DBS BusinessClass

DIGITISE DISRUPT TREND REPORT

The Future Of Business

Foreword

While technological disruption is sweeping across all businesses and industries, SMEs are arguably being impacted more than others as they have less resources to deal with a fast-changing landscape. While the digital revolution is causing them a tremendous amount of stress, it is also presenting opportunities for growth.

New digital tools are levelling the playing field and giving rise to a new generation of tech-savvy start-ups that are taking on incumbent players in their own backyard. Meanwhile, SMEs in traditional sectors are leveraging technology to upgrade their capabilities in order to stay relevant and grow their operations.

At DBS, we are committed to helping our SME customers make the leap into a digital world. We do this by providing them with the resources or matching them with the right partners to go digital and expand regionally.

Our DBS BusinessClass platform, for instance, helps connect SME business owners with experts and critical insights for their industries. We also match companies with technology vendors to meet their most pressing challenges through our TechMatch initiative.

The guide you have in your hands is another effort to help you prepare for the numerous changes that are impacting the business world. We hope it will kickstart a journey that will ultimately lead to success in the long term.

Joyce Tee
Managing Director &
Group Head of SME Banking

Foreword

Change in the business world is happening at an unprecedented pace. It took the Internet only 15 years to match the reach that television achieved in 100 years. Google managed the same feat in 10 years, Facebook in six years and Instagram in just two.

The speed of innovation and transformation means that businesses today need to rethink their strategies. With life cycles compressed, companies must move nimbly and review their strategies regularly to avoid getting caught off-guard by any sudden disruption.

Are we ready to face such changes head-on? Technology start-ups are unbundling banking services and disrupting traditional verticals – from payments to trading – one by one. Consumers can now get a personal loan on a peer-to-peer lending platform, or invest their savings with the help of AI robo-advisors.

It's a no-brainer. Traditional banks must change their modus operandi to stay relevant. This involves embracing fintech, and collaborating with start-ups to offer new and enhanced services to their customers.

Solutions that are backed by research and data consider trends that impact businesses in the future. As such, the innovation team at DBS designed a process to provide an in-depth analysis of trends that matter not just to the business but also how we live and interact with one another.

"**Northstar**" is a futurecasting tool that we developed to combine data and research with views from thought leaders with expertise across different fields. This is the first time that we are highlighting Northstar's findings in this guide, and what the implications might be for your company. We hope you find these insights useful in future-proofing your business against the challenges ahead.

Bidyut Dumra
Head of Innovation Group

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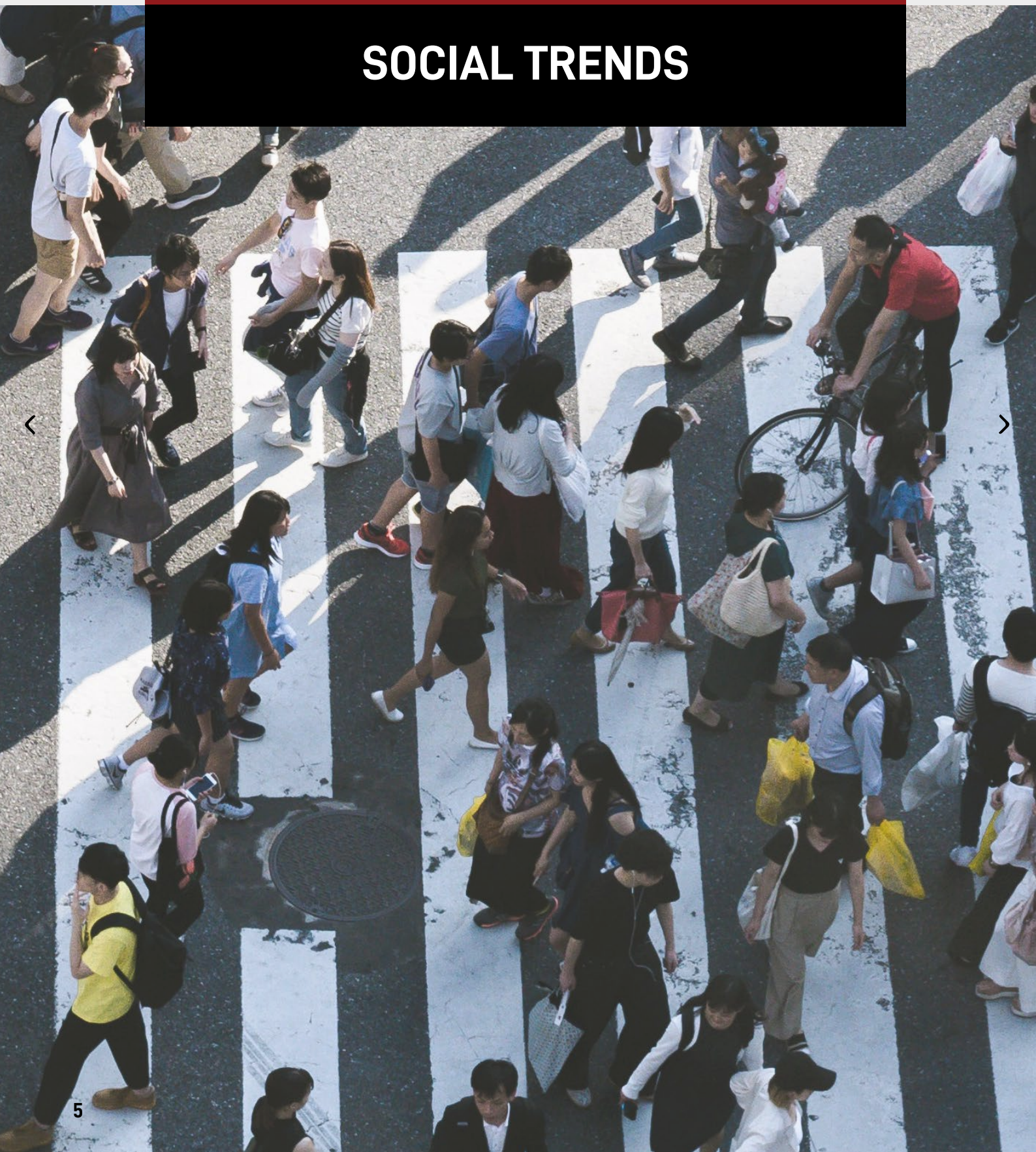


SOCIAL
01

An Emphasis On Millennials

The rise of the Millennial generation as consumers is one of the most important social trends that business owners need to be aware of. Their behaviour, values and significantly spending habits are vastly different from previous generations.

In Singapore, there are roughly 1.2 million Millennials - broadly defined as those born between the early 1980s and 2000 - representing around 22% of the population. This shift will force businesses to alter their marketing strategies and business models to meet the demands of this increasingly influential group of consumers.

Millennials are poised to be a key driver of the economy as they build their own wealth, and also become the recipient of a substantial generational wealth transfer in the coming years.

So what makes Millennials so different from their predecessors? Firstly, they are deeply engaged with technology. According to Forbes, 87% of Millennials in the U.S. use two to three devices at least once a day, and 41% use Facebook every day. Importantly for businesses, five out of six millennials are known to connect to companies through social media.

