The PRC and Global AIDC Devices and Solutions Market Study 2023

Date : 30 May 2025

For and on behalf of
Frost & Sullivan (Beijing) Inc., Shanghai Branch Co.

Name: Terry Tse
Title: Consulting Director

Highly Confidential
2025

Agenda

Scope

- **The project scope is defined as follows:**

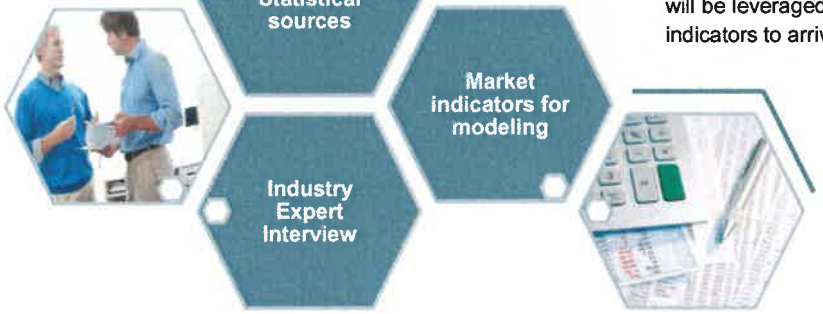
Research Period	• **Historical Year: 2019-2023** • **Base Year: 2023** • **Forecast Year: 2024E-2028E**
Geographic Scope	• **Global** • **The PRC**

Target Market	• **AIDC Devices and Solutions**
	  ◦ **Specialty Printers**
	  ◦ **POS Terminals**
	  ◦ **PDAs**
	  ◦ **Scales**

Limitations

Source of Information

- Interviews with industry experts and competitors will be conducted on a best-effort basis to collect information for in-depth analysis for this report.
- Frost & Sullivan will not be responsible for any information gaps where Interviewees have refused to disclose confidential data or figures.
- The study took 2023 as the base year for analysis and 2024-2028 for forecast. However, some of the historical figures may not be available at the moment from public statistical sources. Frost & Sullivan will use the latest information available or make projections based on historical trends.
- Under circumstances where information is not available, Frost & Sullivan in-house analysis will be leveraged using appropriate models and indicators to arrive at an estimate.
- Sources of information and data will be clearly stated in the bottom right hand corner on each slide for reference.



