ASUS | BUSINESS

2022 TECH TRENDS REPORT

EDUCATION SMB ENTERPRISE RETAIL HEALTHCARE MANUFACTURING BANKING

CONTENT

FOREWORD

If the start of 2022 is a prelude to the coming months, we might expect yet another year of disruption. But unlike the previous two years, businesses are leaning back and into their seats. Businesses have grown more accustomed to change as constant and leaders more comfortable with accelerated innovation as a prerequisite for success. But what trends should leaders across verticals expect in the rest of 2022?

FOREWORD

Where do the pressure points lie in your business? In what areas should investments be focused? How can you harness tech, people, and resource for optimal results?

In this report, we look at how 2022 will be shaped by both evolving and new demands across education, SMB, enterprise, retail, healthcare, manufacturing, and financial services. We explore and consolidate observations from executives and experts globally to draw actionable insights that companies can take to enter the future with confidence.

While no examination of the future can be conclusive, at ASUS, we believe that we can certainly be prepared.

EXECUTIVE SUMMARY

TRENDS ACROSS THE VERTICALS

01. EDUCATION

New ways of learning, accelerated by technology, require education to grow more agile and personalized

We are living in a world where technology has made it possible for individuals to learn anything they want at any time. This increase in learning accessibility has been crucial for the modern workforce to keep up with future demands of work. Education is also more personalized in both curriculum and methodology today. This enables students to progress at their preferred pace in areas of interest (e.g., esports) and increase their chances of academic success.

02. SMB

New economic realities necessitate SMBs' transition out of their traditional ways of working

The past few years have seen numerous small and medium-sized businesses (SMBs) struggle to survive. Digital transformation, which was once touted as costly and a good-to-have, is now a necessity for survival. On top of digital transformation, SMBs also need to unify workspaces for effective remote working, engage employees to keep remote workers invested, and protect their dispersed workforce with cybersecurity. It is time for SMBs to take the leap and strengthen business resilience.

03. ENTERPRISE

To lower cost and spur further growth, Enterprises can take advantage of new technologies and services.

The right technology and services can elevate enterprises to new business frontiers. There are many ways to do so, but some of the more effective ones are by harnessing DaaS (Device as a Service), Chromebooks, and private 5G. DaaS simplifies IT management and removes the need for substantial expenditures in infrastructure. Chromebooks are reliable and secure devices available at low costs for the organization. And private 5G can enable enterprise-grade connectivity with enhanced security.

EXECUTIVE SUMMARY

TRENDS ACROSS THE VERTICALS

04. RETAIL

Retailers are looking for ways to better understand their customers and enhance shopping experiences.

Retailers are always looking for ways to improve their customers' experience. Technology can be a powerful tool in this quest. For example, retailers are using computer vision to track products on shelves in real-time to pre-empt restocking needs. Other technologies include touchless payment which makes customers' shopping experiences safer, and data analytics of purchase histories which reveal customer preferences.

05. HEALTHCARE

The healthcare industry is undergoing digital transformation and a shift towards a more patient-focused approach.

Customer and access management platforms are crucial for providing patients with a convenient and secure platform. This presents a need for IoT security in healthcare, especially with the surge in cyberattacks during the COVID-19 outbreak. The industry is also exploring digital twin technology to deliver data-driven personalized medicine and accelerate medical innovations.

06. MANUFACTURING

Rising consumer expectations, talent shortages and sustainability concerns are key challenges facing the manufacturing industry.

This especially concerns manufacturers with traditional processes. Technology plays a huge role in keeping up with consumer demands, and it is imperative that organizations integrate new technologies and capabilities such as the Internet of Things (IoT), automation, and artificial intelligence (AI) into existing systems. These technologies will also equip firms with the solutions to address the increasing generational skills gap and advance sustainability.

07. BANKING

The need for cost-savings and faster decision making is driving innovations in the banking industry.

Cloud-based banking remains key as banks today look to innovate while retaining their legacy platforms and keeping investments low. The global pandemic has also caused a shift to a cashless society and further automation that improves processes resulting in higher cost-savings and personalized customer experiences.

EDUCATION

- AGILE UPSKILLING
- ADAPTIVE TEACHING
- EDUCATION WITH ESPORTS

AGILE UPSKILLIN

People

Agile upskilling is a learning approach where knowledge and skill acquisition is continuous so as to meet future demands of work. People have gravitated to this learning mindset because recent economic uncertainties have fractured careers and highlighted the need for continuous upskilling.

Additionally, people's perception of leisure has changed. The expansion of free time caused by the pandemic lockdown has encouraged self-improvement activities as a form of entertainment.

Data point

59% of people globally agree that "I can teach myself anything I want with online tutorials". This figure has risen in the majority of global markets surveyed between 2018 and 2021.

