Quantum Leap

Technology driven
opportunities for businesses
on the road to 2050

Virgin MONEY

Contents

Foreword

I started my career in 1992, the same year this futurology report begins with a look-back at the business environment 30 years ago. I recognise a lot of the experiences and technology of the time that our fictional character Roz enjoys during her working day, and I smiled with fond nostalgia at the cultural references to TV shows and popular adverts.

I suspect some of today's SME leaders will draw a blank at these references, being too young to remember them – or perhaps they weren't even born.

However, I am sure they will recognise some of the same challenges associated with running a small business. Most SME owners now, then and probably in the future will worry about cash flow, paying the bills, keeping customers happy, growing the business, and finding and keeping the right people with the right skills.

Then and today, time is the most valuable asset SME leaders have. Our research shows repeatedly that SMEs would like more time. In our most recent survey, 77% of SMEs asked said they were likely to use tech that will save them time to reinvest in their business and for planning for the future.

We've listened and we've launched a new and free online service for our business banking customers in response to their evergreen desire to find more time. M-Track enables customers to collate their banking information with data from other systems they use to help run their business, making it easier for small businesses to manage their money through a single dashboard.

It's not quite a digital avatar intelligent enough to run a business, as you'll read about in the following pages, but it is an innovative solution that nods to the future of SME banking and how we intend to continue supporting the UK's small businesses.

Futurologist Dave Coplin provides a fascinating description of the business world thirty years from now. A world where SME owners may be able to hand over the reins to a digital clone to take care of key business tasks while they focus on other things. Where highly sophisticated advances will allow humans to

absorb technology, giving them instant access to the world's information by just thinking about it.

Obviously, no-one can predict the future with any certainty, not even Bill Gates it seems. However, we know it's essential that SMEs embrace the new tools and tech available. SMEs are urged to lean-in to the opportunity that tech provides, and to invest and adapt to stay ahead.

Encouragingly, 85% of SMEs in our research said they're likely to adopt new technology in the next five years to support business growth, and significant proportions said they plan to use advanced tech such as data science, artificial intelligence and virtual reality to support their growth.

Agility is a key requirement in the brave, new, tech-critical future. SMEs are smaller and more flexible, making it easier for them to adopt new technologies – in theory. But as always, time and money are key barriers to change for SMEs, as further evidenced in our recent SME survey. SMEs need support on this journey and of course, they need ready access to financial support.

This is where Virgin Money aims to support SMEs. We're committed to helping the UK's small businesses to grow and thrive. We recognise digital transformation is a key part of this and we are on our own customer focused journey to harness what tech can offer. M-Track is the latest investment which marks a further step in our digital transformation journey and our aim to disrupt the business banking market with differentiated products delivering best-in-class digital-led customer service.

**Kash Ahmad,
Head of Business Banking**

A futurology report: predicting the SME 2050 landscape

This futurology report has been written by UK futurologist, Dave Coplin, on behalf of Virgin Money.

For over 25 years, Dave Coplin has provided strategic advice and guidance around the impact of technology on a modern society (both at work and in play) to help organisations and individuals envision the full potential that technology has to offer. Dave is an established author and public speaker on topics surrounding the future of work and our relationship with technology. He has written books on a new working environment based on collaborative and flexible working, and on the future potential that technology offers our society if we take control and learn to harness not hate the digital deluge.

A Day in the Life (1992 edition)

7:45am: an alarm buzzes and wakes a young woman. She gets up, dresses and stumbles into the kitchen. She flicks on the kettle and the 13" Sony Trinitron TV that has pride of place broadcasts Chris Evans and the Big Breakfast House into her home, bringing some laughter to start a busy day.

Roz reaches for the coffee jar, deciding to treat herself to the 'fancy' coffee; she'll have to wait another six years before Starbucks brings its freshly ground goodness to the UK. She pauses for a moment to consider what posh coffee and the romantic goings on of a middle-aged couple had in common.

The telephone rings; it's Pete, her business partner, who's already at the office.

Pete updates Roz on the telephone messages, faxes and post that has arrived since yesterday. There's a fax from the local council, requesting a quote for an annual contract for the design and print of menus and brochures for the area's leisure centres. It's a huge opportunity for their nascent digital print business and would finally put them on the map.

However, to scale up to meet the opportunity they'd need more equipment and staff. That will mean funding from their bank.

Roz and Pete started the business after leaving college, combining Roz's graphic design qualifications and Pete's experience with electronics and personal computers, a relatively new field. They saw the potential for a new market, where graphic designers could harness the potential of personal computers to create high quality designs and prints quicker and cheaper than traditional printers.

They'd made it through the first year, buying equipment on credit cards and winning just enough business to keep most of the interest payments in check. Some months were better than others but there were occasional tough moments when a customer would take too long to pay.

Their business bank was local and for the most part supportive, but had little understanding of new technologies.

Roz knew they'd have to move quickly to establish if they could afford to put their hat in the ring.

She explained her plan to Pete, rang off and picked up the handset again to call her accountant. Thankfully, he had some time that morning, but she'd have to see him in person.

Her accountant was 30 minutes away by car. Once underway she picked up her car phone, wedged the chunky handset between her right ear and shoulder and dialled the bank.

The key trick was getting beyond reception and into the manager's diary. After a few minutes of negotiation, she secures an appointment at 2pm.

The conversation with the accountant was easy. He worked up some numbers into a plan and handed Roz a floppy disc. He could have printed it, but the dot-matrix printer would take 30 minutes to print the document.

That afternoon, Roz and Pete arrive at the bank and are transported back in time. It's an old Victorian building filled with the smell of old wood and old money. The bank has more people behind the desk than in front of it, all scurrying around with various bundles of paper.

After what felt like an age, they are called into the manager's office. The manager is not convinced by their plan. Some of his customers are those traditional print businesses, businesses that have been there for decades and, he believes, will continue to be so. The newness of Roz's business and his lack of understanding of new technology combine with his desire to minimise the bank's risk. In his words, "you're a corner-shop trying to take on Safeway ...". Roz senses he's not grasped the fundamental change that is happening in this marketplace.

