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BESPOKE

FINANCIAL SERVICES

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Productivity Pixie Dust

Technological innovation is increasing at rates faster than ever seen before, with major breakthroughs being made in fields ranging from health to transport and even home shopping. This technological progress is materially affecting both our individual lives and the global economy as a whole.

The latest wave of technological innovation goes beyond social media companies whose revenues are based on advertising, such as Facebook and Twitter. Instead it refers to those companies disrupting established industries and business norms. Beyond improving existing business operations, the innovations create new digital products and features, introduce new ways to deliver them, and support the creation of entirely new business models.

The South African television industry provides the perfect example of this innovation. DSTV was launched in the 1990's to disrupt the existing landscape of analogue TV content providers. It successfully disrupted the industry by offering the first digital, satellite service in South Africa. It provided differentiated, quality international content to South African consumers. DSTV itself is now under threat as the next wave of innovation arrives. This innovation takes the form of digital streaming services such as Netflix. These new disruptors are providing a cheaper, more convenient way of watching TV content. Netflix can offer their service at a fraction of the cost that DSTV charges as they require minimal physical infrastructure to operate. This makes it incredibly difficult for DSTV to compete with Netflix, and their business model is under severe pressure with large subscriber losses.

This example represents only a brief glimpse of the innovation currently taking place globally, if we look across a broader range of industries the following innovation examples emerge:

INDUSTRY	INNOVATION	IMPACT
Telecommunications	Mobile phones, GPS & 5G	Shift away from reliance on physical infrastructure constraints leads to lower costs
Healthcare	Biotechnology & gene editing	More cost-effective treatments
Retail	Online shopping, self-service stores	Convenience; move from retail high street to distribution warehouses
Transport	Electric cars, Self-driving cars	Lower reliance on fossil fuels, long term safety benefits
Administration	Artificial Intelligence driven systems	Automation of medial workforce jobs
Manufacturing	Robotic assembly lines	Increased productivity, lower labour costs

What is the impact of this innovation?

The key effects of this rapid technological innovation are that of increased productivity and economic growth. Increased productivity means that for the same level of input, be it capital or hours of labour, you get increasingly more output from the same activity. Technology driven productivity gains are not a new phenomenon, as we have been going through waves of technological innovation since the industrial revolution. The chart below summarises these. Notably, the innovation is more disruptive and happens at a faster rate with each subsequent cycle.