More than 50% of people globally say that they find learning a new skill highly valuable for their entertainment. This proportion has significantly jumped in many markets between 2015 and 2021.

Implication

Education brands need to reinvent themselves to cater to knowledge-hungry learners. Brands need to stay connected with learners' alumni and ensure that they have the curriculum to meet their knowledge and skills needs throughout their careers.

ASUS VISION Education Project

Agile upskilling will help learners stay relevant in today's fast-moving world. The more they know and can do, the better they can contribute to society and the organization they work for. ASUS believes in agile upskilling and has launched an EduTech program in Taiwan to boost teaching and learning experiences for teachers, students, and IT administrators. The program involves providing innovative hardware, software, and digitized resources to assist educational institutions with building a more agile and accessible learning environment.

ADAPTIVE TEACHING

Process

Adaptive teaching is the delivery of tech-based, customized learning experiences that address an individual's unique needs rather than providing one-size-fits-all lessons. It combines multiple technologies such as AI to assess a student's performance in real-time to customize lessons that meet the student's individual needs.

Adaptive teaching helps teachers easily identify the students who need assistance and deliver personalized lessons at scale. This results in greater academic success across the spectrum of learners.

Datapoint

IMPROVED TEACHING

A 2021 adaptive teaching experiment conducted in a Taiwanese elementary school showed how adaptive teaching platforms enhanced teaching activities by identifying students' learning deficiencies.

IMPROVED LEARNING

A 2021 adaptive teaching experiment conducted in a Taiwanese programming course showed how students made significant improvements in their academic performance after an adaptive teaching course was used.

Implication

Education brands can explore adopting technologies such as AI and robots to deliver individualized learning experiences to a large number of students. Technology and data can also be used to help optimize teaching practices by shedding light on what has been working and what has not.

Epidemic Prevention with ASUS Tinker Board

Adaptive teaching will give rise to better interactions between teachers and students. The ASUS Tinker Board is one such technology that has helped augment teaching environments at Fuping Elementary School and Guizhou University. Together with Chongqing KDAI Technology Co. Ltd, the team created the "AI Face Recognition Intelligent Column" with ASUS Tinker Board to help with first-line epidemic prevention operations and stop the spread of diseases on school campuses.

EDUCATION WITH ESPORTS

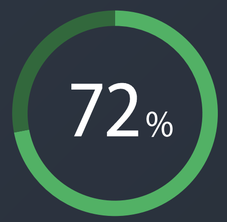
Process

Esports has grown in popularity among younger generations and schools are increasingly leveraging this trend and using it to positively impact learning.

Engaging in esports creates a sense of community between students that improves friendships, teamwork, and their motivation to go to school. Esports is also capable of developing students' Science, Technology, Engineering and Maths (STEM) skills because it involves problem-solving, data analysis, and technology. These are all beneficial skills that will help students thrive in their future careers.

Datapoint

At the end of 2021, the APAC region had an estimated 1.62 billion gamers (making up 55% of players worldwide), up from 1.2 billion games in 2019.



72% of respondents in a 2021 interview shared that they saw personal benefits from playing esports. The top three benefits were social interactions, teamwork, and critical thinking.

Implication

Esports offerings in schools have the potential to build inclusive environments while driving educational outcomes. With schools across the world placing more emphasis on esports, educators should consider the benefits that it can provide for their students and institutions.

ASUS Partnership With Generation Esports

With the ability to promote 21st century skills through game-based learning, esports is becoming an educational phenomenon. ASUS has championed this trend by partnering Generation Esports since 2020 as the exclusive PC and monitor sponsor for the HSEL (High School Esports League) and inaugural MSEL (Middle School Esports League). The partnership provides the participating schools with the equipment they need for the competition. It will also give schools access to the "Adopting Excellence" program – an esports and STEAM workshop that will run twice a month, over four months.


ASUS | BUSINESS
SMB
DIGITALISATION & CYBERSECURITY
EMPLOYEE ENGAGEMENT
UNIFIED WORKSPACES

ASUS | BUSINESS

DIGITALISATION & CYBERSECURITY

Technology

Digital transformation has evolved from being a good-to-have to a necessity for small and medium-sized businesses (SMB) to survive today. From robotics to automation, machine learning to predictive analytics, modern-day organizations are driven digitally. SMBs will fall behind if they do not advance beyond their traditional form of operations.

SMBs are also turning their attention to cybersecurity given the rise in cyberattacks in the recent years. As digitalization picks up and working models become hybrid, SMBs today are more vulnerable to cyberattacks.

Datapoint

2 TIMES

According to a Google-KPMG report, digitally engaged SMBs boost profits up to twice as fast as compared to their offline counterparts.