Agenda

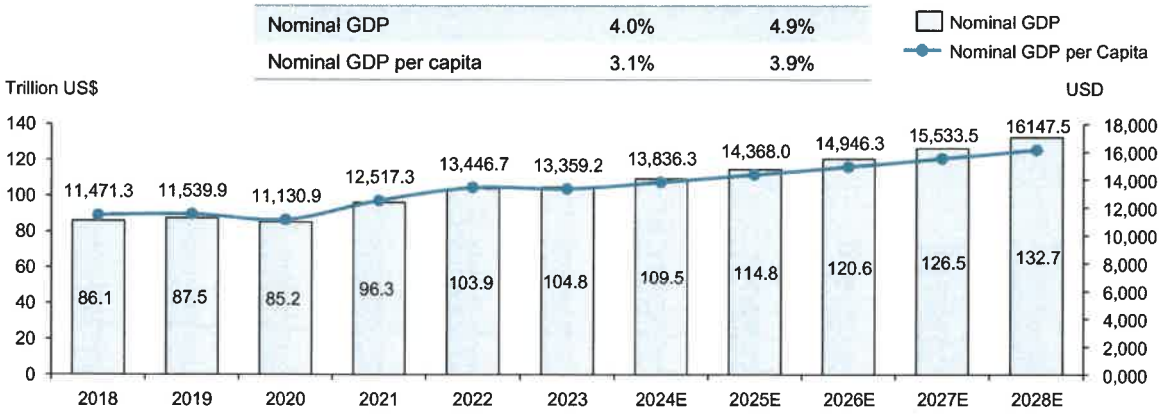
Overview of Macroeconomic Environment

Global Nominal GDP and GDP per Capita

- The global nominal GDP has recorded a growth from US$86.1 trillion to US$104.8 trillion from 2018 to 2023, representing a CAGR of 4.01%. The global nominal GDP per capita is steadily increased from US$11,471.3 to US$13,3592 with a CAGR of 3.1%. The COVID-19 pandemic has adversely impacted the macroeconomic environment across the globe, causing the plummet of nominal GDP per capita in 2020. The rebound from COVID-19 is expected to be uneven across different countries, as major economies look set to register strong growth as many developing economies lag. The uneven growth recovering from the COVID-19 pandemic will as well be reflected in the growth of nominal GDP per capita in the upcoming years. It is expected that the global nominal GDP will increase from US$109.5 trillion to US$132.7 trillion from 2024 to 2028 with a CAGR of 4.9%, and the global nominal GDP per capita will increase from US$ 13,836.3 to US$16,147.5from 2024 to 2028 with a CAGR of 3.9%.

Nominal GDP and GDP per Capita (Global) , 2018-2028E

CAGR	2018-2023	2024E-2028E
Nominal GDP	4.0%	4.9%
Nominal GDP per capita	3.1%	3.9%



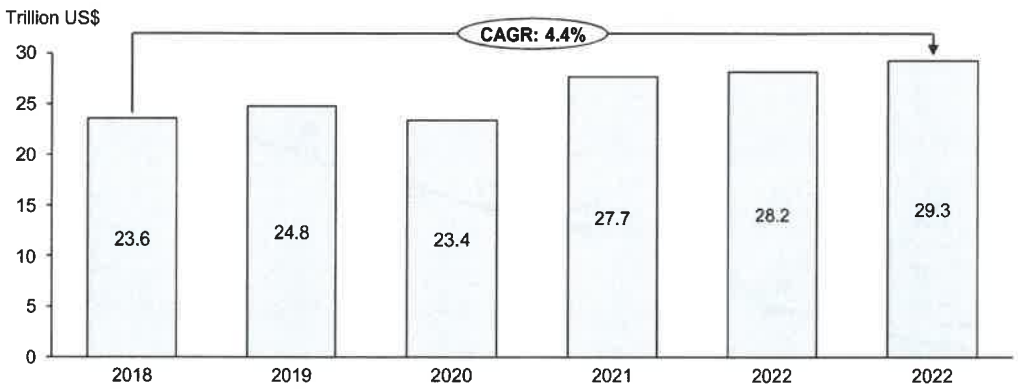
Source: IMF, Frost & Sullivan

Overview of Macroeconomic Environment

Global Retail Sales

- The global retail market has recorded a growth from US$23.6 trillion to US$ 29.3 trillion from 2018 to 2023, representing a CAGR of 4.4%. In 2020, there is a significant decrease from 24.8 trillion in 2019 to 23.4 trillion, mainly attributed to the COVID-19 outbreak. The coronavirus pandemic forced governments worldwide to shut brick-and-mortar businesses and impose lockdowns in an effort to stem the spread of the virus, which majorly affected the supply, demand, and day-to-day operations of many retailers.
- However, as the retail industry is being driven by the rapid technological innovations and the e-commerce is being boosted worldwide during Coronavirus disease (COVID-19), the global retail sales has demonstrate a strong increase to US$27.7 trillion in 2021 and continued to rise in 2022.