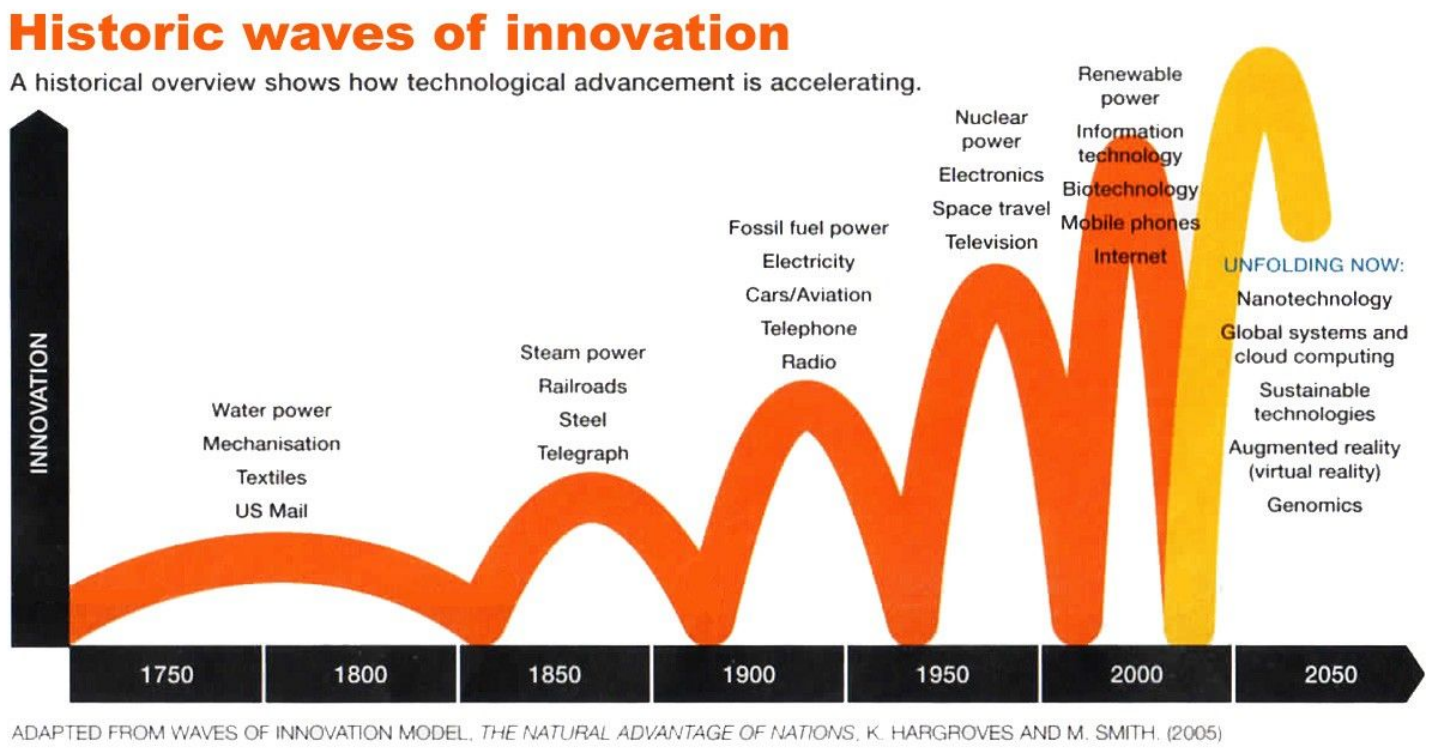

Chart 1: Source: Visual Capitalist

This latest wave of innovation is being fuelled by accelerating computer processing power which is able to operate at a fraction of its historic cost[1]. Firms are increasingly investing in technology to offset cost pressures and to protect their profit margins.

This brings us to the secondary effect of this technological progress, where the so called 'pixie dust' emerges. PineBridge have coined the term 'pixie dust' to refer to the fact that increased productivity is resulting in economic growth without inflation, which is a virtuous circle for growth investing.

In the current cycle, technological progress is driving increased productivity and efficiency for businesses. This means that the same set of goods can be produced in a more efficient way at a lower cost. Higher demand doesn't result in increased costs due to these productivity gains. And where gains are technology based, rising wage costs don't need to be passed on to consumers, as these costs are lower to start with.

We can use Amazon as a relevant example of what happens when the benefits of technology start making a real commercial impact. With the continued expansion of their online retail business, the fact that they don't need to maintain expensive 'high street' properties to distribute their products means they can undercut long time operators with large overheads by using large warehouse based distribution centres instead.

Another example would be Amazon Web Services, where the infrastructure costs of maintaining expensive computers and servers necessary to run a business, can now be transferred to their internet enabled platform as a low-cost alternative. The net result of these disruptive businesses is that consumers can access more goods and services at lower cost: growth without inflation. Or at least: growth with a minimal inflationary impact.

The consequences of innovation?

Innovation has brought enormous advancements and is redefining how businesses operate. However, there are consequences to consider. Technological advancement brings with it a lot of disruption and is creating a great divide between the winners and losers. In business, those companies which are properly embracing technology are winning and those failing to adapt are losing. A recent MIT study[2] has found that companies adopting technological innovation are 26% more profitable than those which have not. If we return to our DSTV example to further this point, Netflix entered the South African market in early 2016 and has amassed between 300,000 and 400,000 subscribers in the subsequent two years[3] with a service at roughly 10% of DSTV's cost. A large proportion of this subscriber growth has come from existing DSTV subscribers switching across to the cheaper, more convenient Netflix service. While this aggressive pricing and growth will likely be driven by the incentive to become the platform 'winner', longer term the global scale of a business like Netflix will outgun a local operator like DSTV. Over the period from March 2015 to March 2018 DSTV lost 330,000 premium subscribers[4], representing 18% of their premium subscriber base. Netflix is the innovative winner in this situation while DSTV is the disrupted loser.