14%

According to Accenture, 43% of cyberattacks are targeted at SMBs but only 14% are prepared to defend themselves.

Implication

As businesses shift online, they become more vulnerable to cyber attacks that can ravage companies financially and reputationally. Leveraging digital products and services can help SMBs grow and cope with digital security challenges.

ASUS Security Endpoint

SMBs need to build a technology and security stack that is appropriate for distributed work today. ASUS has the solutions to do so - hardware and software-based solutions capable of preventing unauthorized access and loss of confidential information. For example, if a laptop is left unattended with no keyboard activity, the laptop would automatically lock itself. Other solutions include brute-force methods such as frequent on-site network authentication token renewal, enforced by a software solution, that will lock the user out if the renewal is not performed on time.

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EMPLOYEE ENGAGEMENT

People

As remote working is likely to continue unabated in the short term, keeping employees engaged and supporting their physical and mental wellbeing will be crucial for the success of growing SMBs. A study from Emotive Technologies revealed that employees who were primarily working remotely expressed feeling nearly two times less engaged than workers who were working in the office.

SMBs need to keep their employees engaged and make employees feel like an integral and valued part of the company. It boosts performance and reduces turnover, helping the company thrive in uncertain times.

Datapoint

88%

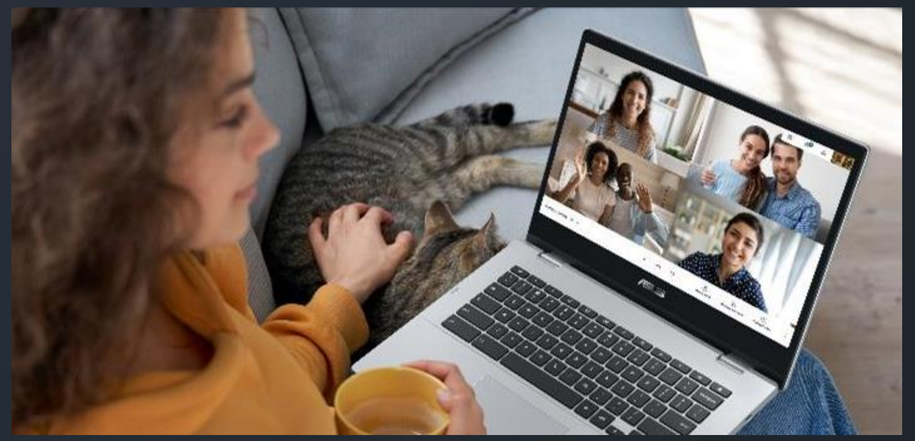
The 2021 Employee Experience Survey found that almost nine in 10 APAC employers (88%) said that enhancing employee experience will be a priority over t he next three years.

79%

The 2021 Employee Experience Survey also showed that most respondents (79%) believe that a positive employee experience is a key driver for employee well-being, productivity, and the ability to attract and retain talent.

Implication

As the pandemic continues to run its course, the stress and urgency on employee engagement remain. Employers need to recognize that this extended WFH arrangement will require a clear focus on and strategy for engaging employees. Strategies include changing work models, prioritizing wellbeing, and aligning reward programs to diverse needs.



ASUS Employee Engagement Amidst The Pandemic

Employees are every company's top asset. It was, therefore, no surprise that employees' health and safety were paramount to ASUS when the pandemic struck. During the pandemic, ASUS provided face-masks, sanitizers, and a work-from-home allowance to help employees transform their homes into productive workplaces. The HR team also introduced initiatives to help the organization stay connected to its remote-working employees. New weekly newsletters, for example, shed light on company developments in an entertaining manner, providing a sense of stability during unprecedented times.

UNIFIED WORKSPACES

Process

The modern workplace has transformed significantly as more organizations embrace flexible and remote working. To navigate these new working practices, tools that grant employees the ability to work efficiently and securely no matter where they are have to be deployed. Unified workspaces is one such tool.

Unified workspaces is a digital management platform that enables access to applications and data independent of time and place. It integrates identity, SaaS, and on-premises applications, and offers a cost-effective way of accessing corporate infrastructure securely.

Datapoint

HIGH

Gartner estimates the benefits of unified workspaces to be “high” as it enables an agile and personalized workplace while considerably reducing operating costs.

90%

90% of organizations say unified workspaces helps employees collaborate more effectively.

Implication

The pandemic highlighted the shortfalls of office-based desktops. Unified workspaces has enormous potential to support strategic roadmaps that cost-effectively and efficiently enable remote access to corporate applications and support the enduring hybrid work model.

