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LOW LABOUR COSTS OR FULL AUTOMATION?

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Conventional footwear production is labour intensive, with some styles having anything up to 100 components per pair all of which need stitching, joining, fastening, gluing or otherwise to produce the finished shoe. All this must be carried out billions of times in a reproducible manner if the global demand for footwear is to be met. It also clearly calls for a large amount of skilled labour and, because of the complexity inherent in designing and manufacturing different types of footwear and the necessity to train and keep skilled and semi-skilled labour, manufacturers tend to specialise in specific types. Companies such as C&J Clark mainly focus on casual footwear while the likes of Nike and New Balance concentrate entirely on sports shoes.

LABOUR COSTS

The cost of labour is therefore a key factor and *Figure 1* shows minimum wage levels for three developed countries, compared with some lower cost Asian centres of production. The data has been determined using as nearly comparative methods as possible but it should be noted that these are minimum levels and actual wages can be higher.

While there is a massive 10-40 fold difference between

developed and low cost countries, there is also a three-fold difference within the latter, so manufacturers seeking the lowest costs must look beyond traditional Thailand, Indonesia and coastal China. It is also not merely labour costs, other key factors include labour efficiency and, more importantly, a well established infrastructure able to provide all the components required in a timely and cost effective manner.

The average output per Chinese mainland worker is reckoned to be significantly higher than in Vietnam, Bangladesh or Cambodia. Furthermore, mainland Chinese manufacturers benefit from well-developed industrial clusters where upstream supplies are easy to source and essential services such as freight forwarding and lab-testing readily available. All this combines to boost efficiency and shorten delivery lead times. In contrast, countries such as Vietnam have to import raw materials and components from mainland China which, in turn, helps to further boost China's exports. This is confirmed by the fact that other Asian countries' overall share of world markets has not grown nearly as fast as China's since the Millenium (*Figure 2*).

Although the overall market share of different Asian countries remains small, individual product sectors have

Fig 1 – Minimum wage (USD / month)

France	1,997
UK	1,650
USA	1,445
Thailand	145
China (coastal)	141
Indonesia	89
China (inland)	66
Cambodia	53
Vietnam	52

Fig 2 – Percentage share of world manufacturing exports

	2000	2006	2007	2008
China	4.67	10.84	11.92	12.71
India	0.69	0.97	0.99	1.07
Vietnam	0.13	0.25	0.28	0.31
Indonesia	0.79	0.54	0.51	0.50
Cambodia	0.03	0.04	0.04	0.04
Bangladesh	0.13	0.13	0.1	0.13

Source: WTO International Trade Statistics 2009

performed very differently from one another and performances skewed heavily to a limited category of labour intensive products with shorter production chains. Take the case of countries exporting to the US for example. While it imports a wide range of manufactured goods from China, ranging from electronics products to garments, toys, furniture and footwear, imports from Vietnam are mainly of garments, furniture and footwear. Those from Cambodia and Bangladesh consist entirely of garments, accounting for over 90% of all US imports from those countries.

Whilst US imports from these emerging Asian production bases are increasing, it is not at the expense of China. In fact, the Chinese mainland continues to gain US market share in light consumer goods such as garments or footwear. The situation is similar in the European Union so, in the future, whilst China can no longer sustain the cost advantages that defined its initial period of export success, it would be a mistake to think that its manufacturing will stagnate or decrease. In addition, as wages continue to rise, domestic consumption will grow and China will move towards producing higher quality products and service industries.

We can begin to see that extreme low labour cost on its own is not the only answer. Having said that, it is quite possible that long run production runs of simple footwear designs may well migrate increasingly to these lower labour cost countries. This still means, however, that the bulk of footwear production will continue to rely on the Chinese one way or another.