The bank manager promises to think about it and commits to expedite the decision in 24 hours as a "special favour". The usual turnaround is 7 days, so Roz takes this as a win but is frustrated. Roz and Pete are the heart of the business, but the bank is the gatekeeper to its success.

What most people seem to miss is that running a small business is about the people. As a business owner you have zero time to do everything; you have to simultaneously run the finances, build the team, wow the customers and grow the business. Finding staff with the right skills and who are prepared to jump on the roller coaster with you is hard (if not impossible) and when it comes to customers, you know that it's never about finding the perfect job, it's about finding the perfect client, the one that believes in you and trusts you to deliver for their business again and again.

The local council looked like they might be that client, and better still would be the catalyst that could propel their business.
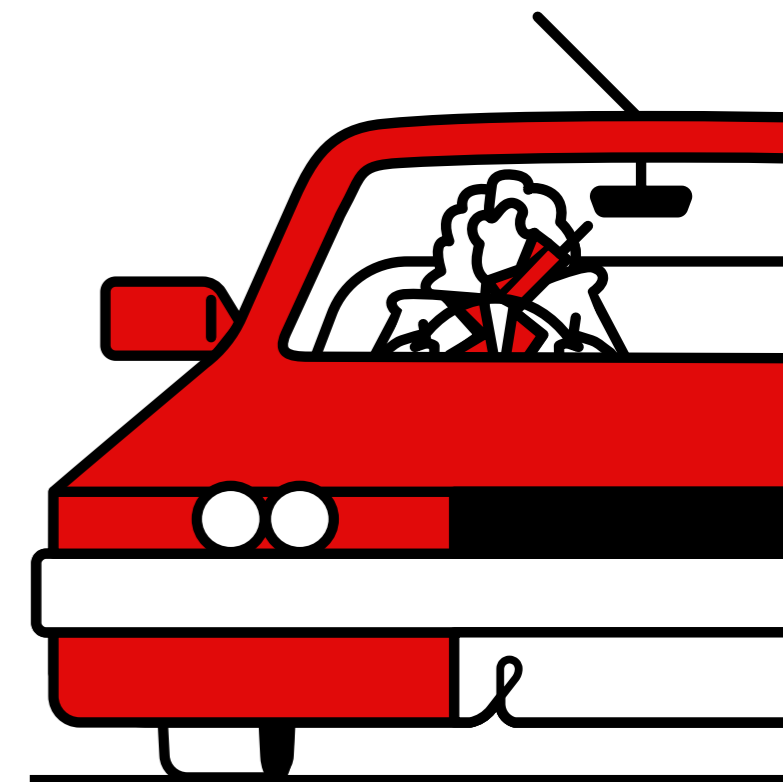
Roz and Pete's predicament, balancing on the knife edge between success and failure is familiar territory. To be an SME is to be in a perpetual position of *almost* making it. It's disheartening but there's something in an entrepreneur's DNA that is hard-wired to thrive on that. To run a small business is to know how to hustle. Diversification and agility are your two best friends.

If only that was reciprocated by the array of gatekeepers that surround you. This is a time of no internet, no online small business forums, no search engines, and no social media to give you access to answers, just a series of physical gatekeepers who, for the most part, are looking for what you can do for them rather than the other way round.

What business owners need most is support, people who have a vested interest in and a passion for helping others succeed. It was hard enough finding out how to solve the myriad of problems from VAT registration through to employment and supplier contracts, as well as look after customers old and new.

Roz and Pete drive back to the office to do the day's 'real' work, burning the midnight oil until the last job is finished, packed and ready for delivery the next day.

The following morning, back at the office, Roz finds a single piece of thermal paper curled up and barely legible. Roz turns it over and catches a glimpse of the bank's letterhead, smeared, and mangled by the low resolution of the fax but just below it the writing was clear enough, the bank, they said yes! (terms and conditions apply...).
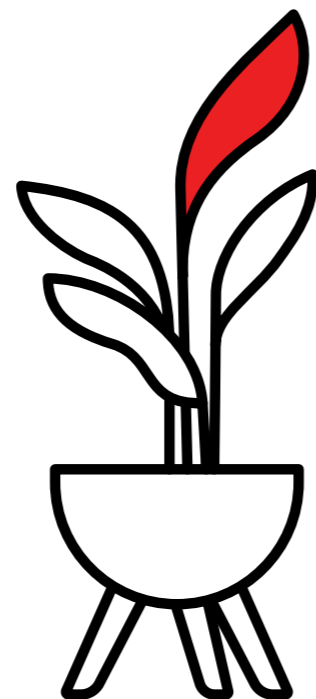
Let's party like it's 1992

"The computer will increasingly replace the commuter."

Gerald Celente, 1994

Roz's story is fictional, but it is built around a montage of the experiences of small business owners in the years between the advent of the mobile phone and the internet. It describes the day-to-day reality of business life before digital and it's incredible to consider just how far things have come.

In some ways, to be a small business owner in the early nineties meant much the same as it does today. They worry about the same things that small business owners have worried about for hundreds, if not thousands of years –

customers, growth, skilled people and money. But if we look closer, it starts to become obvious that the nineties were in fact a very different world.

The 1990s World of Work

This is a disconnected world at the dawn of the personal computer revolution. The internet exists, but not as we know it today – it's mostly used by academic and government/military institutions.

Mobile phones are available, but mainly owned by 'big shots'. The usage costs were eye-watering, and the handsets weren't called bricks for no reason.

Those who worked in an office would have seen a dramatically different landscape too. There were likely still actual offices in the office. The craze for open plan was gathering pace but constrained more than anything by the technology of the time – the desktop computer.

Today, technology revolves around us wherever we are and whatever we're doing and is a natural, essential part of our everyday lives. The technology of the early nineties required us to gravitate around it. We had to 'go' to work, it was physically impossible for it to come to us. It wasn't until much later in the decade that our relationship with technology shifted to revolve around us.

Of course, there were portable computers, just like there were portable phones but they were expensive, cumbersome, and mostly used as status symbols because the infrastructure just wasn't there to make them useful.