ASUS Unified Workspace

The COVID-19 pandemic has affected ASUS just as it has the entire industry. Beyond safeguarding employees, ASUS had to work hard to maintain the normalcy of business operations as well. ASUS unified workspace was one such solution that enabled business continuity. By making sure that all employees were equipped with work devices hardened with cybersecurity, a central management system to manage all work devices, and a dedicated support team, ASUS could continue delivering success for their customers.

ENTERPRISE

- DEVICE AS A SERVICE(DAAS)
- CHROMEBOOKS FOR ENTERPRISE
- PRIVATE 5G

DAAS (DEVICE AS A SERVICE)

Process

Device as a Service (DaaS) is the bundling and offering of management services and IT equipment (e.g. PCs and mobile devices) as a paid subscription. DaaS goes beyond leasing hardware and software to include other services such as security, inventory monitoring, maintenance, and many others.

DaaS has many benefits for enterprises. It simplifies IT management by outsourcing it to the device providers, provides access to the latest technology without having to make heavy investments, and allows companies to quickly scale their devices to meet changing needs.

Datapoint

35%

According to Gartner, by 2025, 35% of organizations will acquire devices on a PC as a service model, up from less than 15% in 2021.

38%

According to researchandmarkets.com, the global DaaS market size is expected to reach US$475.98 billion by 2028, expanding at a CAGR of 37.8% from 2021 to 2028.

Implication

Enterprises who want to lighten the load on their IT administration teams will benefit from a DaaS model. With it, businesses can easily and quickly empower a large number of remote workers, something they cannot do with traditional IT infrastructure.

ASUS Support For Windows Autopilot

With companies around the world leaning towards a distributed workforce, speed and flexibility are now more important than ever. Through ASUS's support for Windows Autopilot, a unified endpoint management tool, IT administrators can have the ability to automatically configure a new device for easy integration into existing IT ecosystems. With Windows Autopilot, devices can be prepared for a new user expeditiously, system configurations can be automatically changed, and apps can be loaded without the need for further action by the users.

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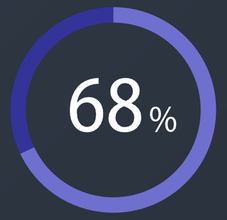
CHROMEBOOKS FOR ENTERPRISE

Technology (Hardware)

Chromebooks are a new type of notebook computer that runs on a different operating system – Google's Chrome OS rather than the usual Microsoft Windows OS or Apple macOS. These computers are apt for enterprises as they provide benefits such as:

- *Tighter security: Corporate data or applications are usually not stored on the device.*
- *Lower price: Chromebooks cost significantly less than an average laptop.*
- *Enhanced operational modes and integration with corporate identity and security tools.*

Datapoint



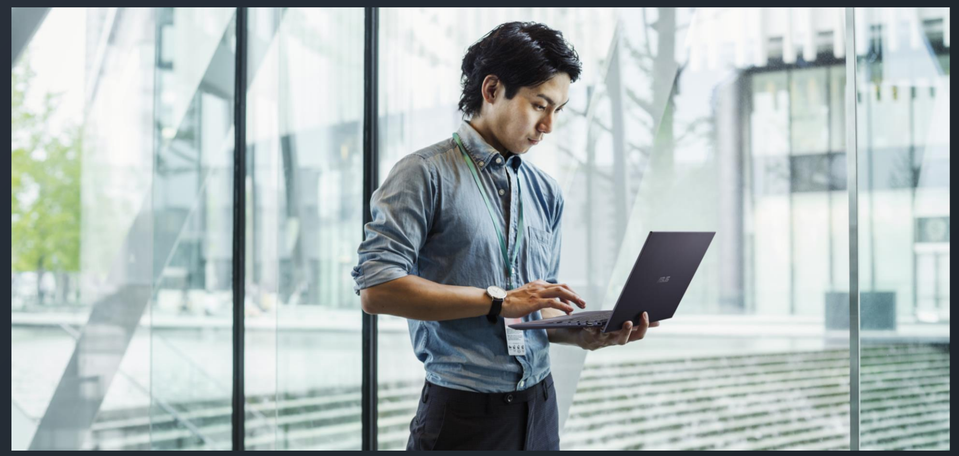
According to IDC, shipments of Chromebooks were up 68% in the second quarter of 2021 compared to the same period the previous year.

According to reportsanddata.com, the global Chromebook market is estimated to reach $14.03 billion by 2027, with a CAGR of 8.2%.

Implication

With a growing remote workforce, enterprise IT leaders will continue looking for ways to lower operational and upfront costs.

Chromebooks offer a secure "grab and go" mobile-alternative for today's remote users.



