



Choosing the right shoe

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When consumers enter a shoe shop, they are faced with three dilemmas. The first is choice—which model really satisfies their tastes, aesthetic needs, matches a particular outfit or simply responds to their desire to look elegant and in some way feel unique? This is perhaps the most difficult of the choices because the product offering is so vast and fast changing with seasons and fashion trends. The buyer can be overwhelmed by the richness of the choice and the large number of different models, including variations of the same theme, that are on show. Yet this is undoubtedly the first and most important step of the purchase process

as it relates directly to the original reason for buying: the necessity or irresistible temptation that drove them to the shop initially.

Then immediately comes the second major dilemma, that of size. It sounds like a simple question. We are all supposed to know what our foot size is as buying shoes ought to be a normal activity for most consumers. Statistics say that, depending on the country involved, the average number of yearly purchases can range from 2.5 to 5 or more pairs per year. This implies that on average, consumers are supposed to go through this experience at least two or three times a year. It is in fact probably more, considering all the visits paid to shoe shops that do not

result in actual purchases.

All this would therefore lead us to think that choosing the right size should be a straightforward exercise. Facts contradict that however. To begin with foot length or size is not necessarily the same as shoe length or size. Depending on the shoe involved, as in say a very pointed cowboy boot or a highly fashionable high heeled ladies court shoe, the actual shoe length—and hence size—can be very different from that of the foot.

In addition to that, we have the size 'Babel'. As in the mythical tower in which thousands different languages were spoken and no one could understand what anyone else was saying, in the shoe world there is no

unique, reliable way to correlate the dimensions of the foot with those of the corresponding shoes. French or European versus UK sizes, to name just the two most common, have numbering systems that sound and look different. Furthermore, many shoe manufacturers seldom have the same notions of 'size'. To make things even more complicated, actual 'fit' can vary between different shoes marked with the same size. This is frequently found in ladies fashion shoes where a 'slimmer' last is often used in order to produce a more elegant looking shoe.

It comes as little surprise therefore that our poor consumer must perform a delicate trial and error exercise, trying on different shoes of different sizes until the right one is found. This is fine provided they can go to an actual shoe shop. It is not the case if, for instance, the shoes are bought through the Internet. When this happens, is the size of the shoes which are eventually chosen of any importance at all? The answer is for most of the time negative, due to the fact that while a particular size of a given style will fit a customer today, the same size in a similar style purchased next year or next season

may very well not. The 'right' size is therefore not fixed but is a dynamic and ever changing notion.

A QUESTION OF COMFORT

This brings us to the third, profound dilemma. We would all like our new pair of shoes to have the desired style and beautiful appearance that made us choose them in the first place and, at the same time, be able to wear them comfortably so that even after hours of standing or walking our feet do not ache and we feel no pain. This dilemma is therefore one of comfort in that it deals with the consideration that even in the happy event that we know what the right size is, that specific style in the colour we want may not be available either in the shop or the manufacturer's inventory. We then have to accept a compromise by giving up either on the aesthetic side of the deal by buying the right size but of a different style to our preferred choice or on the comfort side by buying the one we really like but at the risk of some discomfort. The customer's dilemma is therefore which style of shoe to choose that satisfies taste and in which size in order to wear them comfortably.

Modern technology can help solve these dilemmas. It would, however, require a revision of traditional purchasing processes and a profound rethinking of the manufacturing model that has been used so far. What is needed is to go back to basics, i.e. to knowledge of the feet and, in particular, their most relevant dimensions. If a technology existed that would allow us to precisely and rapidly measure consumers' feet, we would have a very valuable set of data that could be used to compare the typical dimensions of the foot with the inner volumes of the various shoes on sale until a satisfactory match was found. The answer to this lies in foot scanners and last/shoe/foot matching algorithms.

POTENTIAL OF FOOT SCANNERS

Foot scanners of various kinds have been around for quite a long time and their technology has certainly improved in recent years. Laser scanners and photogrammetric devices can now capture the 3D geometry of the foot both rapidly and extremely accurately to provide a complete measurement of all its relevant dimensions and



The iFootGauge App enables an iPhone to be used for foot scans. CREDIT: MINDSKATE LIMITED

sections. Moreover, their prices have also been reduced substantially from the early models to less than US\$16,000 for the latest ones. Although this has certainly improved the situation by making the investment needed to procure one of these digital versions of the old Brannock device much more affordable, the cost is still not low enough to encourage widespread use of these machines in a high enough number of shoe shops.