There is also a negative effect for job availability as the threat of decreased demand for labour becomes apparent. Oxford academics Frey and Osbourne have claimed that as many as 47% of today's occupations are at risk of being automated in the next 20 years. This fear is not unique to the current cycle of innovation. In the early 1800's textile workers in the United Kingdom gained infamy for attempting to protect their jobs from the advent of the mechanical loom by destroying the machines that were set to replace them. What is less well known is that through the introduction of the mechanical loom, prices of textiles dropped 98% and employment in the textile industry quadrupled, as new jobs were created that had never been thought possible before the technological advances were made.

Beyond the fear of job losses comes the realisation that many of the industries we work in today, such as healthcare, electronics and computing, barely existed or had not been invented a century ago, to the extent that one third of the jobs created in the United States in the past 25 years, were in occupations or fields that did not previously exist[5].

What does this mean for South Africa?

To be a leader in this cycle, a country requires an entrepreneurial and educated workforce with both capital and skills to drive innovation. Unfortunately, South Africa is poorly positioned on these metrics. The World Economic Forum (WEF) uses the number of STEM (science, technology, engineering and mathematics) graduates as an indicator of ability for a workforce to adopt to technological innovation. Chart 1 shows the highest STEM graduating countries in 2016. These are the countries fated to be the innovators from this point forward. It is important to note that 5 of the top graduating countries are emerging market economies. China and India also lead the world in terms of percentage of graduates in STEM fields with close to 40%[6], with the US and other Western Nations less than half of this level.

By way of comparison, South Africa had only 203,000 graduates across all fields in 2016, with 30% of this related to STEM degrees[7]. South Africa is therefore set to be a follower and not a leader through this period of innovation.