Millennials also focus on experiences rather than products. Reflecting this, a survey by LinkedIn found that 76% of Singaporean Millennial professionals rate happiness as the highest indicator of success, followed closely by health at 74%. Only 31% saw a pay raise as an indicator of success.

This generation does not like to be tied down either; whether it's to a job, a relationship or even a gym membership. This partly explains the emergence of the gig economy characterised by flexible working arrangements. Meanwhile, they value brands and products that are sustainable and behave responsibly, even if it means paying a premium for them.

Key Insights

01

Engage them in their backyard

Millennials communicate, transact and shop in the digital realm. Businesses who want to engage this group need to leverage a variety of channels, from social media, gaming apps and other digital tools for their marketing campaigns. There is a growing need to better the customer journey on the different channels for millennials.

02

Keep it real

Millennials prize authenticity in the products and services they use. As such, brands seeking to target the millennial demographic need to stay authentic and communicate their stories well. Being authentic allows smaller businesses to stand out from the crowd and finding a niche will differentiate themselves from bigger brands.

03

Be transparent

Related to authenticity is transparency. Millennials are big fans of transparent organisations. For businesses, this could mean sharing inside information through channels such as social media about how the company operates and inviting them to give their views and feedback. This is paramount to holding meaningful conversations with millennial consumers.

04

Be a do-gooder

To appeal to this socially conscious generation, businesses need to show their sustainability credentials. This could involve working only with fair trade suppliers or only using sustainable ingredients. Businesses who do so will be rewarded with long-term brand loyalty. Start by identifying the parts of your business that is already doing good for society.

SOCIAL

02

80 Is The New 60

The "silver" economy is valued at over US$3 trillion dollars in Asia Pacific by 2020, but is still a largely underserved segment that businesses can target.

With 60% of the world's population aged 65 years or older expected to be located in Asia by 2030, according to Deloitte, the expanding ranks of elderly will pose challenges and opportunities to businesses and governments in the region.

Better access and quality of healthcare, coupled with improved health education is likely to see the average human life span break the 90 year barrier by 2030. Already, the average life expectancy is now 83 years in Singapore, the third highest in the world after Japan and Switzerland, World Health Organisation (WHO) data shows.

Singapore is also greying at a faster pace compared with the last decade, according to a report released by the National Population and Talent Division last year. Citizens aged 65 and older grew to 14.4% in 2017, higher than the 9.4% rate in 2007.

Today's elderly are healthier and wealthier than previous generations, and are seeking solutions to maintain their independence for as long as possible.

Ageing populations in Singapore and the region will also create new business opportunities in these markets, notably in the healthcare and related sectors, says consultancy firm Deloitte. While the retirement age in Singapore is set at 67, in reality many are continue to work well past this age. This allows them to sustain their spending power well into advanced age, making them a potentially lucrative market.

Key Insights

01

Tap growing demand for ageing at home

There is growing demand for technology innovations that enable senior adults to age at home comfortably and enhance their well-being. SMEs can tap on technologies such as wearables, Internet of Things and data analytics to develop healthcare monitoring, assistive living and smart living solutions.

02

Tweak your product for the elderly consumer

Look for opportunities to adapt your product for the silver generation even if it's not healthcare-related. A significant part of their expenditure goes beyond healthcare-related goods and services.

03

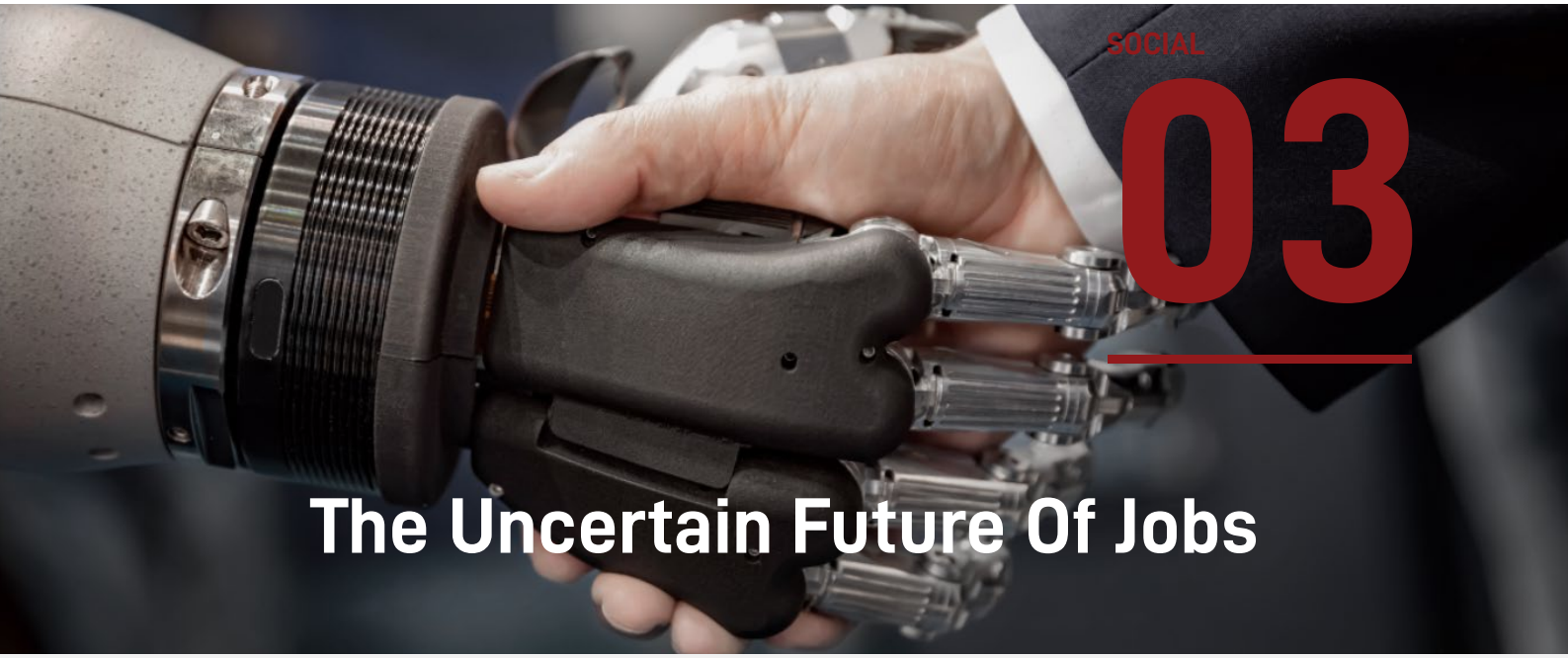
Start targeting silver segment early

Invest in generating loyal elderly consumers earlier; it's worth the effort. Breaking into the market might be challenging, but once established, businesses can enjoy customer and brand loyalty.

04

Engage the children too

- Targeted consumers are not just the elderly, but also their children who have the spending power to cater to the well-being and health of their parents.
- The local market is not big enough to be sustainable. SMEs eyeing the 'silver dollar' should expand overseas early on to access the full potential of the global ageing market.



SOCIAL

03

The Uncertain Future Of Jobs

As a result of new innovations that are displacing human jobs and changing the nature of work, companies will have to re-organise their workplaces and re-design jobs to ensure they have the right skill sets to thrive in a fast-changing environment.