Furthermore, the scanner is only one part of the solution. Once the 3D model of the foot is available, its relevant dimensions must be compared with similar ones of all the different models of shoes on sale, produced by different manufacturers in a multitude of different countries. So multi-model, powerful and versatile matching software engines are needed that can compare any foot with the inner volume of any shoe to suggest the perfect match. This would provide the ultimate solution to the size dilemma. It would no longer be a guess and try-on process but one involving precise foot measurement, a vast database of shoe inner shapes (something similar but not identical to the last on which the shoe was built) and powerful matching software applications to guide the customer in the selection process and suggest the perfect match.

Although some interesting ideas have appeared recently, a real solution, both technical and organisational, has still not been found. At the end of 2012, Swiss company UTD launched its RightShoes service primarily aimed at online purchasers. This allows them to go to any one of an unfortunately still limited number of already operational scanning points to perform a foot scan and obtain a personal ID that can later be used to enable the online service to compare their foot data with that of the vendor whose shoes the client wants to buy and is already stored in the RightShoes database. The service then suggests the best size in which the shoes should be ordered.

More recently, the HUMANIC footwear chain launched a similar service called AVATAR that works in more or less the same way. The foot scan taken in the shop is used to suggest the best size the customer should buy when they return for a new purchase or alternatively order online.

These are both interesting developments that highlight an encouraging technological trend. We are nevertheless still a long way from seeing a widespread use of this improved method of selling shoes. To achieve this, two major technological drawbacks need to be eliminated.

ELIMINATING DRAWBACKS

First, in order for this approach to show its full potential it should be extremely easy and involve no cost or additional effort for the customer, to find scanning points to go to for a measurement of their feet and attribution of the scan ID. Even with the relatively low costs of the current generation of foot scanners this is not easy. Their cost possibly needs to be reduced to a half or a third of present prices in order to trigger the kind of large scale usage that would become necessary for such a service. In addition, modern and innovative business formulae should also be sought to induce shop owners to place such machines in their businesses.

What might well really kick-start such a service would be the availability of a new breakthrough technology that transforms a commodity such as the smart phones that millions of consumers all over the world carry in their pockets or bags, into low cost, ubiquitous foot scanners. The first prototypes are in fact already available and can be tested. While this might sound like science fiction, there are at present at least two or three serious research groups actively working on it.

The second problem to be resolved is how to obtain the information from the shoe side, i.e. the inner volume to be compared with the customer's foot data. Working from the lasts might seem easier but would also involve manufacturers, who normally guard their last data jealously from competitors, making it available to a third party or shop to feed to the matching engine. If lasts are not available, the only other choice is to work directly on the shoes themselves by measuring their inner shape with appropriate devices such as the system developed for this purpose by UCS a Slovenian company.

Unfortunately, this piece of technology is neither cheap nor easy to use and its adoption has been limited to

companies with large budgets such as HUMANIC. Despite these apparent stumbling blocks, technological developments are nevertheless proceeding and it is more than likely that in a relatively short time we will witness some major steps forward.

RESOLVING THE COMFORT QUESTION

That would just leave us with finding a way to improve the third and most important dilemma: comfort. This would mean that, after we made our perfect size choice, we could rely on the fact that the shoe we want is certainly available in the model, colour and size required. Some large retail chains and major brands such as GEOX are already offering customers advanced services such as store locators. If a given model in the required size and colour is not available in a specific shop, the virtual, networked shop inventory can be requested to locate the closest location in which it can be found. This certainly improves the chances of completing a sale and reduces the risk of losing the customer.

If the shoe is not available anywhere, there is not much that can be done unless the whole manufacturing chain was flexible and reactive enough to receive the specific customer unit order and then produce and deliver it to the shop in say two to three days. This is the typical time an increasing number of internet buyers are prepared to wait before receiving a product. In other words, it is producing shoes on demand. It would present an enormous challenge that would involve gathering a large number of different orders, entering them immediately into production and producing them at no additional cost to the customer.

It is also a challenge that would have a number of massive benefits. There would be less waste as only what is ordered is actually produced, lower inventories, smaller shops as less retail space would be required and there would be reduced sale risks.

Such positive benefits would have the potential to completely transform the manufacturing/retail model, something that the modern and flexible manufacturing technologies now available would make worthy of serious investigation. 