ASUS Chrome Enterprise Devices

In today's fast-paced and demanding work environments, workers need to be equipped with good technology to help them excel. The ASUS Chrome Enterprise devices can do so. They combine the end-user benefits of ASUS Chrome devices with the business capabilities of Chrome OS, enabling IT to empower the cloud workforce to work securely and effectively from anywhere. ASUS Chrome Enterprise devices, including Chromebooks and Chromeboxes, feature secure, versatile and lightweight designs, enterprise capabilities, and cost savings that greatly benefit any business.

PRIVATE 5G

Technology (Software)

A private 5G network is a local area network that uses 5G technology to create a network with dedicated bandwidth and infrastructure for the company's connectivity needs. It provides high-speed, high-capacity, and low-latency connectivity everywhere with enhanced security.

Private 5G is the next generation of mobile networks which aims to address mission-critical wireless communication requirements. 5G compatible devices are required for users to be able to connect to 5G networks.

Datapoint

80%

According to NTT in 2021, over 80% of CIOs and senior leaders plan to deploy private 5G networks within the next 24 months.

39%

The global private 5G market is expected to witness a CAGR of 39.7% from 2021 to 2028.

Implication

Enterprises are increasingly embracing private cellular for their business as requirements for full, reliable, and powerful network coverage increase. Private 5G offers just that — an enterprise network with security, speed, and bandwidth.

ASUS ExpertBook B7 Flip

Private 5G brings network efficiencies capable of supporting new technologies with demanding workloads. The ASUS ExpertBook B7 Flip is an enterprise-level, 5G-enabled premium laptop designed to accelerate businesses. It future proofs enterprises with lightning-fast data connections, protection from cyberattacks with its personal secure network, reliable signals for continued connection, and convenience as 5G cellular services are not confined to limited areas.

RETAIL

- ADVANCEDCOMPUTER VISION
- SAFER SHOPPING
- PERSONALISED EXPERIENCES

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ADVANCED COMPUTER VISION

Technology

Advanced computer vision is the application of image/video, and predictive and prescriptive analytics to identify and classify multiple objects. It allows retailers to boost business operations and customer experience.

Some use cases include stock management (a monitoring system to detect empty shelves), image search (finding ecommerce listings based on uploaded images), in-store crowd management, and automated payment where stores automatically charge customers for products when they leave the store.

Datapoint

$41 BILLION

According to IEEE, the global computer vision market is expected to reach $41 billion by 2032.

93%

According to AlwaysAI, leveraging data from consumer analytics powered by machine learning such as computer vision can lead to a 93% increase in overall profit.

Implication

Retailers need to proactively align their plans with customers' fast evolving requirements and pursue opportunities that deliver tangible benefits to customer experience or store operations. Computer vision can reveal these customer requirements.

ASUS IoT Object Recognition

Advanced computer vision is poised to transform retail operations and elevate customer and employee experiences. The ASUS IoT AI is one such retail solution. With object recognition capabilities that automatically detect and calculate the cost of purchase, customers no longer need to manually scan item barcodes. Every purchase is connected to the inventory database so that it is easier for retailers to manage and restock inventory when it is low.

SAFER SHOPPING

People

The COVID-19 pandemic has ushered in a new reality for the retail industry. Before the pandemic, a big part of shopping was the hands-on experience. Today, retailers need to set themselves apart for the opposite reason – low-touch shopping to limit the spread of viruses and encourage consumers back into stores.

One of the most important challenges for retailers today is striking a delicate balance between bringing back good memories about shopping in person while making the environment safe, controlled, and inviting.

Datapoint

53%

The digital economy index revealed that 53% of respondents expressed a clear preference for stores to continue enforcing strict virus protection policies, such as social distancing and mask wearing.

65%

A McKinsey survey revealed that 65% of consumers in China indicated that they care more about safety after COVID-19 than before.

Implication

The COVID-19 pandemic has underscored the importance of digital. Retailers will need to harness technology for touchless shopping more than ever in order to emerge successfully from this crisis
and thrive going forward.

ASUS IoT Mask Detection and Crowd Density

The pandemic has rewritten the rules of retail, requiring retailers to make every effort in protecting their customers and employees from the spread of viruses. The ASUS IoT mask detection and crowd density technologies can help retailers provide a safe shopping environment. The former can be deployed at shop entrances to ensure customers have their masks on while the latter helps ensure that the number of customers in the store is at a level where social distancing is possible.

PERSONALISED EXPERIENCES

Process

Trying to compete with online retailers and shops that give heavy discounts is difficult for retail stores these days. The traditional differentiating factors of strategic pricing and promotions are no longer as effective as competitors can easily imitate them.

But differentiation is still possible through creating unique experiences tailored to individual customers. It not only provides a sustainable competitive advantage, but also enhances customer loyalty and advocacy. Moreover, customers, being savvier than ever, expect and want personalized experiences.

Datapoint

80%

Epilson and GBH Insights found that 80% of survey respondents want personalization from retailers.