AUTOMATION

Producing footwear close to the selling point has been shown to be possible but not using conventional labour intensive methods; it is not commercially viable. If labour costs can be drastically reduced then it becomes a different picture. So, is any such automated footwear production taking place? Yes and there are three good examples: Danish brand ECCO has production units in Portugal, Slovakia, Indonesia, Thailand and China; Hotter, manufactures in the UK and US sports shoe brand New Balance predominantly produces in North America. How do they all do it?

ECCO led the way in fusing innovative technology, good design and traditional craftsmanship with a profound understanding of the human foot to produce a really new

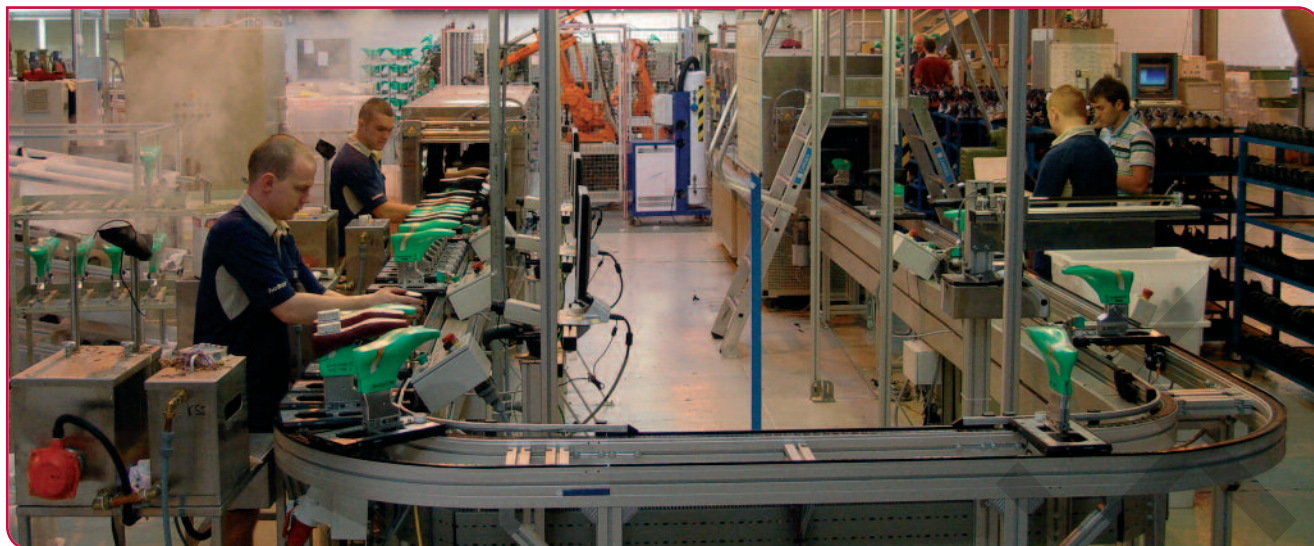
type of casual shoe. It has also always used the most advanced direct injection technology to produce a lightweight PU sole with a unique anatomical shape that fits the contours of the foot. In addition, it has also always focused on vertical integration and runs a number of tanneries so it can develop and produce its own specific leathers.

By purchasing tanneries and creating research centres, ECCO is able to obtain leading expert knowledge about tanning and have direct access to the finest leathers on the market. It is now also one of the largest suppliers of leather in the world. These two factors combined have given ECCO greater control over the quality of its products and meeting tight lead-times.

Production is centred on fully automated PU systems from Klöckner Desma of Germany that mould a PU sole directly on to the shoe bottom without the need of any adhesive. The benefits of this type of manufacturing system are by now well known and it has great advantages if the shoe's design is geared to match it. Almost all ancillary operations can be robotised so that high outputs of excellent quality footwear can be achieved in relatively small factories and with a very limited labour force. Closed uppers for ECCO shoes are produced in its lower cost Asian factories.