If you were lucky enough to have access to a laptop in the early nineties, you might take it home to continue working on a document, but it was an entirely off-line experience. You could work on your document, but you couldn't share it with anyone, it was unlikely you could even print it out. As a result, most of us stayed happy with our desktop computers at work, printed out the documents we wanted to work on away from the office and resigned ourselves to typing it up the next time we were in front of a screen.

Business at the speed of paper

Outside of manufacturing, most work remained constrained to the Monday to Friday, 9-5 because the decidedly unportable technology meant you had to stop work when you left the building. Businesses small and large, moved at the pace of paper. Communications happened in the real world, on paper. Moving information around relied entirely on physical movement. Sending a document to a colleague usually took a day, even if they were in the same office. Ordering something over the phone was always "please allow 28 days for delivery".

Email had arrived in some larger companies, but it was seen as the poor relation to what people at that time perceived as the real innovation in electronic communication – the fax machine.

Business owners were helpless in this. To do business, you had to go to it, or it had to come to you. An order from a customer had to be posted or faxed; paper or another physical artefact, like a floppy disc, had to be passed from one place to another. Conversations with stakeholders were the same. A conversation with your accountant? Better be at their office. A conversation with your bank? You needed an appointment.

Business leaders had to join all the dots and inevitably it meant schlepping around from point to point throughout the day. All the time lost in moving physical artefacts of business around was time not spent on improving the business.

Skills and people

Every SME owner knows one truth about being in business – it's all about the people. The only way as a leader you can move forward is to build a team that creates the capacity for you to focus on the areas where you can add value, rather than being bogged down with everything.

It's also about the experience of those people. One of the greatest challenges of a business owner is to be a jack and master

of all trades. To do that in the 1990s when there's no internet to provide ideas, answers or connections, it was essential to surround yourself with people that would add both brains and brawn.

Being nimbler than the big corporations is one of the key USPs of the small business, but you cannot afford to stay still. Diversity and agility are key, and SMEs need people that can adapt and react and are comfortable wearing many hats.

In this sense, the people needs of the small business haven't changed, and are unlikely to change. What has perhaps shifted is the diversity in skills that are increasingly going to be important for success.

With the end of the cold war in 1991, the world became more connected; the growth of new global markets had us looking beyond borders for new opportunities. We were more likely to see value in language skills than computer literacy. Remember when learning Mandarin was seen to be the key skill for a successful future? Thanks to technology, no-one has to learn a foreign language to communicate and do business anywhere on the planet – unless we want to.

In the 1990s, it wasn't that easy to find the right people. Short of a card in the Post Office window, there was no quick, easy, or cheap way to find labour.

Even if you could find people, finding the right skills was also problematic, especially at a point where the skills in the world of work were going through a fundamental shift (more so perhaps in offices than elsewhere) with the shift from paper to electronic communication.

As the PC began to emerge, small businesses needed people on the team that had sector / market experience along with great people skills, all supported by an affinity with technology to do things like create a website or an email list for the first time. Even today that combination of skills remains very hard to find.
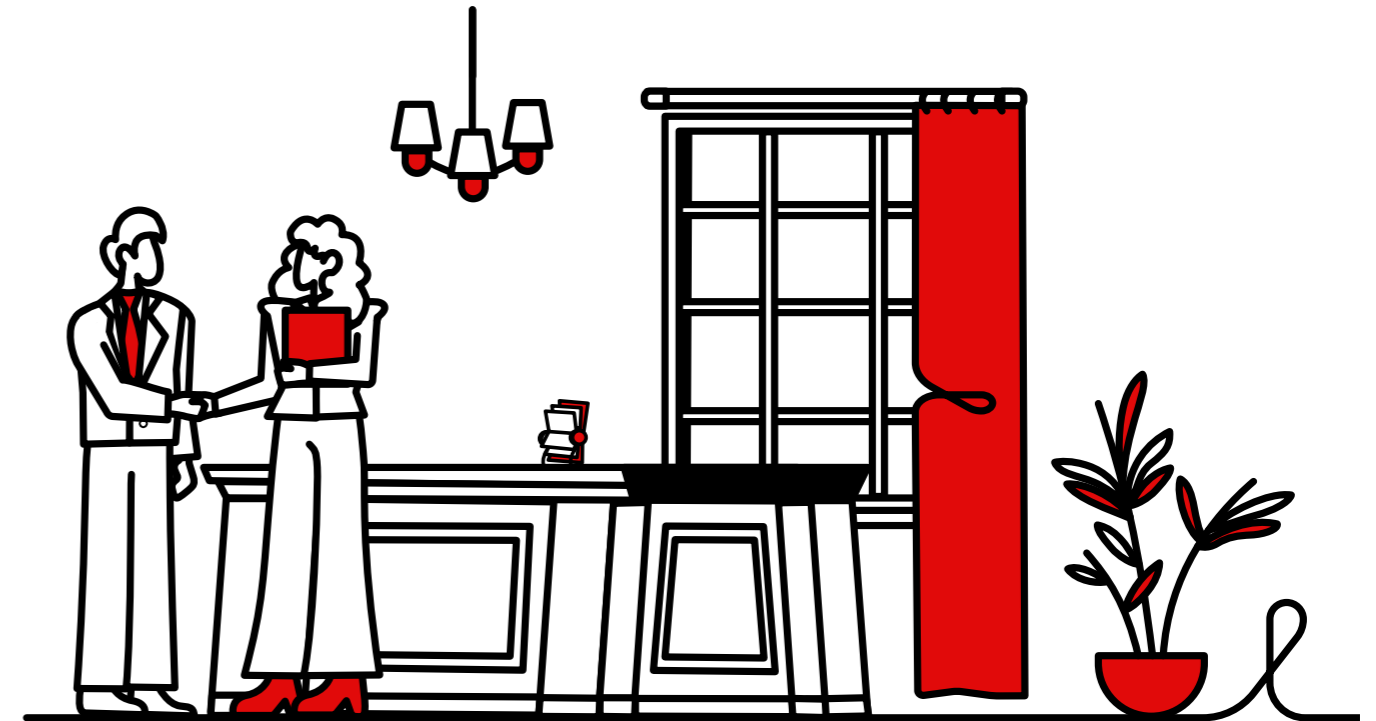
"Show me the money!" Banks and financing

Money and financing were always front of mind for the small business owner of the 1990s. Then as now, a small business is almost by definition unlikely to have any significant reserves, so every day becomes a hand to mouth affair, walking the tightrope between debt and profit.