Retail Sales Volume(Global) , 2018-2028E



Source: eMarketer, Frost & Sullivan

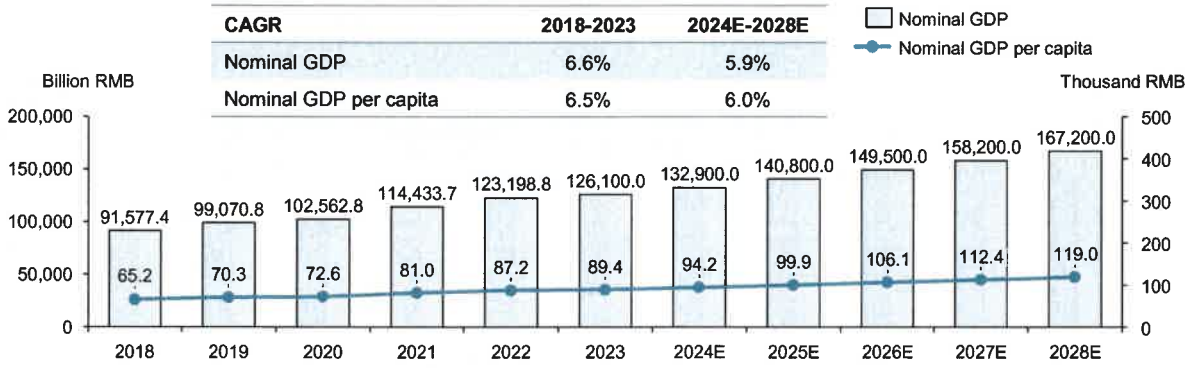
Overview of Macroeconomic Environment

Nominal GDP and GDP per Capita in the PRC

- The nominal GDP in PRC has increased from RMB91,577.4 billion in 2018 to RMB126,100.0 billion in 2023, representing a CAGR of 6.6% as stated by National Bureau of Statistics of China. Although the Chinese economy has remained uncertain due to the tumultuous relationship between U.S. and the PRC, with effective government policies and transformation of domestic economy from an investment-driven economy to a consumption-driven economy, the economic growth in the PRC remained strong.
- The nominal GDP of the PRC is forecasted to reach RMB167,200 billion by 2028, representing a CAGR of 5.9% from 2024 to 2028 in accordance with the forecasted growth rate provided by International Monetary Fund (IMF). In the future, the economy is expected to recover after the pandemic and the national economy is estimated to grow steadily along with the sustained investment and consumption by local residents.
- The nominal GDP per capita aligned with the growth of the PRC's economy, increasing from RMB65.2 thousand in 2018 to RMB89.4 thousand in 2023, representing a CAGR of 6.5%. It is anticipated that the nominal GDP per capita will rise from RMB94.2 thousand in 2024 to RMB119.0 thousand in 2028, with a CAGR of 6.0%.

Nominal GDP and GDP per capita (the PRC), 2018-2028E

CAGR	2018-2023	2024E-2028E
Nominal GDP	6.6%	5.9%
Nominal GDP per capita	6.5%	6.0%