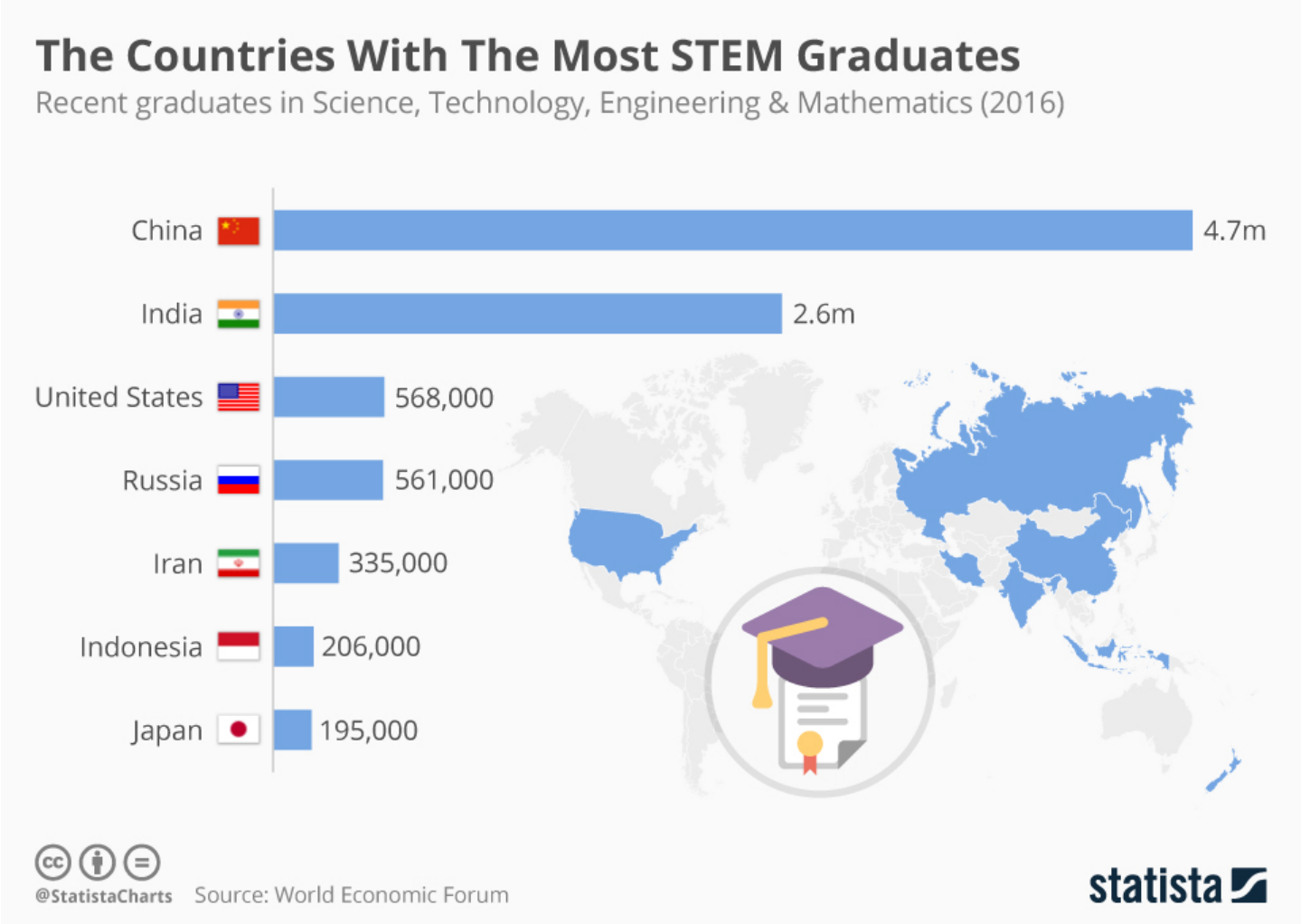

Chart 2: The Countries with the most STEM Graduates

How do we access these opportunities as investors?

It is important to remember that this is not the first wave of technological innovation. There have been waves of technological advancement for the past 200 years and yet the percentage of people employed globally has never been higher. Technological advances are a complement to human labour and not a substitute for it. To stay ahead you need to educate yourself and be open to innovation.

Investment managers can take advantage of technological innovation in two distinct ways. The first is found amongst those 'old world' companies which are in decline due to disruptors. These companies have the potential to adapt and become resurgent due to the infrastructure they have in place already. An example of this is Charter Communications, the 2nd largest fixed-network telecoms company in the US. They have been largely written-off as the telecoms industry has been disrupted by wireless operators, yet the potential exists for them to use their existing infrastructure to lead the industry into a 5G dominated world. These types of situations are generally where value managers will be finding opportunities, as ex-growth companies uncover new prospects.

Growth orientated managers will also find opportunities as they attempt to identify the companies that will successfully innovate and disrupt existing industries in future. This requires a specialist mindset and set of skills as failure rates will be high for these disruptive companies. The innovators will tend to be smaller and not have the clearest growth path ahead of them. A growth manager requires the skills to see the end picture and invest with a long-term horizon.

Investors have much to look forward to if they can capture the effects of innovation and productivity increases within their portfolios. As part of our ongoing research efforts, we are continuously assessing the potential sources of return for clients, and how best to access these "pixie dust" opportunities.

[1] *See Moore's Law, where the theory is that computer processing power doubles roughly every two years, with a commensurate reduction in cost.*
[2] *See: "The Digital Advantage: How digital leaders outperform their peers in every industry' – MIT & Capgemini Consulting*
[3] https://mybroadband.co.za/news/broadcasting/278963-how-many-subscribers-netflix-has-in-south-africa-the-estimates.html
[4] https://mybroadband.co.za/news/broadcasting/278027-how-many-dstv-premium-subscribers-multichoice-has-lost-since-2015.html
[5] *"The Future – Dystopia or Utopia" – Lawrence Burns – Baillie Gifford*
[6] https://www.bbc.com/news/business-35776555
[7] http://www.hsrc.ac.za/uploads/pageContent/7429/LMIP_SkillsSupplyandDemand_Sept2016.pdf