Disruptive innovations have resulted in an increasing number of jobs being lost or significantly altered, forcing some into less permanent work arrangements. The emergence of digital platforms is also making it easier for individuals to freelance and participate in the growing gig economy.

As such, workers are likely to change careers more often during their lifetimes, as new job opportunities emerge and existing ones are redesigned. These trends are already apparent in developed economies in the West, where almost one in four Europeans work independently, and one-third of Americans did freelance work in 2015 alone.

The global economy is expected to lose over five million jobs to automation by 2025. Yet, only 17% of global executives report they are ready to manage a workforce with people, robots and AI working side by side, according to a survey by consultancy firm, Deloitte.

The rise of robotics and automation technologies has been often cited as a key reason for the displacement of jobs.

Nobel Laureate Dr Christopher Pissarides, Professor of Economics and Political Science at the London School of Economics, noted that technology is likely to help increase the productivity of those in highly skilled jobs, while taking over the routine tasks of semi-skilled workers such as cashiers, booking agents, booksellers and clerks.

Key Insights

01

Upgrading

Businesses should invest in skills upgrading and lifelong learning for their employees to develop the competencies they require in the long term. SkillsFuture Singapore and Workforce Singapore are the two government agencies tasked to build a stronger link between education and employment.

Beyond technical skills, training should also focus on softer skills such as communication, creativity and problem solving.

02

Redesign

Organisations will need to redesign roles so that employees whose jobs have been disrupted can continue to contribute to the business.

03

Technology

Companies can leverage technology such as data analytics to enrich employee experience and promote loyalty and retention amid disruption. DBS Bank, for instance, launched an initiative known as Alive to connect and engage its customer centre staff through a mobile app.

SOCIAL

04

Changing Family Structures

The traditional nuclear family structure is undergoing significant changes around the world and forcing businesses to change the way they engage with this important segment.

In Singapore, we are witnessing a rising number of unmarried adults, smaller households and more interracial marriages. The proportion of one-person resident households has almost tripled from 4.6% of all households in 1992 to 12.4% in 2016, according to official statistics. Indeed, one-person households are the fastest-growing household type in Asia.

The proportion of one-person resident household in Singapore has almost tripled from 1992 to 2016.

Among other factors, this trend is being driven by changing values and the desire for greater personal space and privacy. Young working adults who can afford it no longer feel that they have to stay with their parents. Meanwhile, around one in five marriages in Singapore are inter-ethnic, changing the racial makeup of families here.

For businesses and marketers, these changing dynamics means throwing out old notions of the nuclear family, as well as roles of said family members. Not all single women are looking to get married, and young couples do not necessarily want to have children. Gone are the days of only stay-at-home mothers as house-husbands are on the rise.

Understanding how family structures are evolving will be key to offering them the right products and services to meet their needs, as well as a message that resonates with their values.

Key Insights

01

Use data to engage effectively

Use data analytics to shed light on the diversity of today's consumers in order to create more targeted content to engage them more effectively.

02

Don't make assumptions

Avoid using stereotypes when marketing to families. Roles in the familial sphere are no longer fixed but instead take on multiple responsibilities.

03

Show it like it is

Reflect what families really look like in marketing and advertising efforts. As more interracial marriages take place, campaigns should be created with this diversity in mind.

04

Keep singles in mind

With more people living alone, this segment is becoming an increasingly important consumer group with their own needs and wants.

SOCIAL

05

Advancements In Biotechnology

From eradicating diseases to addressing food and water shortages, advances in bio-technology is making a positive impact on a range of fields and industries globally.

Biotechnology is a life science that harnesses cellular and biomolecular processes to develop technologies and products that can help improve lives and the health of the planet.

Biotechnology is being used to develop more sustainable foods and seeds, renewable biofuels that can help to decrease greenhouse emissions, as well as new vaccines and medical treatments.

Today there are more than 250 biotechnology healthcare products and vaccines available to patients, many for previously untreatable diseases, according to BIO, an industry association for biotech. There are also over 13 million farmers globally using agricultural biotechnology to boost crop yields, prevent damage from insects and pests and reduce farming's impact on the environment.

With such wide-ranging impact, companies should monitor the growing use of biotechnology and how it could potentially impact their industry.

Key Insights

Biotechnology is making an impact on our world and lives in the following ways:

01

Healthcare

- Reducing rates of infectious disease.
- Tailoring treatments to individuals to minimize health risks and side effects.
- Creating more precise tools for disease detection.
- Combating serious illnesses and everyday threats confronting the developing world.

02

Clean fuel

Biotech uses biological processes such as fermentation and harnesses biocatalysts such as enzymes, yeast, and other microbes to become microscopic manufacturing plants.

- Lowering the temperature for cleaning clothes and potentially saving $4.1 billion annually.
- Improving manufacturing process efficiency to save 50% or more on operating costs.
- Reducing use of and reliance on petrochemicals.
- Using biofuels to cut green-house gas emissions by 52% or more.
- Decreasing water usage and waste generation.

03

Food production

- Generating higher crop yields with fewer inputs.
- Lowering volumes of agricultural chemicals required by crops.
- Using biotech crops that need fewer applications of pesticides and that allow farmers to reduce tilling farmland.
- Developing crops with enhanced nutrition profiles that solve vitamin and nutrient deficiencies.
- Producing foods free of allergens and toxins such as mycotoxin.

SOCIAL
06

Universal Education

Innovative companies will play a key role in providing the solutions needed to achieve the ambitious goal of education for all.

Providing access to quality education for all has been identified as a global priority by the United Nations under its 17 Sustainable Development Goals (SDG), which aim to end poverty, protect the planet, and ensure prosperity around the world.

Providing access to quality digital devices and content will be critical in ensuring that children everywhere have a fair shot at receiving a basic level of education. Businesses around the world are embracing this opportunity by leveraging technology to make universal education a reality.

Aiming to expand universal education from early childhood to secondary school and achieve relevant learning outcomes by the year 2030 proves to be an uphill battle. Children in low- and middle-income countries are estimated to be around 100 years behind their peers in terms of education. Furthermore, rapid advances in technology and changes to the workforce require young people to be equipped with a broader set of competencies.

Success in this endeavour will lead to a host of benefits that stretch far beyond the classroom. According to UNICEF, getting every child in school can help to reduce global poverty, improve health and increase gender equality, among other benefits.

Technology is key to this journey. To ensure that the right content reaches children who need it most, cloud-based solutions on open-source operating systems like Android are essential because they transform the device into a virtual "classroom" for a range of content. Utilising these and other technologies, businesses with the right skill sets and resources can play a part in the education revolution that will play out in the coming years.

Artificial intelligence will also play a role in creating customised curriculum that reduces the need for classrooms and teachers.

Case Study

Zaya Learning Labs: Providing Access To Education Through Technology

Social enterprise Zaya Learning Labs is revolutionising education for underserved communities in India. The inaugural winner of the DBS-NUS Social Venture Challenge Asia, Zaya has leveraged technology to deliver high-quality, affordable education to low-income schools in rural regions of the country.