Having access to sufficient funds to smooth out the small business finance roller coaster is everything and in the 1990s there were fewer options than today. There was less access to venture capital and no crowd-funding platforms.

As an entrepreneur you typically had access to three sources of funding: personal savings, the (investment) bank of mum and dad, and the bank.

The bank was often the last resort, and that is possibly no different to today. However, unlike today, the main reason the bank was last in line was as much about the experience as it was the interest rates.

In the early 1990s, businesses had a local branch on the high street. In that bank would have been a bank manager, a real person, complete with their own office. The bank manager's primary job was to minimise the risk to the bank's resources, not make businesses successful. Therefore, relationships were very different. The bank was there to allow business to operate, not the other way around.

The same was true about access to finance. Remember, no internet and no smart phones. Want to check your balances? If you were trendy, you might be with a bank that offered telephone banking, but for most people, it meant a trip into the bank to ask a human.

Technology Predictions - Leading the blind

"Prediction is very difficult, especially if it's about the future!"

Niels Bohr

In every aspect of our lives, the main source of change between the 1990s and today has been driven by technology, particularly by the internet, the personal computer and the smartphone. It's hard to imagine what it was like to run a small business without access to these game changing resources but comparing where we are now to how we saw the world 30 years ago can really help us understand how we should deal with the next 30 years of change.

If you look at the top five most significant technologies of the last 30 years: the world wide web, smartphones, ecommerce, social media, and artificial intelligence, not one of them was accurately predicted. Even though the building blocks that made them possible were all in plain sight in the early nineties, many of the visionaries of the time didn't see them coming.

This phenomenon is encapsulated in something called Amara's Law, named after Roy Amara, an American Scientist and Futurist. His law simply states that "*we tend to overestimate the effect of technology in the short run and underestimate the effect in the long run*." Some of the most important examples of Amara's Law that the 1990s had to offer can be seen here.

The World Wide Web

Although the internet was already over 30 years old in 1992, the service that would take it to the world wide web, reaching 60% of the population, was stuck in a nuclear research lab in Geneva. Even when the world wide web was introduced to the public, it was seen as a more user-friendly way of sharing information amongst academics rather than something that would transform almost every aspect of how we live, work and play.

Even the leaders of the tech world initially misjudged the potential of the internet. After publishing his book, 'The Road Ahead', in November 1995, Bill Gates realised he had *"vastly underestimated how important and how quickly the internet would come to prominence"*. He sought to rectify his mistake by adding 20,000 words on the topic and re-released the book as a new edition less than 12 months after its initial publishing. At the same time, he also issued a now famous memo to Microsoft

"The truth is no online database will replace your daily newspaper, no CD-ROM can take the place of a competent teacher and no computer network will change the way government works."

Clifford Stoll, 1995

called 'The Internet Tidal Wave'[1] which completely changed the company's direction by centring all its operations around the growth of the internet.

Hindsight makes it easy to poke fun at just how badly experts got it wrong at first, but we have to remember, the internet was vastly different to the web we love today. There was no Google, no way of easily finding information or being able to verify its veracity. Content was heavily skewed towards academia. Most of all, it was painfully slow.

If you wanted to surf the web in 1995, you needed a phone line, a modem, and a lot of patience. Connectivity was provided by a dial up connection that, on a good day offered you a connection to the internet that was *three and a half thousand* times slower than today's average domestic broadband connection[2]! To put that in perspective, to download an average length HD movie in 1995 would have taken 83 days compared to today's average of 34 minutes. Given all of that, it's really no wonder people were struggling to see the potential.

Smartphones

"The idea of a personal communicator in every pocket is nothing more than a pipe-dream fuelled by greed."

Andy Grove, 1992

Smartphones are one of the most transformational pieces of technology of the last few decades, but amazingly that potential has only really begun to be realised in the last few years.

It was in 1992 that the consumer mobile revolution began with the launch of the Nokia 101, the first ever "candy bar" phone and the first real chance to move away from the Motorola bricks that had filled briefcases with plastic (and radiation) since 1989. There was no SMS, no WAP, no snake or amusing ring tones. These devices did exactly what they said on the tin, they were "mobile" phones.

Slowly, as the decade progressed, so too did the technology. Phones got smaller, functionality grew beyond speech, but they remained mildly better versions of their previous selves.

Then, a year or so into the 21st century, some new phones were now coming with an ominous black circle on the rear of the case – a camera.

Many didn't see the point of a camera on a mobile phone which ruined the battery life, the images were terrible and there was an extortionate cost of sending the resulting pictures to anyone.

Hardly anyone could see the potential of a Nokia or a Motorola looking forward to the smartphone, the device that by 2011 - less than 5 years after the iPhone's

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1   Letters of Note: The Internet Tidal Wave, Bill Gates, published May 25th, 1995. (https://lettersofnote.com/2011/07/22/the-internet-tidal-wave/)

2   UK Home Broadband Performance, 9 September 2021 (https://www.ofcom.org.uk/__data/assets/pdf_file/0020/224192/uk-home-broadband-performance-technical-report-march-2021-data.pdf)

debut, had become so important to over half of 16–30-year-olds interviewed would rather lose their sense of smell than be without it[3].

Microsoft's former CEO, Steve Balmer, spoke to USA Today in 2007, remarking "*There's no chance that the iPhone is going to get any significant market share. No chance,*"[4]. The leader of the world's largest technology company didn't see what was about to happen. 2.2 billion handset sales later, Apple's market share peaked at 24% in 2018 but remains high at around 17% as of the end of 2021.

"Most things that succeed don't require retraining 250 million people."

