. Environmental concerns, compliance to health and safety and worker representation etc. are secondary or tertiary 'add-on's in the primary nature of business decision makers.

Mr. Harris shows where the economic tension between EMS providers and the brands comes from and how these billion dollar tensions play out on the backs of impoverished workers who are willing to give up their night's sleep for a few dollars more for basic cost coverage as well as remittance to feed their families. In the following back ground article he shows it is all about margins and explains the standard mark-up on the factory price, the technique of Purchase Price Variance (PVV) and the Profit Life Cycle of fast moving consumer electronics. In other words, how does a $100 electronic factory priced product become a $500 consumer product while the people making that product receive so little under marginalized operating conditions?

About the author

The author Anthony Harris worked from 1979–1993 for Philips Electronics as Senior consultant Video product safety and liability and Divisional Quality Manager for: Video recording, Passive components and medical systems. In 1993, he started his own consultancy/interim management company working with customers including Philips Plastics, Philips Consumer Electronics, Elcoteq and Flextronics. In 2004, he was appointed for five years as Interim TQM Director for Flextronics Mobile Phones, overseeing global mobile phone business activity in Malaysia, China, India, Brazil, Mexico and Hungary, with a focus on operational excellence and financial performance. He can be contacted at aharris@harris-serv.com.

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The aim of this article is to describe the financial parameters that determine the relationship between the EMS and the Brand Names – and to demonstrate the impact of this model on workers and working conditions.

The relationship between Brand Names like Apple, Dell and HP and their contracted Electronic Manufacturing Services (EMS) partners - that make their products in factories around the globe - is principally determined by cost, speed and flexibility. Other factors such as quality – and, to a lesser extent, sustainability along with social responsibility – play a secondary role in that relationship.

As a distinction between essentially American Brand Names and Asian labels (mostly Korean and Japanese), the main Asian Brand Names make products in their own factories. Nevertheless, the economic drivers are more or less the same.

The business power balance between Brand Names and EMS providers is disproportionate, as reflected in the following comparison between the EMS margins and Brand Names margins (Figure 1). While gross margins combine revenue and costs from different types of activities (high speed consumer electronics having the lowest margins for EMS producers), the disparity is clear to see.

Figure 1: Gross margins gap between leading EMS companies & US Brand Names.

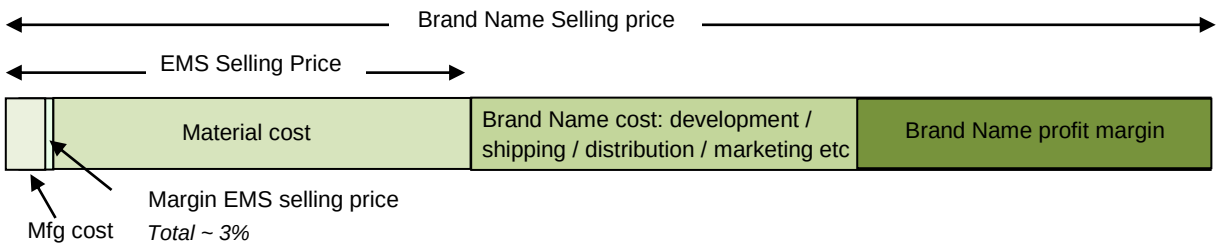
EMS	Country (Management Centre)	Employees (source Bloomberg unless indicated otherwise)	Gross Margin[1] 2013 (source Bloomberg)
Foxconn	Taiwan	1, 290,000[2]	**6.4%**[3]
Flextronics	USA[4]	149,000	**5.8%**[5]
Jabil	USA	177,000	**7.4%**
Celestica	Canada	29,000[6]	**6.7%**
Brand Name			
Apple	USA	80,300	**37.6%**[7]
Dell	USA	108,000	**21.4%**
HP	USA	317,500	**23.1%**

1. Gross margin = (revenue - costs of goods sold / revenue). The gross margin accounts for the company as a whole. For some companies this includes component production, printer ink, software and services which deliver higher composite margins.
2. Latest employee numbers of Foxconn in Bloomberg relate to 2012.
3. Based on the financial data in the annual report 2013 of Hon Hai Precision Industry Co., Ltd. Bloomberg makes a distinction between Foxconn/Hon Hai Precision Industry Co as parent company (gross margin is 2.3%) and as a consolidated company (gross margin is 6.4%).
4. Flextronics is officially registered in Singapore, but for all intents and purposes, it is a US-managed company.
5. Bloomberg does not include the restructuring charges in the costs; some other financial analysts do which results in a gross margin of 4.9%.
6. Per 31 December 2012, source Form 20-F.
7. Gross margin was 43.9% in 2012.