23%

A Periscope survey by McKinsey showed that only 23% of consumers believe that retailers are doing a good job in their personalization efforts.

Implication

To successfully build a personalization program, retailers need to have access to data and technology that they can draw actionable insights from to improve customer experience and overall store operations.

Chrome OS For Retail Workers

Speed, convenience, friendly service, and knowledgeable help are some of the most important elements of positive customer experience. ASUS and Chrome OS devices can help frontline workers manage storefronts more efficiently and effectively. With fast deployment, proactive security, remote management, zero-touch enrolment, and a cloud-first way of working, ASUS and Chrome OS are the preferred choice for retail workers.

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HEALTHCARE

- DIGITAL TWINS
- IOT SECURITY
- CUSTOMER IDENTITY AND ACCESS MANAGEMENT (CIAM)

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DIGITAL TWINS

Technology

A digital twin is a virtual representation of an object or system that spans its lifecycle. It not only helps teams understand how an asset is performing, but how they will perform in the future through simulations that use real-time data.

Digital twin technology is not new. However, it is still in its nascent stage in healthcare. It has the potential to revolutionize the industry, enabling users to ask better questions and derive actionable insights without risking the lives of people.The goal is to deliver data-driven, personalized medicine and accelerate medical innovations.

Datapoint

$ 36 BILLION

According to CB Insights, the global digital twin market is projected to reach $36B by 2025.

30 %

The global healthcare digital twin market is slated to grow at a CAGR of 30 to 50% in the coming years.

Implication

As new healthcare applications and research emerge, we can use digital twins to explore their use and potential. This will accelerate the industry's move towards more efficient, personalized, and advanced healthcare.

Drug Safety Service at Cheng Hsin General Hospital

ASUS is actively deploying AI technology to develop drug management for chronic diseases, medical complications, and cancer. Cheng Hsin General Hospital collaborated with ASUS to develop an AI-assisted drug safety system that analyzes over 10 million medical records. The AI-assisted drug safety system warns if any abnormal dosage of medicine is prescribed, putting patient safety first and reducing human error, disputes, and medical waste.

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IOT SECURITY

Technology

Internet of Things (IoT) security in healthcare addresses software, hardware, network, and data protection for healthcare delivery organizations (HDO), including medical devices.

Healthcare organizations struggle when it comes to securing their IoT devices. During the COVID-19 outbreak, there was a surge of cyberattacks and medical devices became one of the most frequent targets of perpetrators. The cyberattacks created compromises that impacted both the back office of the HDO and point of care. IoT security is therefore crucial for HDOs and their patients because sensitive health data is at stake.

Datapoint

Healthcare was the biggest breach target in 2020, 2019, and 2018 (ForgeRock, 2020).

According to IBM, the healthcare sector experiences some of the highest costs for breaches, averaging $6.45 million per accident, 65% higher than the industry average.

Implication

Medical devices are not typically built with security in mind. As these devices continue being an integral part of healthcare delivery, including IoT security as part of a robust and comprehensive cybersecurity strategy is imperative.

ASUS IoT Intelligent Telemedicine Cart

ASUS IoT has announced a collaboration with Tobii to integrate the latter's world-leading eye-tracking technology into ASUS IoT Intelligent Telemedicine Cart, enabling medical personnel to interact with the device without the need for regular or repetitive touch interaction or other physical controls. Implemented within the Taipei City Hospital, Heping Fuyou Branch, the Tobii technology empowers upgraded privacy, safety, and security through features such as automatic screen blurring to protect sensitive information if it detects any unauthorized person looking at the screen.

CIAM (CUSTOMER IDENTITYAND ACCESS MANAGEMENT)

Process

As the healthcare industry moves towards greater patient engagement, virtual care, and electronic prescriptions, there is an increasing need to offer convenient and secure ways to establish this connection over the internet.

CIAM platforms can do so. They manage access rights and establish a password policy to ensure that the healthcare data of both patients and practitioners remain confidential. With the added security and privacy provided by CIAM platforms, referral management, community physician collaboration, and support processes would also be improved.

Datapoint

80%

80% of physicians and 60% of hospitals are now using electronic health records (HealthIT, 2021).

$ 23 MILLION

A Frost & Sullivan study found that cyberattacks can cost a large healthcare organization in Asia Pacific an average of US$23.3 million.

Implication

There is growing recognition that positive customer and employee experience is a competitive differentiator in the industry. As more healthcare organizations turn to new-age technologies, delivery of seamless and secure experiences must become the norm.