Waring Partridge, 1995

eCommerce

Although the experience of shopping on the internet was one of the first use cases that many of the early internet experts and pioneers were keen to point out, few if any of them really understood the magnitude of the opportunity. In 2022, global online purchases are expected to total $5.55 trillion, accounting for 21% of all retail sales.[5]

In the UK in February 2022, almost 28% of all purchases were made online, accounting for just over £2 billion pounds of all retail sales[6]. In June 2007, when the first iPhone launched, UK web shoppers accounted for only 3% of all sales.

Back in the early nineties, the problem was that enabling technologies weren't sufficiently developed for people to understand or even see the possibility. The early web was more about finding information than bargains. It was also a massively untrusted space, often referred to as the "wild west". Even if you had a credit card, it was unlikely you'd be getting it out to use it on an untrusted space like the internet.

Meanwhile, while all the experts, academics and armchair pundits debated the merits of commerce on the Information Superhighway, somewhere in the pacific northwest, a man quits his job as a hedge fund manager, borrowed money from his parents and started selling books online out of his garage.

That man? Jeff Bezos.
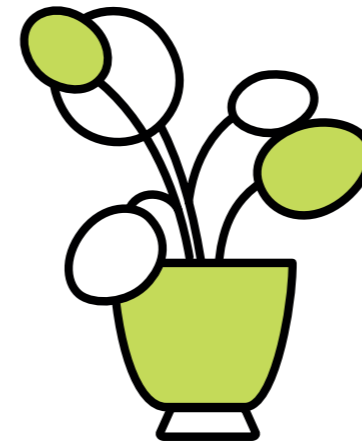
The Rise of Artificial Intelligence

Incredibly, given its absence in any of the predictions or comments of the 1990s, this technology is probably one of the most significant we have ever created.

This is a technology that, over time, will fundamentally change how we define what it means to be human, as you'll see later.

Today's artificial intelligence uses a process called Machine Learning where algorithms are trained, in the same way that we might train our dogs to repeat a certain action in response to a recognised input. Just as a dog will sit if you say the word and offer a treat, so too will a search engine return the answer to a question using just the same principle of rewarding performance.

This basic ability to spot patterns and deliver a result based on those patterns is the very foundation of pretty much every digital innovation we enjoy today. In fact, not one of the technologies outlined in this section of the report would even exist today without it.

Yet in the 1990s hardly anyone knew it existed never mind thought about what it might make possible. Of all the bad predictions we've talked about in this report, the complete ignorance of AI has to be the most significant.

3   The Truth about Youth, McCann WorldGroup, 2011. (https://www.mccannworldgroup.de/fileadmin/mrm-mccann/mwg/pdf/McCann_Truth_About_Youth.pdf)

4   CEO Forum: Microsoft's Ballmer having a 'great time', USA Today, 29 April 2007 (https://usatoday30.usatoday.com/money/companies/management/2007-04-29-ballmer-ceo-forum-usat_N.htm)

5   Global eCommerce Forecast 2021, eMarketer Inside Intelligence, 7 July 2021, (https://www.emarketer.com/content/global-ecommerce-forecast-2021)

6   Retail Sales Index internet sales, Office for National Statistics, 25 March 2022, (https://www.ons.gov.uk/businessindustryandtrade/retailindustry/datasets/retailsalesindexinternetsales)

Summary

As we've seen, the 1990s was a decade of incredible change, driven by a new era of digital technology and the seemingly unstoppable march of globalisation all of which were to set the stage for the main attraction, the mass adoption of the internet as the world's marketplace.

In this transition from one evolutionary period to another, companies and entire industries disappeared. Not because they failed to predict what happened, but because they weren't agile enough to reorient themselves around the new world order.

As a classic example, Kodak was one of the first companies to bring a digital camera to market, but they simply couldn't adapt quickly enough to maintain their relevance.

The truth is, predicting the future might be fun, but it rarely ever works. We've seen how even the world's visionaries and leaders struggled to anticipate the twists and turns of society, the economy and technology. If they couldn't anticipate it, what chance does an SME owner have?

While predictions are about to get a whole lot better, predicting the future isn't the only or even the best way to get ready for it.

Understanding this will need to become a core part of any SME's strategy because if you think the last 30 years have brought about a huge change in our lives and businesses, it will be nothing to what's likely to happen over the next 30.

A Day in the Life (2050 edition)

It's the year 2050. Roz's daughter Sam is awoken by a gentle buzzing behind her left ear. The implant, placed subcutaneously, monitors her blood chemistry and brain patterns, and has identified this exact moment as the perfect moment in her sleep cycle to wake up.

She gets dressed and heads to the kitchen. As she steps through the kitchen doorway, the room sparks into life. The walls transition from plain surfaces to large displays. A colourful interactive dashboard has a range of information covering her health, news, weather, commercial updates for her business and her day ahead.

As she works through the details, the food appliance kicks into life triggered by her presence and fills the kitchen with the aroma of freshly ground coffee. There isn't a coffee bean in sight however, just an array of hoppers containing protein and plant-based matter which the machine blends with fresh ingredients from the adjacent vertical farm unit and water. Her subscription gives her access to her favourite brands and is programmed to synchronise with her medical implant to provide the exact balance of nutrients to give her blood chemistry exactly what it needs to start the day.

She asks for the overnight report and Sam's avatar, a near-perfect digital copy of her, appears right next to her. Sam's avatar has been programmed with her business persona, is fully independent and authorised to act on her behalf in the metaverse.

Sam's avatar talks her through a deal she's been working on while Sam slept. Her virtual bank agent put them in touch with an opportunity in the Netherlands, where the local council wants to upgrade their virtual agents to improve engagement with citizens.

Sam was indebted to her bank. It was through their mentorship that she found a niche market, making virtual agents feel more human to improve their interactions with humans. The bank had pulled together anonymised insight from across its network and helped Sam identify areas of opportunity that matched the capabilities of her business.

Sam had discovered the secret to creating the perfect virtual agent. While the big tech companies were focused on making virtual agents flawless, the bank helped her identify that such perfection only decreased effectiveness.

Sam's business creates minor personality flaws for digital agents. Nothing huge, just a mispronunciation here, a mis-spelled word there, tiny little flaws that Sam had found were just enough to make the human interacting with the agent feel more at home and a little less intimidated.