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October 2018

data provided by Reuters and Datastream

31 October 2018

		3m	YTD	1yr	3yr pa	5yr pa	10yr pa	5yr Vol1	10yr Vol1
LOCAL MARKET INDICES									
FTSE/JSE All Share Index (ALSI)	ZAR	-7.6%	-9.4%	-8.4%	2.1%	6.0%	12.8%	10.8%	13.2%
FTSE/JSE SA Listed Property	ZAR	-2.2%	-23.5%	-18.7%	-2.6%	5.8%	14.0%	13.6%	13.5%
SA All Bond Index (ALBI)	ZAR	-3.3%	3.1%	7.8%	6.6%	6.7%	8.4%	7.8%	7.3%
SA Cash Index (SteFI)	ZAR	1.8%	6.0%	7.3%	7.4%	6.8%	6.8%	0.2%	0.4%
Balanced Benchmark	ZAR	-2.9%	-2.3%	-2.6%	4.4%	7.8%	12.0%	7.1%	8.3%
SA Inflation (1 month lag)	ZAR	1.2%	4.0%	4.9%	5.4%	5.3%	5.3%	1.3%	1.3%
GLOBAL MARKET INDICES									
Global Equity (Datastream World)	USD	-5.6%	-1.9%	1.7%	8.5%	7.4%	10.6%	10.2%	14.3%
Emerging Markets Equity (Datastream EM)	USD	-11.6%	-15.4%	-12.2%	6.9%	1.1%	8.2%	15.1%	19.5%
Global Bonds (Barclays Global Bond Index)	USD	-2.3%	-3.6%	-2.1%	1.3%	-0.2%	2.3%	5.2%	6.4%
Global Cash	USD	0.6%	1.9%	2.1%	1.3%	0.9%	0.7%	0.2%	0.2%
MAJOR INDICES BASED TO RANDS									
FTSE/JSE All Share Index (ALSI)	ZAR	-7.6%	-9.4%	-8.4%	2.1%	6.0%	12.8%	10.8%	13.2%
Global Equity (Datastream World)	ZAR	6.5%	17.1%	6.2%	11.0%	16.1%	15.2%	14.6%	14.5%
Emerging Markets Equity (Datastream EM)	ZAR	-0.3%	0.9%	-8.3%	9.3%	9.3%	12.7%	13.1%	14.2%
SA All Bond Index (ALBI)	ZAR	-3.3%	3.1%	7.8%	6.6%	6.7%	8.4%	7.8%	7.3%
Global Bonds (Citigroup)	ZAR	10.1%	15.0%	2.2%	3.6%	7.9%	6.5%	13.7%	14.0%
COMMODITIES									
Gold (US Dollars)	USD	-0.5%	-6.7%	-4.2%	2.1%	-1.7%	5.3%	13.3%	16.9%
Gold (Rands)	ZAR	12.1%	11.2%	0.0%	4.5%	6.3%	9.6%		
CURRENCIES									
Rand / Dollar	ZAR	12.7%	19.3%	4.4%	2.3%	8.1%	4.1%	14.9%	15.8%
Rand / GBP Pound	ZAR	9.8%	12.7%	0.5%	-4.0%	3.3%	1.7%	16.1%	15.7%
Rand / Euro	ZAR	9.2%	12.5%	1.6%	3.1%	4.2%	3.0%	13.9%	13.5%

Spot Rates		31-Oct-18	Latest Quarter	1 Year Ago	5 Years Ago	10 Years Ago	20 Years Ago
CURRENCIES							
Rand/US$	Rand	14.77	14.15	14.14	10.01	9.85	5.69
Rand/GBP	Rand	18.87	18.45	18.78	16.07	15.94	9.40
Rand/EUR	Rand	16.73	16.44	16.47	13.60	12.49	NA
RATES							
Libor 6m $	US$	2.80	2.60	1.58	0.35	3.12	5.15
Repo Rate	Rand	6.50	6.50	6.75	5.00	12.00	19.73
Prime	Rand	10.00	10.00	10.25	8.50	15.50	23.50
All Bond Index Yield	Rand	10.00	9.65	9.75	8.05	NA	NA
COMMODITIES							
Gold ($/oz)	US$	1,215.54	1,191.49	1,269.46	1,323.61	728.55	292.35
Platinum	US$	834.00	815.00	915.00	1,450.00	814.00	354.00
Oil (Brent Crude) $	US$	75.71	82.79	61.12	109.07	59.50	10.27
INFLATION							
SA Inflation	%	4.9	4.9	4.8	5.5	10.9	NA

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