To do this, the start-up has developed a portable learning device called ClassCloud which makes e-learning available offline, while leveraging manpower on the ground. Women who do not have proper training as teachers, for instance, can be empowered to be teaching assistants with ClassCloud and effectively teach and earn a salary.

Meanwhile, high-quality learning material from content partners – including instructional videos, assessment questions, lesson plans and performance analytics – can also be uploaded onto ClassCloud, which also acts as a WiFi router, server, storage and battery pack.

Students can work on interactive assignments using the tablets, learning at a pace that suits them best. Meanwhile, teachers use Zaya's system to access high quality learning content, or to create personal plans for students based on analytics and reports on how each child is faring.

The enterprise was set up by ex-Cisco engineer Neil D'Souza, who got the idea in 2011 when he witnessed the important role that technology played in providing good quality education to both low-income and well-to-do children.

SOCIAL

07

New Ways of Working

The rise of millennial in the workforce has seen a shift towards less traditional modes of working. Enabled by digital technology, many are rejecting 9-to-5 office jobs in favour of more flexible arrangements that allow them to work the hours that suit them.

Businesses seeking to attract and retain talent will need to re-organise their structures to meet the preferences of this new generation of nomadic workers.

To do so, many companies are turning to increasingly powerful mobile technology that will enable their employees to work anywhere, anytime while boosting their productivity.

According to Samsung, this “Next Mobile Economy” will be characterised by consumers and workers who are reliant on mobile devices and open systems, supported by greater advances in connectivity, bandwidth and cloud services.

The workforce’s mobile revolution will change the way a company operates and collaborates, its internal processes as well as product and service offerings. Businesses that successfully integrate mobile systems into the way they work will be better placed to win the war for talent in the coming years.

Key Insights

Mobile driven business transformation will be one of the keys to success in business in the digital economy. According to Samsung, this transformation will manifest itself in the following ways:

01

Collaboration

Moving from transactional, one-size-fits-all systems to collaborative, open platforms, businesses will forge strong and strategic partnerships. As Irene Greif, head of the Collaborative User Experience Group at IBM, notes: "Collaboration is most meaningful when you are creating something together, to the extent that it is helping to build trust [between businesses]".

02

Customisation

The future physical workplace will also undergo transformation through mobile and open systems, becoming more responsive to workers' individual working styles through the personalisation of their working environment.

03

Secure

In order to thrive in a mobile economy, businesses must ensure that they are equipped with devices that are secure to counter the increasing threat of cyber attacks.

SOCIAL

08

The Future Of Data Privacy

As business becomes increasingly digital, this trend towards greater privacy will affect companies that use data.

The issue of data privacy has come under the spotlight recently following revelations of a massive breach of confidential user data at Facebook last year. In response, governments and businesses are putting in place tighter controls over the data that is being collected over the Internet.

Companies that use data to better engage their customers or refine their product offerings will need to adjust their modes of operating. Many enterprises are already feeling the impact.

On May 25 2018, a deadline to comply with the European Union's General Data Protection Regulation (GDPR) arrived. This initiative imposes strict new rules regarding customer data protection that businesses must adhere to or face stiff penalties.

As many companies based outside the EU process personal data of European residents, they are required to comply with GDPR. As such, many international businesses were left scrambling to change their policies and infrastructure ahead of the deadline.

The new rules will also hit the bottom line of many companies. A PwC survey finds that 68% of U.S.-based companies expect to spend US$1 million to US$10 million to meet GDPR requirements, and 9% expect to spend more than US$10 million.

The Singapore authorities are also shoring up their laws to protect the data privacy of residents directly, impacting businesses. As businesses ramp up their digital operations and conduct more of their business online, ensuring that they do not fall afoul of increasingly stringent data privacy laws will be critical.

Under new legislation introduced in January 2018, public servants who disclose residents' personal data without authorisation will face up to two years in jail or fines of up to S$5,000.

Key Insights

Here are four possible long-term outcomes of the current trend towards greater consumer data privacy.

01

Data lockdown

Consumers with privacy concerns demand more regulatory control, and organise massive demonstrations following concerns over data breaches. Hefty fines are issued to corporations and this leads to a surge in data encryption technologies.

02

Centurions

Consumers turn to governments for guidelines to safeguard their privacy. There is a heavy load on companies to comply and explain how data is used. Meanwhile, data privacy courses are introduced in the curriculum of schools.

03

Data chaos

Concerned about privacy, citizen-led guerrillas emerge and government sites are hacked on a regular basis. New business models emerge and consumers are charged for privacy. Private firms that police data and privacy also enter the fray.

04

Power to the people

Consumers happily sell their information for more personalised services. Algorithms that predict future behaviour are hidden from public view, while business models increasingly rely on data monetisation. In this scenario, four companies dominate the market: Amazon, Google, Facebook, and Uber.

SOCIAL

09

The Growth Of The Sharing Economy

Incumbent businesses must be alert to the potential threat of the sharing economy, and even find ways to profit from it. Led by poster boys such as Grab and Airbnb, the sharing economy is making inroads into a range of traditional businesses.

This market is expected to grow to US$335 billion by 2025, up from just US$14 billion in 2014, according to Brookings.

The sharing economy is defined by PwC as "any marketplace that allows individuals and groups to make money from underused physical assets by turning them into shared services." Underutilised resources such as cars, bikes, and even skill sets, are playing an increasingly important role in the economy.

At the heart of this dynamic, the rise of mobile apps are helping to drive peer-to-peer transactions. Companies such as Grab act as an intermediary that connects a service provider to a user through their mobile platform. These new players are undercutting traditional players such as taxi companies by offering cheaper prices and more seamless experiences.

Unsurprisingly, tech-savvy millennials were the early adopters of this. As they prize experiences over materialistic goods, ownership is no longer important to them. The sharing economy offers this group the chance to experience new things without having to own them.

Case Study

Sharing More Than Just A Bike Ride

Go-Jek is a motorcycle ride-hailing service that is offering residents of Jakarta a solution to the challenge of transport in the city, where it can sometimes take two hours by car to travel a mere two kilometers during peak hours.

Motorbike owners are able to take part in the sharing economy by offering their underused assets in return for money. However, Go-Jek has gone beyond just facilitating transportation. Customers can also use the app to have food delivered, as well as hire a massage therapist or cleaning service to come to their homes.

Meanwhile, home kitchens are now able to earn income by offering their specialty dishes on the Go-Jek platform; further growing the sharing economy.

SOCIAL

10

Globalisation Takes A Back Seat

Businesses looking to enter new markets can no longer adopt a one size-fits-all solution to their internationalisation strategy.

Globalisation has created a world where we drink coffee from Brazil, wear shoes made in Indonesia, and check smartphones made in China. But the opening up of global markets has reversed in some markets, as the trend of localisation starts to take hold.

Many companies have come to treat the world as one giant homogeneous marketplace. Yet in reality, they are dealing with a range of different cultures, religions, languages, and belief systems. A product or service that may be a hit in Singapore may bomb elsewhere.

As a result of this trend, some local brands are winning the battle against multinational behemoths in their own backyards. In a Boston Consulting Group survey, 73% of executives at large multinational companies said that “local companies are more effective competitors than other multinationals” in emerging markets.

Companies can no longer treat localisation as a nice to have, but rather an important part of any overseas expansion.