Business had been going well, but it was all a bit hand to mouth. She often felt like she was working all day just to stand still. If she could win a big contract and create a long-term client relationship, she could finally scale up.

Sam's digital avatar gave her more detail on the potential deal. It was going to be huge, but more than Sam could cope with on her own. The extra development resource would be easy because she was already part of a huge global network of developers that were easily contracted, but she would have to buy some extended processing time on a

quantum computer to generate a wide range of believable digital personas and that wasn't going to be cheap. It was more than she could cover from current cash flow. The opportunity started to feel out of reach until her avatar chimed in to say, "the best bit is we've already been pre-approved for finance from the bank."

Sam's bank was focused on leveraging their position of being connected across a broad range of industries and companies to find insight and investment that would help their customer's businesses grow. The bank had predicted this scenario and had already done the math. It was through this predictive, pre-emptive partnership that the bank was able to minimise both risk and cost while simultaneously helping customers like Sam navigate through a rapidly changing environment.

It was the best of all worlds, a group of mutually supportive physical and virtual agents working together to drive business value.

Sam's avatar had already pulled together a client-ready briefing, waiting for Sam's final approval. Sam reviewed it, gave it a big thumbs up and started the rest of her day.
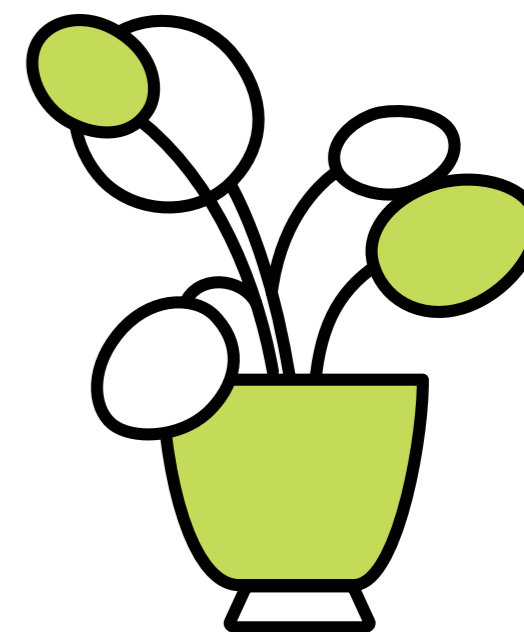
The road to 2050

"There's a big cinder block stuck on the technology accelerator pedal, and we're only gonna go faster and faster, never stopping."[7]

Doug Coupland, 1994

Just as it was in the 1990s to now, there is a small handful of big technologies that is going to fundamentally change everything. In this section, we'll revisit artificial intelligence, explore quantum computing and look at how humans will become more like computers and why computers will become more human.

The Rise of Artificial Intelligence (again)

If the rising potential of AI in the 1990s was missed, we're certainly making up for it now. The first couple of decades of the 21st century seemed to have been peak hype for the technology that is now almost 70 years old.

AI is increasingly at the foundation of almost everything we do that has a digital footprint. It's an incredibly powerful technology that is already transforming our capabilities as human beings and it's poised to go through another enormous transformation.

An easy way to think about how AI works is to think of it in terms of a car. The algorithm, the rules by which the service works, is the engine. The fuel is the data that the algorithm consumes to learn and work. The more powerful the engine, the more significant the result. Similarly, the more data you have, the further the algorithm can run. We're about to perform an upgrade to the 'engine', although calling quantum computing an upgrade to a traditional computer is a bit like calling a

smartphone an upgrade to a pocket calculator. We're also creating a new, limitless supply of fuel (data) thanks to our increasingly digital world. We're creating and storing more data than ever before, and both developments are going to push the performance of algorithms into completely new levels of capability and achievement.

The holy grail of all AI research is 'general AI'. This is the point at which computers can think and act better than humans.

The concept of general AI has been hyped for years, mostly depicted as a dystopian future that ends in the destruction of human life (thanks Arnie).

But what once seemed to belong to a distant future, now seems increasingly likely. The imminent rise of the machines has been threatened by headlines and movies alike for decades, but thanks to advances in technologies such as cloud computing, processing power and techniques like neural networks and machine learning, some people believe that the robot uprising is finally at hand.

Ray Kurzweil, possibly the world's most famous and successful living futurist, has predicted that we'll reach the "Singularity" which is when we "*will multiply our effective intelligence a billion-fold by merging with the intelligence we have created*"[8] in 2045.

Rather than fear the uprising, we must welcome our new robot overlords. To be successful in this future we will share with the machines, we will have to learn how to stand on the shoulders of the power and use it to extend our reach, not replace us.

Taking a quantum leap

Ever since the computer was first created in 1822 by British mathematician and engineer Charles Babbage, every computer has relied on the same principle of binary where the most basic units of information (called bits) are simply a 1 or a 0. Everything that is processed by a computer is represented by a unique combination of 1s and 0s.

All that is about to change with the introduction of quantum computers. This is a world where the basic units of information can either be 1, 0 or *both at the same time*. The net result is that for some calculations, these new computers are already hundreds of millions of times quicker than the traditional computers we run our businesses on today.

This is the "engine upgrade" mentioned earlier. With this kind of power, we're going to be able to do amazing things.

Just as a binary bit is the basic unit of information for a traditional computer, a quantum bit or "qubit" is the basic unit of information for a quantum computer.

In 2019, Google successfully demonstrated a quantum computer, operating with around 53 qubits performing a task in 200 seconds that would have taken a "normal" supercomputer 10,000 years.[9]

The power of qubits grows exponentially, and scientists expect that a quantum computer with 300 qubits could simultaneously answer as many questions as there are atoms in the known universe![10]

Today's quantum computers are at around 100 – 200 qubits and quantum pioneer IBM expects to exceed 1000 qubits in 2023.