Making phones and tablets, EMS providers make no more than around 3% margin on selling costs to Brand Names. The reason for this imbalance is oversupply of EMS capacity and an insatiable

desire by EMS providers to secure patronage from leading consumer brands – both to fill their worldwide factories, as well as providing flagship banners to attract further business.

Figure 2: Cost and profit margin relationship between Brand Name & EMS partner



N.B. the Brand Name selling price is not the same as the retail price which can be significantly more (retailer margin, VAT etc.)

The standard mark-up on the factory price

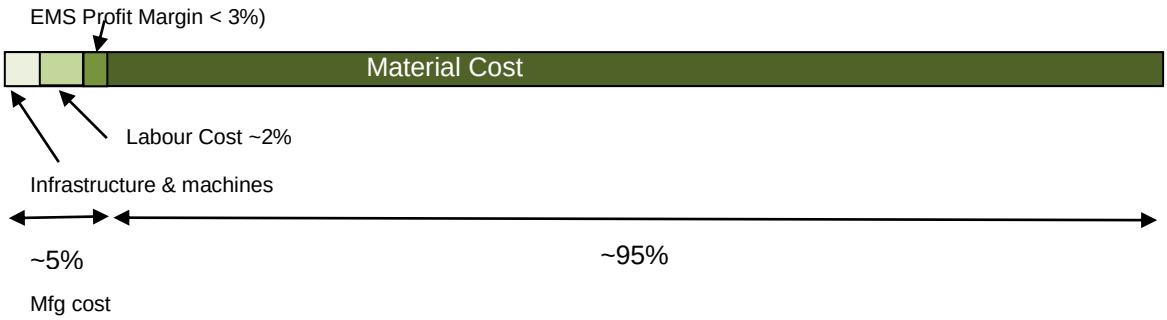
All along the product supply chain – from the component supplier to the assembly factory to the retail outlet – prices are factored up by percentage of goods value. The factory price is marked-up on basis of invoice value without differentiating between cost of labour, manufacturing complexity, materials, IP, or other value. The EMS selling price gets a margin added every time it is moving down the chain. For example, a smartphone with a factory price of 100 Euro of which 2 Euro = labour costs. Next in line exports to USA/Europe and adds 30% (logistics, management, margin) = 130 Euro. Distributor in USA adds another 30% for logistics, risk and labour = 169 Euro. The store adds its percentage and then there is the internet provider contract and Vat, all pushing upwards to 500 Euro. With this standard business model mark-up on the EMS selling price the actual labour cost becomes almost insignificant as an element of the retail store price.

Consider the following: if the memory of this phone is increased from 16 GB to 64GB, the assembly work content remains essentially the same, while material cost increases by around 60 Euro. So the 100 Euro factory phone becomes 160 Euro. However, on the high street, the retail price increases by more than 200 Euro to 700 Euro. With no increase in labour cost, logistics cost etc. an effective difference is generated out of thin air by the non-added value percentage mark up business model.

Let's look at how the business model works when the factory workers of the smartphone are getting a theoretical 100% pay rise. The factory price will become 102 Euro resulting in a retail price of 545 Euro. That means that a consumer pays 45 euro more for the smartphone after the pay rise while only 2 Euro of it goes to the workers, the other 43 Euro goes to the Brand Name, the distributor, retailer, VAT etc. Another irony of the % mark-up model is that value added tax (VAT) levied on the retail product, at around 20% in Europe, is about five times the total manufacturing cost of the product – including the EMS manufacturer's profit (excluding material cost content). This leads to the conclusion that European governments earn more than EMS companies on smart phones and tablets!

As Figure 3 shows, direct labour costs (workers who actually make the products) represent about 2% of the factory selling price. About 95% of the selling price is determined by material content. Compared to the retail price, manufacturing labour costs will therefore come to about 0.5%. For a phone or tablet retailing at 500 Euros, this amounts €2.

Figure 3: EMS factory selling price



However in this discussion about the financial tension between EMS and Brand Names, it is significant to note that, while labour cost represent only 2% of the EMS selling price, they represent upwards 40% of the EMS manufacturing cost. And herein lies the main tension between the EMS provider and the Brand Names, where small fractions of a percentage are fought over for the cumulative effect of the millions of products made.