Source: National Bureau of Statistics, IMF, Frost & Sullivan

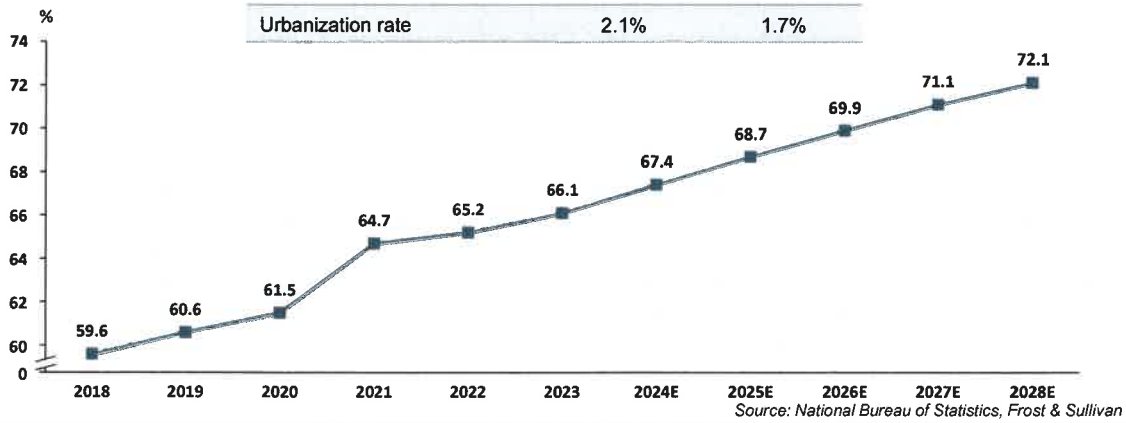
Overview of Macroeconomic Environment

Urbanization Rate in the PRC

- As urbanization is one of the strategic focus of the PRC government, the urbanization rate in PRC has grown rapidly from 59.6% in 2018 to 66.1% in 2023, representing a CAGR of 2.1%, with an increasing number of rural residents transferring to the urban area in recent years.
- Looking forward, it is forecasted that the rapid economic development would further boost the urbanization rate of PRC from 67.4% in 2024 to reach 72.1% in 2028 with a CAGR of 1.7%, fueling the growing demand of household consumption.

Urbanization Rate (the PRC), 2017-2027E

CAGR	2018-2023	2024E-2028E
Urbanization rate	2.1%	1.7%



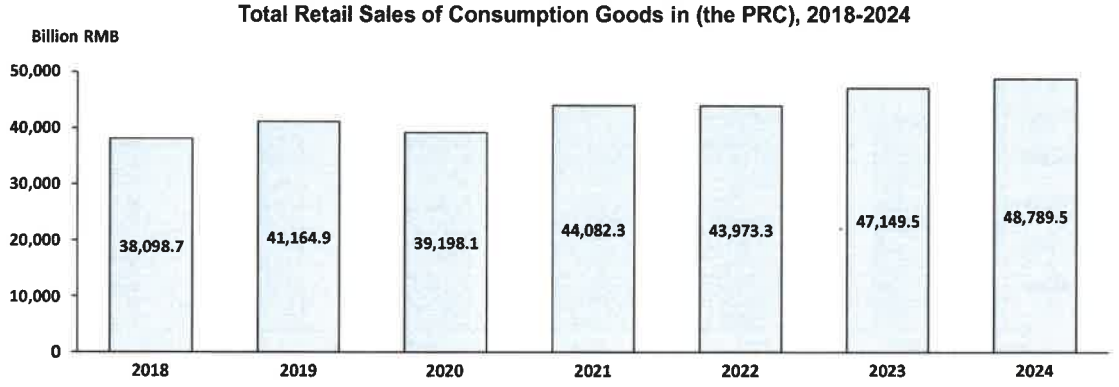
Source: National Bureau of Statistics, Frost & Sullivan

Overview of Macroeconomic Environment

Total Retail Sales of Consumption Goods in the PRC

- Total retail sales of consumption goods represent the amount of physical commodities sold by businesses (units) to individuals and social groups for non-production and non-business reasons through transactions, as well as the amount of money made from the provision of food and beverage services. In 2024, the total retail sales of consumption goods in the PRC has reached RMB48,798.5 billion from RMB38,098.7 billion in 2018 at the CAGR of 4.2%. In 2020, the total social retail sales in the PRC has recorded a decline compared to the same period in 2019, mostly attributed to disruptions in the business operations and logistics arrangements of regional distributors and temporary store closures caused by the COVID-19 epidemic. Later, due to the containment of the COVID-19 outbreak in the PRC, the growth of domestic consumer demand, and the rapid development of new retail formats such as e-commerce and live streaming during this period, consumer sentiment improves and continue to increase since 2021.
- Urbanization is driving population growth in cities, which in turn boosts consumer spending. The expanding middle class, with greater disposable income, increases demand for a wide range of products. Rapid growth in e-commerce makes shopping more convenient. Technological advancements, especially in mobile payments and logistics, improve the overall shopping experience. Additionally, shifting consumer preferences towards healthier and branded items, along with supportive government policies and effective marketing strategies, all play a significant role in the strong growth of retail sales in the PRC.