7   A Couple of Hyped Guys Sitting Around Talking, Wired, 1 December 1994, (https://www.wired.com/1994/12/linklater/)

8   Kurzweil claims that the singularity will happen by 2045, Futurism, 5 October 2017, (https://futurism.com/kurzweil-claims-that-the-singularity-will-happen-by-2045)

9   Google claims 'quantum supremacy' for computer, BBC News, 23 October 2019, (https://www.bbc.co.uk/news/science-environment-50154993)

10   Quantum Leaps in Quantum Computing, Scientific American, 1 December 2017 (https://www.scientificamerican.com/article/quantum-leaps-in-quantum-computing2/)

IBM, Google, Microsoft, and others are building quantum computers that our businesses will use as a utility service (just like we use their cloud computing facilities) and IBM expects its version to be broadly available by 2030[11].

Think what SMEs might have access to by 2050?

But it won't be plain sailing. Quantum computers are already presenting a problem to businesses today as they will break all the encryption we have relied on for decades to keep our information safe.

Becoming "quantum safe" by using a level of encryption that even quantum computers can't break is going to become the new battleground for cyber security that every business – regardless of their size - will need to prepare for.

Inevitably, crypto-currencies and supporting infrastructures like block chain will have to form the basis for our new economy moving financial services from centralised to decentralised. This will be another change in the relationship to business and financing that will provide new opportunities for all businesses, regardless of size.

When artificial intelligence gets powered by quantum computing the world is going to make a pretty sizeable jump forward.

If today's algorithmic predictions are considered good (like which word you might type next or which product you might like to buy), imagine a future where real predictions can be made with almost perfect accuracy. Imagine being able to predict if your product will be successful without even making it. Or being able to anticipate your customers' needs before they do. These scenarios have been the stuff of dreams to date, but quantum computing may change that forever.

The Human Computer

What do we do when we are asked a question to which we don't know the answer? We pick up the nearest device and punch in a few details to bring up the answer.

For many of us, that device has become a physical extension of our selves. Research has shown that just as it is with any tool we might use to augment our capability from a screwdriver

to a smartphone, it becomes a part of us. Not just in a metaphorical sense, but our brains make it real, pretending that the new extension is physically part of ourselves.[12]

But what if instead of having to hold (or wear) that tool, it was intrinsically part of us?

The concept of augmenting humans with computing technology is nothing new. Many of us have already spent the best part of a decade wearing at least one computer (smartwatch) with another more powerful device either in our hands or in our pockets.

What's going to happen over the next 30 years is those devices will get smaller and move inside our bodies.

Cybernetic implants are already moving beyond science fiction. In a recent survey 75% of people said they would implant a medical microchip in their bodies if it was available.[13] The most desirable cybernetic enhancements amongst those surveyed was:

1. Microchips that monitor health and allow fast diagnosis (39%)

2. Cybernetic eyes to take pictures and record footage of what you see (37%)

3. Optic nerve interface that would allow projecting images directly to the brain (32%)

4. A charger and digestive system upgrade that would allow you to get or restore energy without eating or sleeping (32%)

5. A cybernetic tattoo made with electronic ink technology that you can turn on and off, or upload new designs onto your skin on a regular basis (30%)

6. A brain-computer interface that would allow uploading and downloading data (30%)

7. Microchip implants in a hand for opening doors and contactless payments (29%)

8. Nanoparticle tattoos that change colours depending on blood glucose levels (26%)

9. Enhanced bionic eyes that would allow night vision/infrared vision (25%)

10. LED-based or UV tattoos that can glow in the dark (22%)

11   The Quantum Decade, IBM Institute for Business Value, July 2021, (https://www. ibm.com/thought-leadership/institute-business-value/report/quantum-decade#)

12   When objects become extensions of you, Michael J. Spivey, MIT Press, 9 Nov 2020. (https://thereader. mitpress.mit.edu/when-objects-become-extensions-of-you/)

13   Microchip implants or and LED Tattoo?, Tidio, 27 October 2021. (https://www.tidio.com/blog/cybernetic-enhancements/)

Imagine being able to run your business while having instant access to all the world's information (fact and fiction) or being able to translate and speak different languages real-time or even being able to record and replay any given moment of any given day. Elon Musk is already working on a range of brain-computer interfaces which will give you control over all the above simply by thinking about it.

You might view this with equal measures of delight and terror, but the reality is that this will be the future that awaits us and we're going to have to work out how to make the best of it.

As well as putting computers into ourselves, increasingly we're also going to be putting ourselves into computers. Let's take a trip into the metaverse...

The Computerised Human

While the metaverse might feel like the latest technological hype wave, it's a concept that's been around since the early 1990s. The actual capability of being able to create and live in a virtual world has been slow to arrive, limited by technology and imagination in almost equal measure.

Advances in technology such as the internet, cloud computing as well as in computer graphics and visualisation (not to mention our old friend AI) are enabling the creation of a compelling virtual environment where we, or our avatars, participate in everyday activities like working, shopping, and play.

Thanks to advances in quantum computing and artificial intelligence it's going to get even better as we're likely to gain the ability to create a digital copy of ourselves, a virtual clone that can exist in the metaverse operating on our behalf as if we were there in person.

What's going to make this possible, assuming it works of course, is the ability to upload our entire consciousness into a computer. Transhumanists, people who see the body as a physical machine that supports consciousnesses, and other technologists are actively looking for a way of reducing our reliance on the biological hardware, which has a limited shelf-life, and in so doing enabling our software to live on forever in the digital realm.

It might sound like another dystopian sci-fi movie but there's a significant number of people working on the capability to make it possible.

Admittedly that's a lot for us mere mortals to take in, but even if we only got half-way by creating a digital version of our business selves, an agent that could act on our behalf, it would massively transform the life of a small business owner.

Some of you may already be using the early versions of this. If any of you use digital agents like Siri, Google, or Cortana to help run your day then think of this as a logical (but substantial) next step. These digital agents already book meetings, suggest responses to emails, send commitment reminders and tell us where to find the nearest best restaurant. It's just a matter of time before we don't have to ask them the question...

Summary

Hopefully by now, you'll have started to get a sense of the dizzying amount of change that's fast approaching over the next 30 years. If you thought it was tough as an SME owner getting from the 1990s to today, the next 30 years are going to be worse.

But they needn't be.