Case Study

Going In The Right Direction

Grab hailing service cab has used a successful localisation strategy to drive its expansion in Southeast Asia. After launching in five countries in the region, Grab entered Indonesia with a taxi app business. But the service failed to take off due the country's notoriously bad traffic conditions.

The Grab team then changed tack and launched GrabBike instead, as motorcycles would be able to navigate the congested roads. "It's not as crazy as it sounds – you do see people in suits with suitcases jumping onto a bike to get to their meeting. It would otherwise take them three hours in a car. That took off tremendously," said Lim Kell Jay, head of Grab Singapore, at IE Singapore's ASEAN-India Business Forum in 2017.

Grab recognised the differences between Indonesia and a market like Singapore, where traffic is more manageable, and localised its service accordingly.

TOP 10

TECH TRENDS

TECH

01

Personalised Smart Manufacturing

Companies are taking advantage of technologies such as 3D printing and data analytics to offer consumers an unprecedented level of personalisation, allowing these businesses to command a price premium, as well as improve consumer traffic and conversion.

Through their mobile devices and social media, consumers today are increasingly dictating what they want to see in the products they purchase. They are also keen to play a role in shaping the products and services they consume.

A survey conducted by Deloitte showed that not only would the majority of consumers be willing to pay more for a customised product or service, they would also like to be actively involved in the process. In response to this trend, companies are analysing their consumer data to pinpoint what exactly it is that their customers are after and are responding accordingly.

Brands that do not incorporate some form of personalisation into their product may lose out in terms of revenue and customer loyalty in the future.

New technologies are enabling these brands to personalise their products and services like never before. Sneaker brand Vans, for instance, allows customers to custom design on a pair of shoes in less than fifteen minutes. Meanwhile, Adidas launched in 2017 the first ever automated factory that can produce small-batch designs quickly for specific markets. Known as Speedfactory, the facility in Germany was able to cut the production cycle from months to just one day.

Meanwhile, after several false starts, 3D printing is starting to live up to its promise of revolutionising manufacturing. While 3D printers have so far been used mainly for making plastic prototypes, U.S. start-up Desktop Metal has managed to 3D-print parts made of metal, a key material used in a wide range of products. SMEs seeking to develop more customised products will need to adapt their strategy and operating models and alter core processes such as manufacturing and distribution, and marketing.

Case Study

Customised Fashion

In the U.S, apparel design and manufacturing company, Suuchi Inc is breaking new grounds in the emerging field of customised fashion. Suuchi Ramesh started Suuchi to create custom garments quickly and cost-efficiently after getting frustrated with the difficulty of finding outfits to fit her small frame.

Technology is key to her operation. The company uses around 100 different machines to automate 40% of the production process. As a result, time-consuming tasks like sewing buttonholes now take 40% less time.

The trend of personalised apparel is growing, with several other online-based retailers, such as Apliiq and e-Shakti, also offering custom-made clothes.

In an interview with CNNMoney, Ramesh, who has an MBA and a degree in computer science and who began her career as an analyst in Intel, said: "We have to use technology to make the process and people smarter. It's where manufacturing is headed."

TECH

02

A New Reality

More companies today are able to leverage advanced virtual reality (VR) and augmented reality (AR) technologies to engage their customers more deeply than ever before as the costs of these solutions continue to fall. Businesses are also using VR and AR to enhance their processes and improve productivity.

Last year, both Apple and Google released toolkits that allow software developers to build AR experiences for their respective mobile ecosystems. Meanwhile, VR applications are popping up in a growing number of sectors. Consumers can virtually test-drive a Tesla, or digitally experiment with new colour on their living room walls without using any paint.

Technologies become more mainstream as leading tech players launch new tools that will enable them to become part of the everyday mobile experience.

Indeed, experts predict that VR technology will soon overtake mobile phones as the main platform for people to interact with each other and their devices.

"VR is a door and not a window. You walk into a virtual environment and not look at a screen. The headset will be one device on your head that will replace everything on your screen. It will bring all senses into one device," said Alvin Wang Graylin, China Regional President of Vive, HTC, a maker of VR headsets, during his address at this year's EmTech Asia conference in Singapore.

In the enterprise space, organisations can adopt VR solutions to improve productivity by facilitating more effective virtual collaboration, 3D prototyping and more hands-on training.

VR adoption is expected to accelerate in the coming years with the arrival of ultra-high definition 4K screens and blazing-fast 5G wireless networks. This will overcome current latency and bandwidth issues, and also enable headsets to become smaller in size.

Case Study

Keeping The Elevator Running

The HoloLens headset from Microsoft blends digital objects with the real world to facilitate new ways to do everything from training personnel to performing surgeries. The headset allows users to see the real world and its augmented glasses brings the digital world to life on top of it.

Thyssenkrupp Elevators is using Microsoft's HoloLens headset to help its 24,000 elevator service engineers do their jobs safer and more efficiently. These engineers are using this "mixed reality" device to be hands-free while on the job and sharing holographic instructions between users. This has reduced the average length of Thyssenkrupp's service calls by four times. The technology has also improved response time, increased productivity, and reduced elevator down time.

TECH

03

Hacking The Human Body

Embedding microchips into the human body - a process known as biohacking- is no longer in the realm of science fiction. While still a nascent trend, the coming of embedded devices will result in new opportunities for businesses to gather consumer data, engage with customers and improve the productivity of their own operations.

People have started to use these implants to perform a range of tasks – from collecting and transmitting health data, to making payments, and even opening doors. This data can then be transmitted to the cloud and alerts sent to medical teams when conditions such as a stroke occurs.

Radio Frequency Identification (RFID) chips implanted under the skin can be used to measure health information and vital signs around the clock.

A pioneer in biohacking, Sweden already has thousands of people with microchips in their bodies that serve as contactless credit cards and key cards. The Scandinavian country first adopted the technology in 2015, and today over 3,000 Swedes are using biochips. Some Swedish businesses have adapted their offerings to accommodate these biohacked customers.

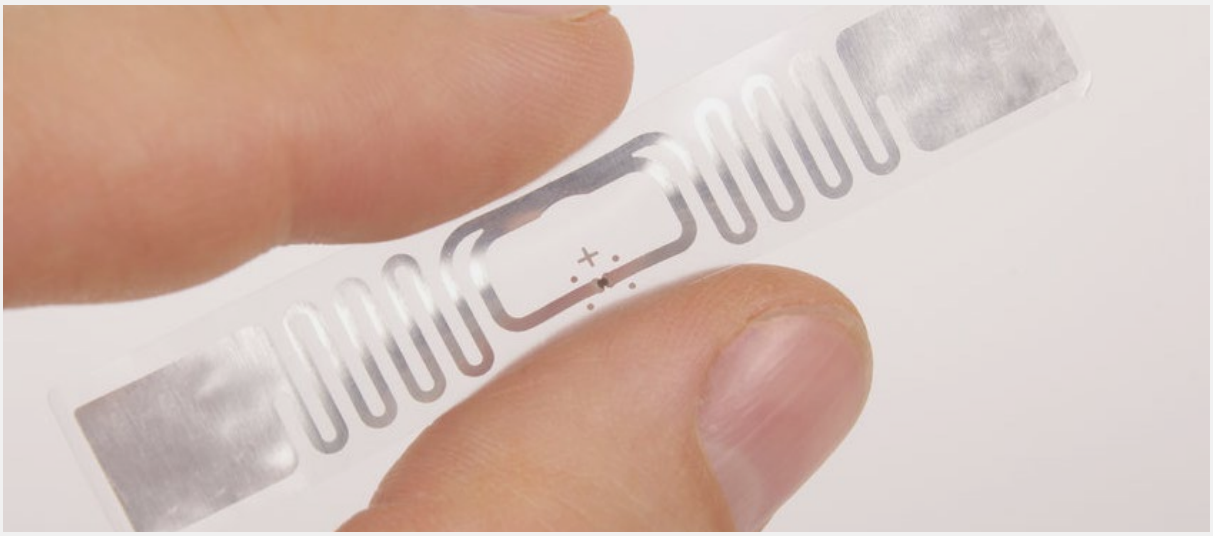
One rail company, for instance, offers its passengers the option of using a biometric chip implanted into their hand as their train ticket. The chip enables conductors to scan a passenger's hand. Meanwhile, some companies in Europe and the U.S. have experimented with implanting chips in their employees to enable them to perform a variety of tasks in an effort to improve efficiency.