Personal Healthcare App at Chung Shan Medical University Hospital

In response to the impact of the COVID-19 epidemic, a rapidly aging society, and a low birth rate, Chung Shan Medical University Hospital has been actively promoting disease prevention and health management. The hospital is working with ASUS to develop a 100% structured medical database that integrates AI, mobile, and telematics technologies to establish a personal health management platform. The app connects patients with medical and care institutions to strengthen long-term doctor-patient relationships and shared decision-making models.

MANUFACTURING

- CONSUMER–DRIVEN MANUFACTURING
- ADDRESSING THE GENERATIONAL SKILLS GAP
- ADVANCING SUSTAINABILITY

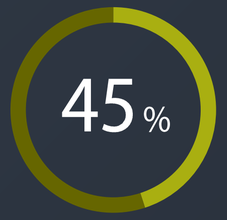
CONSUMER–DRIVEN MANUFACTURING

Technology

Consumer demands are constantly evolving. Today, customers expect same-day delivery, personalized products and services, and transparent delivery processes.

Consumer-driven manufacturing, which is about anticipating the demand of a product, allows manufacturers to stay competitive and keep up with consumer expectations. Powering this mode of manufacturing are advanced technologies such as advanced analytics, the industrial Internet of Things (IIoT), automation, cloud platforms, and more.

Datapoint



In 2022, 45% of manufacturing executives surveyed by Deloitte expect further increase in operational efficiency from investments in the industrial Internet of Things (IIoT).

Half of the executives surveyed expect an increase in operational efficiency in 2022 from their investments in robots and robots.

Implication

Manufacturing enterprises that want to keep up with consumer demands need to integrate new technologies and capabilities – such as the Internet of Things (IoT), automation, artificial intelligence (AI) into existing systems. To support this shift, smart factory initiatives, and rapid fulfilment and delivery will be top priorities.

ASUS IoT Smart Manufacturing

ASUS IoT solutions (including the PE100A, PE200 and PE400D Series) are tailor-made for manufacturing applications and essential use cases, including AI-driven predictive maintenance of single assets, AI-powered automated optical inspection, production optimization, surveillance, and physical threat detection. These solutions reduce costs, increase safety and security, improve quality assurance, and facilitate regulatory compliance, resulting in greater overall equipment effectiveness (OEE) to improve efficiency and profits.

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ADDRESSING THE GENERATIONAL SKILLS GAP

People

The manufacturing industry is facing a critical skills gap and this stems from their challenge of attracting and retaining new talent, especially among Millennials and Gen Zs. The industry has a “branding crisis” where it is perceived as a lesser career compared to other industries.

Beyond the perception of the industry, workplace environment and safety are other characteristics that deter talents from joining the industry. Technology can help to resolve these issues by improving the appeal of the industry for younger workers while progressively elevating the skills of senior workers to support manufacturing’s transition to Industry 4.0.

Datapoint

$ 21 MILLION

Deloitte estimated a shortfall of 2.1 million skilled manufacturing jobs in the U.S by 2030.

38 %

In a Deloitte survey, 38% of executives report that attracting new workers is their top priority for the production workforce in 2022, followed by retention (31%) and reskilling (13%).

Implication

The manufacturing sector needs to change their current outdated image in order to attract talent. This can be done by creating a modern and positive work experience that leverages technology to digitize a worker’s day-to-day experience, providing them the mobility they crave for.

Remote Working and Collaboration

Embracing the future of work could also be critical to resolving the current talent scarcity. As digitalization transforms the industry, automation of recurring tasks, remote working, and collaborations could help to resolve some of the labor shortage predicaments. A range of Work-from-Home essentials, such as ASUS's monitors, Chromebook and routers, can make it easier for teams to collaborate anywhere.

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ADVANCING SUSTAINABILITY

Process

Manufacturers are likely to invest more resources and rigor in advancing sustainability as expectations to deliver green products at speed and scale globally increase. More manufacturers are turning to a circular economy to optimize efficiency at every production stage.

The circular economy leverages technologies including AI and machine learning to automate processes and streamline operations. It is a move away from the “take-make-waste” linear model to one that involves sharing, reusing, repairing, remanufacturing, and recycling.

Datapoint

95% of manufacturing executives Deloitte surveyed expect their organizations to invest more in environmental, social and governance (ESG) areas in 2022 than in 2021.

Two-thirds of manufacturing executives also expect more investment in the social area as part of sustainability priorities in 2022.

Implication

As stakeholders including investors, boards, employees, policymakers, and customers continue to focus on ESG, more reporting and attention on actions taken by manufacturing firms are expected in 2022. Expectations for reporting on DEI metrics in manufacturing will also continue to rise.

Sustainable Packaging

Packaging materials protect goods during transporting. However, most of the packaging materials are often discarded by consumers after purchase, causing resource wastage. ASUS has taken steps to reduce the use of materials while maintaining safe transportation. In addition, when selecting packaging materials, recycled materials are prioritized, such as cartons made of more than 80% recycled materials. ASUS also incorporates reusability in their packaging, allowing consumers to turn an accessory box into a laptop stand and extend the life cycle of the packaging.