"Efficiency" squeeze on costs, and labour

Frequently heard demands are: "I want more. I want it faster. I want it cheaper, Shut it down now!" Due to over-capacity, EMS providers are under intense pressure from Brand Names to squeeze down factory prices, sometimes to the extent of offering products under cost price simply to get the business. Since around 95% of a smart phone/tablet is material cost, and material suppliers are decided by the Brand Names with strictly controlled prices, a squeeze on manufacturing costs essentially means a squeeze on labour, as well as manufacturing "efficiency".

Unfortunately, manufacturing efficiency has many faces, from excellent lean manufacturing processes to crude cost-cutting practices. This has been exposed over the past couple of years, where we have learnt about unsafe conditions, environmental abuse and blatant worker exploitation – all in the name of "efficiency "seeking to trim a fraction of a percentage from a negligible amount paid by the retail customer.

Reality is such that the model for Figure 2 only shows the nominal cost structure relationship between EMS and Brand Names. When the business actually starts to run, three hidden factors come into play: cost adjustment to the Bill of Material (BOM), which covers the cost of all materials needed to make the product, financing of the BOM and so called flexibility.

Purchase Price Variance

Brand Names determine the BOM. They select the material suppliers and negotiate the prices at forecast demand. The EMS provider buys the BOM materials on forecasts determined by the Brand Names and then sells it back in the factory price to the Brand Names (with a small mark up for warehousing etc). Since material prices are constantly changing, opportunities arise for the EMS to charge a slightly higher price percentage for the material in the finished product than they bought it for. This is called Purchase Price Variance (PPV). Any fractional mark up in the 95% cost of BOM adds by a factor of nearly 20 to the EMS producer's margins.

Brand Names however are only too aware of the PPV mechanism and insist on having some of it back. So PPV becomes a cat and mouse struggle between the EMS and Brand Names.

Financing of BOM

By delaying payment to material suppliers till after receipt of Brand Name payment for delivered assembled product, EMS producers attempt to tempt to make suppliers finance the BOM. This is the second mechanism. It's a typical business practice classically employed by large supermarket chains with heavy purchasing clout to eliminate the cost of financing their material purchases. First the consumer pays then the supermarket pays the farmer. In the case of EMS producers, this represents a balance sheet finance advantage for around 95% of their expenditure. When achieved, this amounts to an extra margin boost. So, while the nominal cost model does not add up to a nominal ~3% margin for the EMS, using small fractions of success with PPV, material financing and efficiency measures create a significantly opportunity for up-lifting EMS margin.

A 0.1% improvement of nominal material costs reflects an improvement of EMS margin of about 2%. Therefore, it's not difficult to see how EMS producers – with so-called "efficiency", PPV and material finance – can wiggle a margin of 3% or more on factory selling price, which translates in real terms to 15% on actual EMS manufacturing costs.

Another aspect of the percentage business models is when reporting results, where companies compare total expenditure to income. This doesn't really reflect the actual money earned against the real costs in the EMS world. To illustrate: If expenditure is 5 + 95 = 100 and margin after income is 3, financial reporting says there is a 3% margin. But if the 95 costs are paid by the customer, the real EMS margin can be 15% on real costs = factory investment, maintenance and labour. By successfully capturing a brand name, and even producing at zero or sub-zero nominal cost, an EMS can generate a real margin. Moreover, if the EMS also happens to produce components specified by the Brand Name, where the margins for design components are higher than for the assembly of finished products, the EMS has further opportunity for consolidated margin improvement over nominal product cost price.

Figure 4: Actual costs reported by iSuppli, Evertiq and Zdnet

Product	Year	BOM Cost	Manufacturing cost
Apple iPhone 3G[1]	2009	$172.5	**$6.5**
Apple iPhone 4S[2] **(32GB)**	2011	$207	**$8**
Moto X[3]	2013	$214	**$12**[6]
Apple iPhone 5 (32GB) [4]	2013	$200	**$8**
Samsung S4, US version 16GB[5]	2013	$229	**$8**

1. Kingsley-Hughes, A., 2009, <http://www.zdnet.com/blog/hardware/apple-makes-big-bucks-profit-per-iphone-3g-s/4792> (accessed on 20 February 2014).
2. HIS Technology, Andrew Rassweiler, October 20, 2011, https://technology.ihs.com/389429/iphone-4s-carries-bom-of-188-ihs-isuppli-teardown-analysis-reveals (accessed on 3 Sep February 2014).
3. Evertiq, 29 August 2013, <http://evertiq.com/news/32424> (accessed on 20 February 2014).
4. Evertiq, 26 September 2013, <http://evertiq.com/news/32734> (accessed on 20 February 2014).
5. Evertiq, 10 May 2013, <http://evertiq.com/news/24355> (accessed on 20 February 2014).
6. Assembled in the USA.