Case Study

Getting "Chipped" For Work

Last year, U.S.-based Three Square Market (32M), a marketing solutions provider offered its employees the opportunity to be voluntarily biohacked. According to the firm, an RFID chip is implanted into the hand of the employee, enabling them to make purchases in their break room, open doors, login to computers and use the copy machine, among other work-related functions.

"Eventually, this technology will become standardised, allowing you to use this as your passport, public transit, all purchasing opportunities," said 32M CEO Todd Westby. On August 1, 2017 the company held a "chip party," where a US$300 microchip the size of a grain of rice was inserted in between the thumb and forefinger of over 50 employees. Said Westby, "It feels like basically somebody stepping on a pinky toe with a dress shoe on. It really doesn't hurt at all."



TECH

04

Virtual Assistants

Designed initially for consumers, digital personal assistants powered by artificial intelligence (AI) are increasingly being used by enterprises. From scheduling appointments, processing claims to answering simple customer questions, these virtual workers enable businesses to automate their tasks, increase customer engagement and ramp up productivity.

Many companies now employ chatbots as the their first line of customer service to handle simple queries that pop up frequently on their digital channels.

Experts believe that as AI becomes more advance, these tools will be able to take on more complex tasks. One AI tool that is increasingly being used by businesses tools are chatbots. A human will step in only when a customer's needs are more complicated. In Singapore, we have seen companies like DBS, Singtel and also food delivery apps adopt the use of chatbots.

Chatbots work 24/7 to respond to customers in a timely manner, helping increase engagement. A survey conducted by chatbot developer Ubisend also found more than 50% of people would prefer to talk to a business using a messaging application than pick up the phone.

However, if your company is in niche industries that are likely to receive more complex questions, employing humans to handle customer service is probably a better option – at least until virtual assistants become as smart as the rest of us!

Case Study

Hungry? Ask Sofia For A Recommendation

Meet Sofia, a chatbot for popular travel site "Have Halal, Will Travel" (HHWT), where she answers queries on where to eat with detailed directions and the menus of restaurants. HHWT is a content platform that helps Muslims travel in countries where finding halal food can be challenging.

Sofia was created using a suite of tools that Microsoft provides on the cloud with the help of technology partner PleoData. Combining Microsoft's Azure cloud and its Language Understanding Intelligence Services (LUIS), HHWT's chatbot can answer most of the questions that travellers ask through the platform every day.

This allows the HHWT team to significantly increase their engagement with users. "We created Sofia simply because people have been asking us questions which we found could be answered largely through automation," said Melvin Mikhail Goh, co-founder of HHWT.

By analysing the feedback gathered from Sofia's interactions with users, HWWT can also provide more personalised content for each individual customer.

TECH

05

Voice Interface Gets Louder

Advances in artificial intelligence is driving the growth of voice-user interface (VUI) as a means for users to communicate with their devices. Businesses are starting to adopt VUI in a range of applications, from customer service, real-time translation and interpretation, as well as in productivity tools.

Among other benefits, this allows for hands-free interactions with a machine that feels more intuitive than others. According to research firm eMarketer, around 45 million voice-assisted devices are now being used in U.S., with that number expected to rise to 67 million by 2019.

VUI uses speech recognition technology to enable users to interact with technology using just their voices. This allow for hands-free interaction with a machine that feels more intuitive than others.

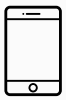
Virtual assistants like Apple's Siri and Amazon's Alexa have brought VUI into the mainstream for consumers, but more businesses are starting to employ this technology as well. Last year, Amazon unveiled Alexa for Business, which is designed to help workers manage their schedules, keep track of their to-do list, and make voice calls, among other functions.

Conversational interfaces, like chatbots and smart speakers, are also increasingly being used for payments and commerce. According to the Mastercard/ Mercator Conversational Commerce survey released in August 2017, over 60% of U.S. consumers employ the use of smartphones as their chat or voice agent for payments and banking (needs).

Closer look at the conversational commerce space

1200m

Monthly active users of WhatsApp



61%

Use smartphone as chat/voice agent for payments and banking

4%

Use text or voice NLP for banking

66%

of U.S. adults use Natural Language Processing (NLP)

60.5m

Americans used Siri and other virtual assistants at least once a month in 2017

Five ways to strategise and win in the conversational commerce space:

1 - Use lightweight, AI-powered chat software (Chatbot)
2 - Offer advanced customer insights
3 - Invest in technology to turn conversations into actions
4 - Automate mundane and time consuming tasks and improve the customer experience
5 - Include basic banking and payment services

Developers are now leveraging natural language processing (NLP) – an artificial intelligence field concerned with the interactions between computers and humans – to make VUIs account for factors such as slang and semantics in speech; making it easier for humans to speak to their devices. In the longer term, experts believe that voice will surpass keyboards and screens as the key interface between man and machine.

Source: Mastercard/Mercator Conversational Commerce Survey, August 2017

Key Insights

01

Growth

Voice technology can help businesses achieve a richer and deeper engagement with their customers. Globally, 43% of regular voice tech users say they love their voice assistant so much that they wish it was a real person, according to JWT Intelligence.

02

Engagement

As voice becomes a more important interface for doing online searches, brands need to be represented on aHome and Amazon's Alexa.

The growth of this technology will lead to a spike in demand for VUI designers. Companies will need to have access to the necessary skillsets to take advantage of this emerging technology.

TECH

06

Everything Connected

The Internet of Things (IoT) has been dubbed the next Industrial Revolution for its potential to significantly alter the way businesses and consumers interact with the physical world around them.

Businesses are expected to be the leading adopter of IoT solutions, as they seek to use connected devices to lower operating costs; increase productivity; and develop new products and services. IoT products and networks will also allow businesses to gather a large amount of consumer data that can generate meaningful insights.

Engineering company Rolls Royce, for instance, is using data generated by IoT sensors to gather insights into the live performance of its products — from jet engines and helicopter blades to power generation systems and marine turbines. This allows them to not just predict maintenance issues but also provide their customers with aftersales services such as showing an airline how to optimise their routes.