ASUS | BUSINESS

BANKING

- CLOUD MANAGEMENT
- CASHLESS SOCIETY
- MACHINE LEARNING

ASUS | BUSINESS

CLOUD MANAGEMENT

Technology

Cloud banking is shaping the future of the financial services industry and it is a growing focus for banking and capital markets' leaders. It is a destination for financial services firms and banks to store data and access advanced software applications through the internet.

Cloud-native platforms leverage microservices-based architecture with application programming interfaces (APIs), providing access to and from other internal and external services. They support real-time processing and, by the nature of being cloud-native, typically have a pay-per-use subscription model.

Datapoint

According to Accenture, banks have been migrating incrementally, and today the average bank has 58% of its workloads in the cloud – mostly in private cloud centers.

By moving to the cloud, Accenture estimates a 10 to 20% cut in operational costs.

Implication

Historically, replacing core banking systems had been an expensive undertaking, but cloud management allows financial institutions to transform digitally without spending massive investments. Banks can look to cloud-based banking as one affordable option of innovation which can even be integrated with existing legacy platforms for the majority of core banking functionality.

Chromebook for financial institutions

Chrome OS is a fast, secure, and versatile cloud-first operating system that powers the Chromebook and is easy to manage. Chrome Browser Cloud Management empowers IT admins with flexible management capabilities in the cloud. By leveraging the inherent security of Chrome OS and the advantages of cloud computing, Chromebooks allow financial institutions to seamlessly embrace digital transformation and gain the ability to use Advanced Single Sign On (SSO), define login controls, manage guest sessions, configure kiosks, and more.

CASHLESS SOCIETY

People

Cashless payments are any type of payment that is made without cash. They are growing in appeal for both consumers and organizations because they are becoming more convenient, traceable, and hygienic.

- *Convenience: Linking cards to mobile wallets on smart watches means that consumers can pay without ever reaching into their pocket.*
- *Traceable: Cashless payments through digital platforms enable consumers to have oversight of their monetary in- and outflow.*
- *Hygienic: Cashless payments reduce physical contact and thus disease transmission, a necessity in today's pandemic era.*

Datapoint

35%

The pandemic accelerated the already considerable shift to non-cash payments, with a 35% drop in payments using banknotes or coins in 2020.

$490 BILLION

By 2023, Asia Pacific was expected to nearly triple the value of such transactions, exceeding $490 billion U.S. dollars.

Implication

Banks can lead innovation or partner with third parties to ensure that their customers always have early access to the newest payment options. Due to the trust consumers generally have in banks, financial institutions are instrumental in boosting the uptake of cashless services – either by improving security or by promoting the simplicity of payments.

ASUS All-in-One PCs keep consumers in touch with Commonwealth Bank of Australia

In line with the digitization, convenience, and traceability agenda, the Commonwealth Bank of Australia partnered with ASUS to deploy All-in-One (AiO) units at their Brisbane flagship branch. The self-service kiosks that featured AiO PCs allowed branch visitors to browse foreign exchange rates and financial products, and make appointments with the bank's financial specialists. ASUS AiO PC ET2300INTS helped change the way the bank operated thanks to a host of technologies that deliver unprecedented speed and performance.

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MACHINE LEARNING

Technology

Machine learning is a branch of artificial intelligence (AI) that uses data to enable machines to learn to perform tasks on their own. AI and machine learning can perform unprecedented levels of automation such as automating repetitive tasks or paperwork. This gives banking professionals more time for more sophisticated challenges

Automated solutions track and store valuable information about customers, allowing the bank to personalize customer experience for unique individuals with precision. Advanced fraud detection and prevention are also top benefits of machine learning.

Datapoint

22%

According to Autonomous Next, banks around the world will be able to reduce costs by 22% by 2030 with AI technologies.

$1 TRILLION

Savings by banks globally could reach $1 trillion.

Implication

Machine learning in banking can help to improve decision-making, enable data-driven predictions, and create new business opportunities. Financial institutions can use machine learning to automate and hasten support processes (such as forecasting and fraud prevention), and ultimately lead to greater profits.

ASUS AI accelerator is designed to enhance machine learning performance with model-pipelining technology

ASUS AI Accelerator PCIe Card can run multiple AI models simultaneously for maximum performance, making it the first PCI Express expansion card with multiple Coral Edge TPUs for AI inferencing at the edge. As machine learning often use substantial power, energy efficiency is key. ASUS' PCIe card is an example that uses optimal thermal stability to achieve inference acceleration.

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