Time and time again small businesses show their ability to be agile and to embrace diversification in everything they do. Learning to separate the things that make your business unique from the things that are commodities is as important to you today and in your future as it was yesterday.

Trying to predict the impact of any or all the changes described here is a mug's game. Instead of trying to guess what might happen, you're going to need to develop some new skills (and hone some old ones) to propel yourself and your businesses into 2050 and beyond.

Best of all, you don't need to wait until 2050 to get started., There are several things you can do right now to prepare for and make the most of the changes that are coming.

Processes are the enemy of agility; they actively prevent change from happening.

A better approach for success is to focus on effectiveness first and efficiency second. This means being obsessed with delivering outcomes that will delight customers rather than the processes used to deliver them.

Focusing on outcomes liberates the business to be able to adapt and adjust to changes.

Remember our earlier example of Bill Gates' initial myopia regarding the internet? After initially failing to anticipate the importance of the internet, not only did he fix that view within 12 months, his 180-degree turn set in motion a fundamental change that was a massive contributing factor to the success that Microsoft continues to enjoy today, almost 30 years later.

If Bill Gates can do that kind of U-turn, so can SME leaders.

People, skills, and technology

In an age where algorithms will answer our questions and robots will do much of our 'heavy lifting', as a business leader, what you're really going to need is a way of combining the best of technological capability with the best of human ability, to find that sweet spot where humans and machines complement each other.

There are key skills you will need to achieve more than ever before across all aspects of our lives:

Creativity

Technology is one of the most creative forces that we will ever get to enjoy. Our future will be filled with complex, challenging problems. SMEs will need creative thinkers to help navigate it.

Empathy

While the machines are busy crunching numbers, it will be the humans who will navigate the complicated world of emotions, motives, and intentions. In a world of the dark, cold logic of algorithms, customers will gravitate towards businesses that never lose the human touch.

Accountability

We must be accountable for how we use technology. Just because the computer provides an answer, doesn't make it right. To get the best value from the insight and opportunity

that technology will bring, businesses will need to learn how to take the computer's valuable input and it with human intuition

Curiosity

One of creativity's most important companions is curiosity. We walk around with a device in our pockets with access to every bit of knowledge and opinion from the last couple of millennia. But what do we choose to do with all that knowledge? Two words: cat videos. Curiosity is the superpower to being able to spot the signals that will define your future, learn to use it.

Lifelong learning

The future doesn't stand still, and neither can we. Learning needs to be an everyday occurrence for businesses. Thanks to new technologies like artificial intelligence, skills that are new today will be automated tomorrow and this means we can never afford to stand idle.

Resilience

The by-product of a rapidly changing world is that we need to help people learn to live with and love the ambiguity it presents. More traditional mindsets of single domains of skills and single careers will have to give way to the much more nebulous world of multiple skillsets for multiple careers. SMEs will need to find a way to preserve and develop enough energy to embrace every new change and challenge.

Digital confidence

There can be no doubt about the growing importance of digital technology in every aspect of how we live, work and play. You don't need to be a nerd, but you do need to lean-in to the opportunity that technology provides.

The future will belong to the humans who can work in harmony with the machines, not in competition. Businesses, and society in general, are going to need people who can bring fundamentally human skills to complement the quick, cold logic of the machines.

Success will go to the businesses who are best able to adapt to a rapidly changing world, where the tidemark that maps out the boundary between computer capability and human ability will continue to rise. Skills, professions, and even entire industries will be in a constant state of flux and those that are most malleable, most resilient, and reactive will be the ones that will be able to enjoy and prosper from the potential that such a world will have to offer.

Conclusion - navigating your future

The intention of this report is twofold: the first is to show how difficult and pointless it is to try and predict or pre-empt the future. The second is to highlight the skills and approach SMEs need to take to best prepare themselves to take advantage of whatever the future may bring.

We've looked at the dramatic changes that occurred in our lives and businesses in the 30 years from the early 1990s to today. There's every chance these changes will pale into insignificance in comparison to the changes we're about to experience in the next three decades.

This report is not designed to frighten or daunt anyone in the face of such phenomenal change but to show how, by focusing on the attributes that make SMEs so powerful, it's possible to plan for success.

Instead of worrying about what might happen, SMEs leaders should focus on building the capability to assess any given situation and adapt their business in response. Building in this constant agility at the heart of business is the best inoculation against an uncertain future.

But agility alone won't be enough.

The best way to prepare for an uncertain future is to surround yourself with a diverse network of people and partners.

The future will bring many incredible advances, changes and challenges and it will belong to those that can navigate a successful path through the unknown.

Dave Coplin
London, April 2022

M-Track – unlocking the bigger picture for small business

Virgin Money has launched a new, free business banking service, M-Track, which enables its current account customers to collate their banking information with data from other systems they use to help run their business, in a single online dashboard to provide an at-a-glance view of their business's financial health. This is powered by partnering with fintechs including 9-Spokes, Fluidly and Codat.

By connecting all their separate business applications into one platform, M-Track provides Virgin Money customers with a snapshot view of their business's position, with personalised insights, drawing together data from their current account, accountancy software, e-commerce platform, social media and other business tools. This makes it much simpler for small businesses to manage their money and business performance, saving them time and giving them control. Connections to their business applications can be set-up in minutes through M-Track, with almost 20 different services available to be linked at launch, with more to be added over time.

M-Track also includes access to Fluidly, a cashflow and forecasting tool which uses data within the dashboard to predict the future and help businesses plan, supporting their success. A standard subscription to Fluidly costs £49 per month, but M-Track provides free access for customers.

What SMEs say

85%

of respondents said they're likely to adopt new technology in the next five years to support business growth.

62%

of respondents said their reliance on tech increased during the pandemic.

SME owners plan to use

data science
39%

artificial intelligence
31%

virtual reality
26%

to help build their business.

30%
Lack of time

39%
Money

are the reasons preventing SMEs from using advanced technology.

77%
of SME owners are likely to use tech to help them save time.

70%
are concerned about the future availability of skilled people to support their business.

66%
of respondents are planning to digitally upskill their workforce.

Survey of 1,013 SME decision makers conducted by Censuswide between 25 March and 30 March 2022.