In the manufacturing sector, companies are connecting their machines to better monitor utilisation and improve efficiency. Reflecting the rapid growth of IoT, research firm BI Intelligence estimates that there will be 34 billion devices connected to the internet by 2020, more than triple the 10 billion in 2015.

Businesses in the region are taking notice of this fast-growing trend. A survey by Forbes Insights found that 70% of companies in Asia Pacific believe IoT is important or very important to their current business, and 87% believe IoT will be important to the future of their business. Some of these companies are already embracing IoT, with 72% of respondents saying they have significant or pilot IoT programs in operation.

As IoT use spreads across industries such as manufacturing, retail, hospitality and transportation, SMEs will need to find a way to incorporate this technology to stay relevant in a fast-changing environment.

Case Study

Usage-Based Insurance

The General Insurance Industry is using IoT technology to deliver Usage-Based Insurance (UBI), which takes advantage of connected car sensors to track the driving behavior of the driver to offer premium discounts, prevent fraud and collect valuable traffic and risk related information.

IBM is working with Groupama Insurance in Italy on hundreds of thousands of such UBI policies to get further insights from massive amounts of data to potentially arrive at a situation where car insurance coverage can be provided for a single trip based on a driver's past behavior, as well as the route that the car will take based in real-time traffic and weather conditions. This provides the customer with the choice of the safest, cheapest or the shortest route based on his or her preference.

TECH
07
Automated Travel

The coming of automated travel in the form of self-driving vehicles will benefit both businesses and customers in terms of time savings and productivity benefits.

Singaporeans spent an average of nine hours a week driving, according to a survey released by research agency 2CV and motor insurance company DirectAsia in 2016. Without the need to operate their own cars, these former drivers can spend that time replying to emails, reading reports or hopping on to conference calls.

Major automakers and technology companies are betting big on the future of autonomous vehicles. Many carmakers have pledged to implement fully autonomous driving technology in their vehicles by 2020. Already, semi-autonomous features such as Pilot Assist - which can control the steering of a vehicle to keep it on a steady course - are available in cars today. Looking further ahead, automated air travel may become a reality by 2030.

They are also looking at using the technology for the freight transportation and utility services sectors, to address manpower challenges and also to ease traffic congestion during peak hours by deploying autonomous systems at night.

In Singapore, the Government is exploring the use of self-driving technology in public transport to address land and manpower constraints.

Case Study

Self-Driving Buses In Singapore

Singapore has launched a number of trials for autonomous transportation services, such as shared self-driving shuttles or pods. It has also launched a three-and-a-half year project to develop and trial autonomous buses that could be deployed in the future.

In one of these trials, Singapore Technologies Kinetics will develop and integrate autonomous vehicle technologies onto two 40-seater electric buses. These buses will use a satellite-based Global Positioning System (GPS) and a suite of sensors to scan and determine their location and immediate surroundings. Radars and sonars will also detect other vehicles and pedestrians up to 200m ahead.

The trial project will also look into improving the autonomous buses' ability to navigate in heavier rain conditions, and will be tested in various locations, scenarios and environments.

TECH

08

Fuelling Cleaner Growth

More businesses are taking advantage of cleaner energy to cut their long-run power bills and build their green credentials with sustainability-conscious consumers.

Renewables - which includes solar and wind energy - grew by the largest amount ever last year, according to data from oil giant BP. They were also the fastest-growing source of energy in 2017, up 17% over the previous year.

The growth of the green energy industry has been partly fuelled by governments' efforts to combat climate change and pollution. Meanwhile, growing demand for renewables is making it cheaper to install such systems and shortening the time it takes for companies to recoup their original investment.

The signs of the clean energy boom are globally evident. New wind and solar parks are being built at a rapid pace, while electric vehicles are selling in record numbers. The 14,000 sq m farm that lies on the roof of science firm 3M's manufacturing plant in Tuas boasts 6,605 solar panels and 55 inverters. It can generate 2,400 megawatt hours of electricity a year.

In June 2018, 3M opened one of Singapore's largest solar farms, which can produce enough energy to power 500 four-room Housing Board flats.

Many of the world's biggest corporations are jumping on the clean energy bandwagon. Google, Unilever and BMW, among others, have pledged to switch to 100% renewable energy. In Singapore, power generation companies are investing in the solar sector, while electricity retailers are offering their customers new types of green electricity plans. This will give SMEs here a chance to take part in the green energy revolution.

Key Insights

Businesses can benefit from adopting clean energy to power their operations in the following ways:

01

Save

Using solar and other forms of renewable energy will lower energy bills over the long-term.

02

Grow

Investing in renewable energy will improve your company's standing with younger consumers who are more socially and environmentally conscious than previous generations.

03

Diversify

For big power users, using renewables is a way to diversify their energy sources and not be dependent on a handful of suppliers.

TECH

09

Blockchain:
Bringing trust and transparency to business

While the jury is still out on how revolutionary Bitcoin technology will be, most experts agree that it will help to power solutions for secured business transactions.

One of the buzziest technologies to emerge in recent years is Blockchain, the driving force behind the rise of cryptocurrencies such as Bitcoin.

The global blockchain market size is expected to grow from US$411.5 million in 2017 to US$7.8 billion by 2022, a report from Research and Markets estimated. This growth will be driven by not just the cryptocurrency market, but also the potential benefits of processing transactions using this technology.

At the heart of blockchain are distributed ledgers that are shared across a group of individuals and institutions; bringing trust, transparency and auditability to the participants. Data that is associated with an event or transaction is time-stamped, added to the record preceding it and made available to authorised participants in real time.

According to IBM, “Because records can only be added using rules agreed to among the participants, they can’t be circumvented by individual actors. The data then becomes part of a reliable, unbreakable chain of trust.”

Among other applications, it can help bring products and transactional services to market quickly and inexpensively, and reduce the costs of security, ‘Know Your Customer’ processes, data storage and other overheads. It also cuts out the need for intermediaries.

These benefits ultimately help to level the playing field for smaller businesses.

Key Insights

SMEs can potentially benefit from blockchain in the following ways:

01

Create binding contracts

Blockchain provides a secure environment for the execution of digital "smart" contracts that are as binding as physical ones. A smart contract can be converted to computer code, stored and replicated on the system and supervised by the network of computers that run the blockchain. These can be used to exchange money, property, shares, or anything of value in a transparent, conflict-free way while avoiding the services of a middleman.