Many have tried to copy ECCO but its production technology and supply chain is difficult to imitate as most brands no longer use in-house production and rely instead on sourcing from contractors. Even if they do attempt to copy the ECCO model, the company has still had years of experience in which to perfect it. It also stresses that whatever the level of automation used, not one single pair is ever made entirely by machines. If that were the case, they would lack personality, individuality and style. Its original intention to integrate design, traditional craftsmanship and automation seems to have achieved the best of all worlds.

Hotter Comfort Concept in the UK produces around 1.3 million pairs of footwear each year in one of the world's most technologically advanced shoe factories. Over the past six years it has invested £6million in production technology and plans to invest another £3million over the coming year in creating a state-of-the-art website to boost its overseas presence and achieve a further 20% growth. Ten years ago, the company employed just 57 people; it now has a staff of



DESMA amir system in operation

CREDIT: HOTTER COMFORT CONCEPT

380. In a country that has seen its footwear industry all but disappear, this is quite an achievement.

Part of its success lies in the type of shoe it produces where special 'comfort concept' features are built into each pair and a marketing strategy whereby it sells direct to active over-50s willing to invest in comfort for their feet. Another factor is the use of the same Desma automated PU system as ECCO. The final piece in the jigsaw is the way it uses a multi-platform selling operation via a purpose-designed transactional website from eCommerce provider Salmon. Called SAFE, this has provided an on-ramp platform to develop a sophisticated functionality for both the short and long term. Hotter can thus sell direct to customers from a 100 seater call centre linked to its website, plus five branded stores and 300 independent retailers.

New Balance presents a somewhat different picture. Since its purchase by Jim Davis in the early 1970s, it has experienced many changes. There are a few principles, however, that it has tried to keep constant. It still has five factories in the United States and operates a strict 'Endorsed by no one' policy as the company maintains that quality shoes do not need a celebrity spokesperson. In many ways, this is a consumer-friendly policy as five dollars of every Nike shoe goes straight into the pocket of some already highly paid sports personality.

New Balance has been able to maintain production in the US by focusing on automation which, in its case, is mainly the automation of upper production. At its Norridgewock factory, for instance, workers use high-tech skills to make a low-tech product. Well-trained, \$14/hour employees work in small teams with each performing half a dozen jobs and switching tasks every few minutes. Some operate computerised equipment with up to 20 sewing heads running at once. Others control an automated stitcher guided by cameras, which allows one operator to do the work of six using ordinary sewing machines. This means they are able to produce uppers as cost effectively as in China or other Asian countries.

New Balance managers also spend a lot of time looking

for new technology and adapting it to their needs. For example, the company's 70 see-and-sew machines came with standard metal templates designed for the clothing industry. New Balance grinds its own templates to guide a needle in the shape of each upper section. The combination of teams and technology has slashed the cost disadvantage of producing in the US and a New Balance factory can turn out a pair of shoes in just 24 minutes, compared to about three hours in Asia.

If New Balance's US workers were no more efficient than those in China, its labour costs would be an untenable \$44 per pair. Instead, it has whittled them down to \$4 as against \$1.30. It can stay competitive under these circumstances as the remaining \$2.70 differential is a manageable 4% of a typical \$70 shoe and is offset by the advantages of producing in the US, where it can ship orders faster than rivals and make quicker style changes.

CONCLUSIONS

Automation is thus not necessarily just about producing footwear but can also involve selling and marketing. These three examples clearly demonstrate that it is quite feasible to produce competitively priced footwear in high labour cost countries. But, what is also apparent, is that this is probably only possible for products at middle to higher prices. Furthermore, all three use direct-moulded PU soling systems. These latter two factors suggest that this type of production will only satisfy a relatively niche market and not be applicable to lower priced products.

It is clear from all this that neither low labour cost or full automation is a complete answer. Extreme low labour cost countries are not taking too much production from China and, whilst full automation can be used to produce competitive footwear, it is at present really only applicable to certain niche products. What will most likely continue to happen, therefore, is that all types of production will continue side by side but with some slight to moderate movements from country to country. 🌐