The Technology Theme: An Introduction

What do we mean by technology and why is it a long term theme?

Technology is often defined as: “the application of scientific knowledge for practical purposes”. While information technology largely dominates this field in our time, we think of the true long-term theme as innovation in general. Since the dawn of our species we have encountered great challenges and have, continually, used the intelligence that separates humans from other animals to navigate and transform our way around them. While we can’t forecast tomorrow’s problems with any accuracy (vide Malthus), we know that amazing things will be achieved in order to solve them.

How does this theme manifest itself at an investor’s level?

Going forward we will look to dedicate a series of these notes to our technology theme. While there are many areas of innovation – and we will look at other examples of this in a series of notes on healthcare – our technology theme will focus on innovation within information technology (IT). As economies become increasingly knowledge-based, our ability to distribute, analyze and access information is becoming vitally important to the way we live and work.

IT, much like many technical subjects, contains a myriad of topics and even more jargon. In these notes we would like to bust as much jargon as possible in an attempt to demystify. With that in mind I would like to start with an excellent chart from our friends at Polar Capital; which puts a number of these buzzwords into a product lifecycle:

As in any sector, IT products move through a lifecycle; in sum, they move from the research and development stage, then into early commercial stages – where growth rates are high but the business models are generally cash-consuming. As the products gain market share, growth slows but profitability, especially in cash terms, rises and products become cash cows. Eventually, the products mature, become outdated and then margins are squeezed as the overall market for the product shrinks. Products can take a long time to move through their lifecycle and a lot of media attention can be devoted to innovations in the “blue sky” zone, quite often before they have reached the point of true commercial profitability. The recent announcement by Facebook of its purchase of “Instagram”, a picture-sharing utility that has no visible means of making money, would be a topical case in point.

Another example that has been very much in the public eye (and illustrates the point well) is the “Cloud”. While this technology has been gathering media attention over the last five years, it has taken a long time to get past the conceptual stage and into the more profitable sunlit uplands of wide-scale adoption.

So what is a “Cloud” anyway?

Computing in the late 80s was centralized and based around mainframes and “thin” terminals. The mainframe stored information and did the processing while the terminal was primarily an access point. As processing power and storage became smaller and cheaper, the world moved to a distributed computing model with powerful desktops that did the computing locally and that were connected to central services like email by a network (or over the internet). This “client-server” model is the model we know today and is what most people use at home and at work.
As our lives have become increasingly digitized, having our data and applications associated with a single physical system has increasingly become a handicap. Users are increasingly looking to access their resources from multiple locations or even on the move. Improvements in internet connections – both in terms of speed and coverage, if not always price – are making this possible, and the warehouse-sized server “farms” that are making this possible are Clouds. Services such as Google Docs, Spotify, or Apple’s iCloud are all examples of services that use centralized processing and storage. This marks a structural change towards a return to the centralized computing model and, intriguingly, all-powerful providers like Apple, Google, Microsoft and Facebook.

To give this some scale, while Google will not officially confirm how many servers it runs, industry estimates put it in the region of 1 million servers worldwide. The Wall Street Journal image below is of one of Google’s latest Clouds in Hamina, Finland. The site was chosen due to its existing underground tunnels used for drawing cooling water in from the Gulf of Finland. This gives some idea of the enormous energy use of such facilities and their environmental impact will no doubt be the subject of future debate.

Figure 2: online.wsj.com

The point is that this type of innovation and disruptive change is typical of high-tech industries and has a major impact upon investors’ choices. Companies that have significant operations in any redundant technologies will struggle as their market gets smaller and competition for remaining customers becomes increasingly fierce. On the other hand, good quality companies that are on the right side of the change process can only benefit from the opposite effect as their market grows.

For example, the Cloud is bad news for hardware companies without strong barriers to entry (ie those who are not in-demand specialists) as one of the central advantages of centralized computing is more efficient use of computing power, which in turn means lower demand for hardware. The corollary is that some smaller companies like VMWare, which has cornered the niche market in server virtualisation, are benefitting handsomely from this re-trend towards centralization.

Conclusion

Our aim at Cenkos is to invest in businesses that benefit from long-term themes that are as close to inevitable as makes no difference. We consider Technology, in our post-industrial wireless existence, as a clear candidate given its vital contribution to the productivity that drives the world’s bottom line. Interestingly, we are also seeing long-and-deeply-held sceptical attitudes towards technology starting to change. The Wall Street Journal recently reported that company CEOs are increasingly seeing modern technology as an essential part of keeping up with their competitors, rather than something to pare in a slowdown. This has helped IT budget growth hold up through one of the worst recessions in living memory. However, it is when you break down these budgets into their components that the truly compelling story arises. And, of course, we are obliged to reiterate that while technology is generally faring well across the board in the current difficult environment, the true opportunity still demands extremely careful analysis to pick the winners from the losers. But here’s the news on the latest changing of the technological guard: victims of the structural shifts brought on by technologies such as the Cloud are reporting difficult operating conditions, while the winners are reporting very different experiences. Red Hat is a software company that produces virtualization software to rival the now-dominant VMware. This notoriously conservative company recently reported over 30% year-on-year sales growth. The implications, dare we say it, are obvious

1 Source: www.digitaltrends.com

2 Virtualisation separates the software running on your computer from the physical machine creating “virtual machines”. This allows you to run multiple computers on one piece of hardware – a good domestic example of this is a desktop Apple Mac running its own Apple operating system while simultaneously running Microsoft Windows in a separate virtual machine. This is a major cost benefit if you are in the business of running hundreds or even thousands of servers. You could have (for argument’s sake) 500 servers running at 80% capacity, rather than 1000 running at 40%, thereby significantly reducing hardware costs.

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