02

Smoothen supply chain operations

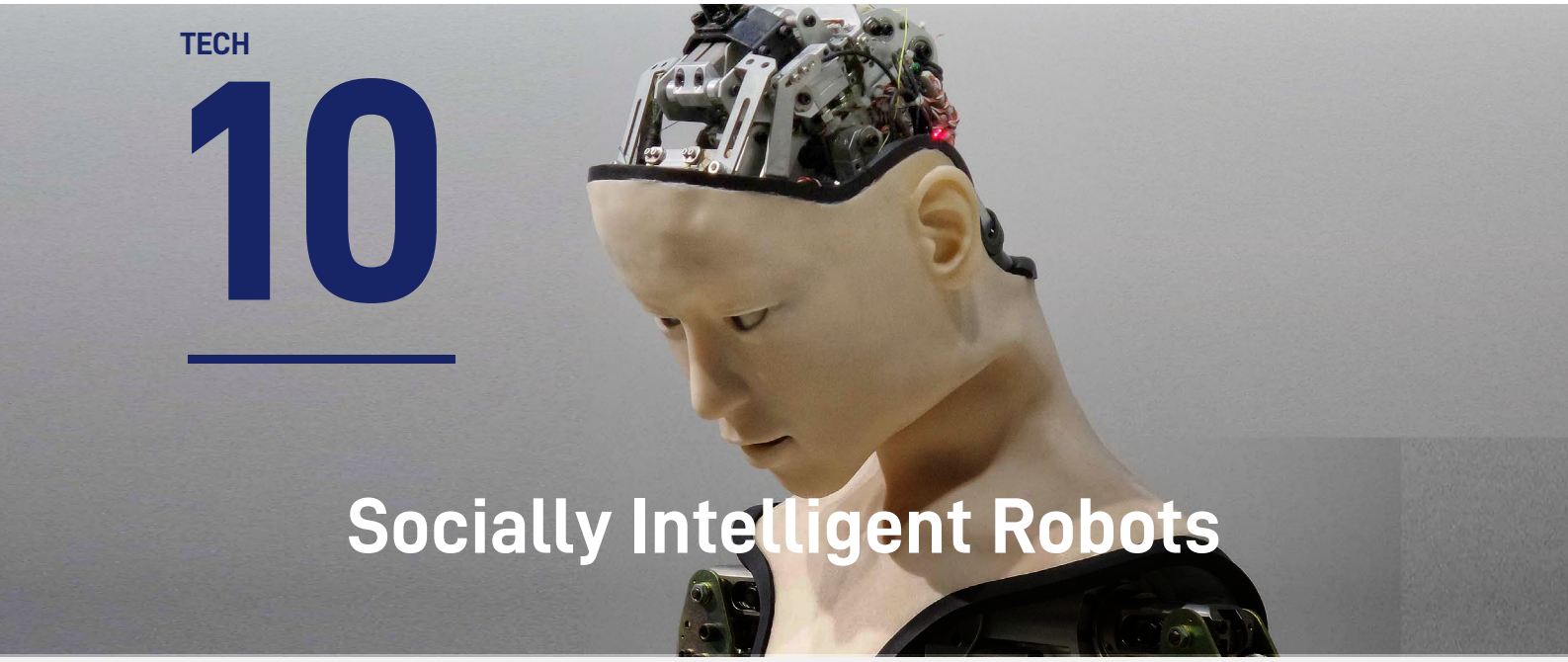
Blockchain makes it possible to track and record each stage of a product's journey along the entire supply chain easily and in real time. Every time a product changes hands, the transaction can be documented; creating a permanent history of a product from manufacture to sale. This can significantly reduce delays, costs, and human error in logistics transactions.

03

Brand protection

As Blockchain technology can be used to establish the provenance of a product, it can help companies detect counterfeit and conflict goods, among other things. This can help to protect a brand's reputation and give their customers the assurance that the products they receive are up to the standards they expect.

TECH
10



Socially Intelligent Robots

Going beyond factory floors or warehouses, a new generation of robots are being developed that can express emotions and communicate with humans to a degree not previously seen.

Businesses will be able to use these "social robots" in roles ranging from receptionist and healthcare worker to assistants in more complex professions such as law and journalism.

For instance, robots can act as a huge database to help journalists find information and understand texts. They can also help lawyers retrieve past cases efficiently and apply specific laws to specific cases. In greying societies such as Singapore, these machines could be deployed to support the elderly or the sick by helping them in and out of bed, reminding them to take medication, and providing regular updates to human caregivers.

Social robots are the latest evolution in a global trend that is expected to grow rapidly in the coming years.

The worldwide market for robotics is forecasted to grow at a CAGR of around 4.8% over the next five years, reaching US$25.9 billion in 2023, up from US$20.5 billion in 2017, according to the Global Robotics Market Report 2018-2023.

Companies keen to find solutions to overcome their manpower challenges and improve productivity would do well to stay abreast of the developments of robotics technology.

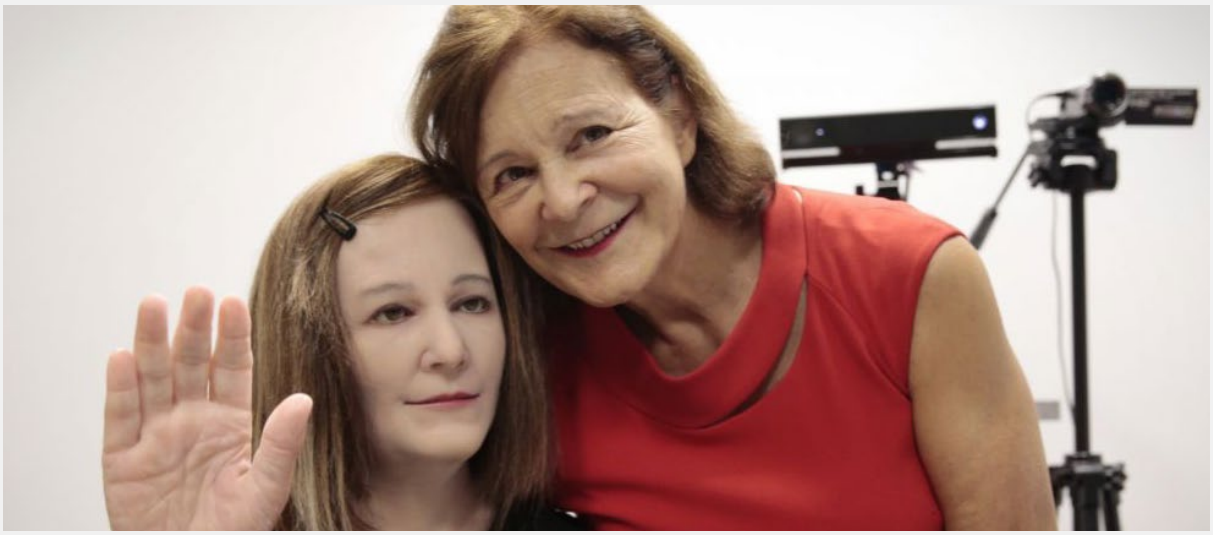
Case Study

Not Your Average Receptionist

Nadine is not your usual receptionist. Working at the Nanyang Technological University's (NTU) Institute of Media Innovation, she has her own distinct personality and is able to make conversation with those she comes into contact with, just as any receptionist should.

The only difference is that the 1.7-metre tall lady is a life-like socially intelligent robot created by a team of scientists headed by Professor Nadia Thalmann, Director of the Institute of Media Innovation. Nadine, whose looks were modelled after Professor Thalmann, has been working at the institute since 2016.

"She can say goodbye and good morning, and keep a list of what to do. She will take documents we hand to her, read them and, being a computer, keep it filed. She will do it perfectly, and better than a standard receptionist," said Professor Thalmann in an interview with Channel NewsAsia. Professor Thalmann said that it could take around five to ten years for robots to effectively take over repetitive jobs as receptionists, restaurant cleaners or drivers in the form of self-driving cars.



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