Flexibility at a heavy price

So far so good, but now flexibility comes into the picture to distort everything. To illustrate what happens: When Apple launched the initial manufacturing of the iPhone, a screen change was suddenly required. 8,000 workers were woken from their dormitories in the middle of the night in China. Within 30 minutes, after being given tea and biscuits, they began an unscheduled 12-hour shift to kick-start the change for the new screens. Foxconn relentlessly ramped up production to

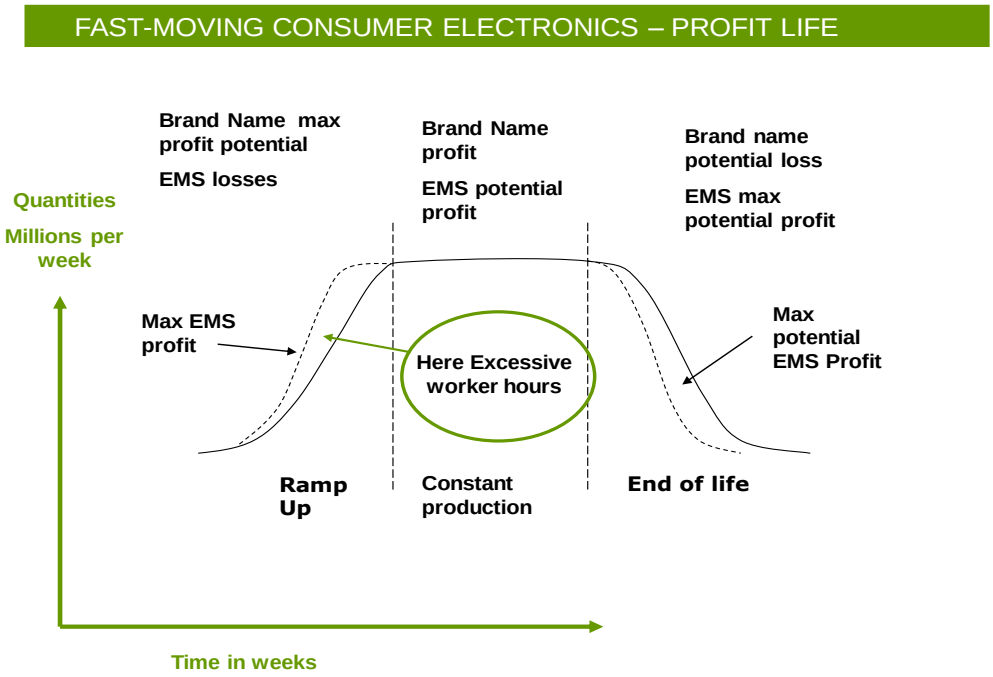
10,000 pieces (a day) after only four days. One Apple executive, as quoted in *The New York Times*, said "That speed and flexibility is breath taking. There's no American plant that can match that."[1]

Breath taking speed and flexibility, however, come at a human price, which clearly American workers at that time were not prepared to endure. Yet with a cup of tea and a biscuit, impoverished Chinese workers were all too ready to earn some extra money to help cover basic costs and feed their families.

Another facet of flexibility is contract of employment. In China workers are recruited on a formal basic contract with verbal promise of extra overtime. While demand is high workers can earn and remit to their expectant families back home. However when Brand Name demand decreases the EMS workers find themselves with only basic income which is insufficient to cover their housing and food / basic needs. Legally EMS's need to pay dismissal fees. Yet if employees leave by their own accord no severance payments are due. This is how the EMS's see the legal employment liability. By basic income below the cost of living most redundant workers have little choice but to voluntary leave without cost to their employer. This is called flexibility as well!

Mobile phones and tablets are the fastest movers of any technological industry, as well as the high-tech leaders. In this cauldron of market hype push and responding consumer demand, new product launch ramp-up is critical to margin achievements. A day's delay means a day less advantage for premium retail price in a market populated by super-fast innovative adversaries.

Figure 4: The profit cycle between brand name & EMS provider



[1] *The New York Times*, 21 January 2012, <http://www.nytimes.com/2012/01/22/business/apple-america-and-a-squeezed-middle-class.html?pagewanted=all&_r=0> (accessed on 20 February 2014).

In the push to change over from ‘old’ to new models, fast ramp-ups are critical to the financial success of Brand Names. Irrespective of nominal cost contract models, Brand Names expect total EMS commitment to ramp up production at almost any cost. This will happen several times a year, making high-speed consumer electronics the most technologically demanding and dynamic industry we have ever experienced.

During a ramp-up, the EMS will consume more labour costs (read excessive working hours) and there will also be a learning curve on manufacturing and material waste arising from suppliers, many of whom may also be new. Both labour and material costs will rise considerably beyond the nominal costs as the Brand Name pushes to fill the supply chain with new products while demanding its EMS provider to respond with lighting speed. Nothing else is tolerated. This leads to an enormous cost pressure for the EMS provider anxious to maintain its strategic relations with the Brand Name. Losses are accepted by the EMS in the hope that – with stable production and the inevitable End Of Life (EOL) scenario – margins will return. The tension between labour cost, material scrap and margin becomes intense. As a consequence, overtime hours increase with a military discipline to elasticise the EMS provider’s response. Once ramp up to stable production levels has been achieved, the EMS attempts to recover to its business model of earnings, as described above.

Squeezing workers, safety

Given what has been said above, flexibility continues to dominate the relationship between EMS producers and Brand Names. Design changes, supplier changes or a hiccup in production throws the tempo of EMS activity into a frenzy of costly catch-up activity with the Brand Names program expecting their EMS providers to pirouette production like a ballerina at any time on a 24/7 regime irrespective of human constraints, with biscuits and tea possibly becoming the norm in some quarters.

End of Life phase

Finally, as we follow the economic cycle of events, there is an End of Life (EOL) for every product. When the music stops, the EMS can be left holding considerable obsolete material stock, with stock and orders backed-up along the supply line to the material suppliers. As mentioned earlier, it’s the EMS provider that orders and purchases the material from the suppliers and it’s the EMS that risks potential liability when product orders are suddenly or dramatically reduced by the Brand Name in the EOL termination.

In the fast-moving consumer electronics market, model lifetime is measured in months with ramp-ups and EOLs lasting a few weeks (fig. 4). No other hi-tech industry moves with such lightning speed. Mass produced, fast-moving consumer electronics assembly requires heavy investment in specific machines, factory layouts, worker training and engineering, as well as development of a fluid understanding between EMS and Brand Name project management teams. For this reason, Brand Names are highly selective when choosing their EMS partners. Sometimes they carefully choose two, or maybe three, competitive EMS suppliers as a strategy to play the one off against the other for cost or flexibility advantage.

The vail of not knowing

The selection of an EMS provider is therefore a lengthy process involving extensive Brand Name auditing by highly professional personnel. They look into the production and engineering capabilities of the EMS, as well as their capacity to recruit adequate personnel, quality, social

aspects and environmental capabilities. With this level of professional due diligence, Brand Names know exactly what bed they are getting into when they contract an EMS provider.

Claims of astonishment, flapping of Brand Name corporate wings and stamping of feet at revelations of overtime, abuse and mistreatment of workers can only be explained as an extension of politically correct public media behaviour that has become morally distasteful to a growing number of industry observers in recent years.

Unfortunately, fair and decent behaviour within the economic tension between EMS providers and Brand Names is an option that some players in this fast-moving consumer electronics industry prefer to ignore. And in this they are not alone. Stock market's preference favours Brand Names over the EMS producers and are generally impervious to the shocking media reports of abuse and flagrant violations of safety, environmental and social norms.

Decent manufacturing requires a change in the economic mind set of Brand Names and EMS providers. Some have made that transition even while enduring the pressure of sharp economic tension. Unfortunately, the usual suspects have only changed a bit because of media exposure, grabbing at straws with media consultants.

Nevertheless, in essence both sides of this industrial circus are playing their billion dollar tension out on the backs of impoverished workers who are willing to give up a night's sleep for a biscuit and a cup of tea in order to receive a few dollars more to feed their families.

Colophon

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This paper is written by, and based on, the experiences of Tony Harris to gain insight in the financial relationships between Electronic Manufacturing Services (EMS) providers and the Brand Names of consumer electronics. GoodElectronics has not conducted a review with the companies involved.

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