Total Retail Sales of Consumption Goods in (the PRC), 2018-2024



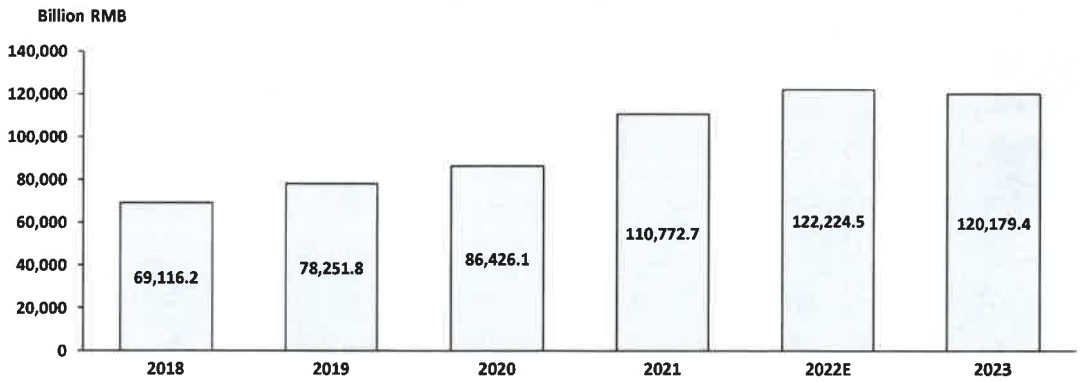
Source: National Bureau of Statistics, Frost & Sullivan

Overview of Macroeconomic Environment

Total Wholesale and Retail Sales of Consumption Goods in the PRC

- Wholesale refers to the amount of goods sold to the various sectors of the national economy for production and operation. Retail sales refers to the amount of goods sold to individuals for domestic consumption and social groups for public consumption. In 2023, the total wholesale and retail sales of consumption goods in the PRC has reached RMB120,179.4 billion from RMB69,116.2 billion in 2018 at a CAGR of 11.7%.
- The overall wholesale and retail industry is driven by the technological innovations, including the continuous development of big data, cloud computing, and Internet of things, accelerating the digital transformation of commerce enterprises, reducing product distribution costs and improving operational efficiency. In addition, the increasing new business models, especially the rapid development of online sales in the PRC, tends to diversify the overall market format, and optimize the business environment, which will continue to drive the future growth of the wholesale and retail industry.

Total Wholesale and Retail Sales of Consumption Goods (the PRC), 2018-2023



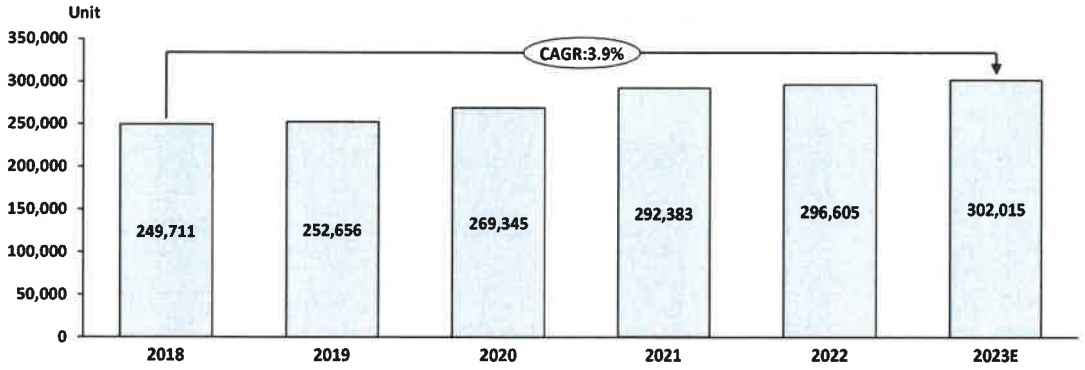
Source: National Bureau of Statistics, Frost & Sullivan

Overview of Macroeconomic Environment

Total Number of Retail Stores in the PRC

- The change in the number of retail stores is consistent with the overall retail market development. In 2023, the total number of retail stores in the PRC is expected to reach 302,015 from 249,711 in 2018 at the CAGR of 3.9%. The continuous increase in the number of retail stores represents the positive development of the retail markets. Though the online retail sales is rapidly developing especially during the Coronavirus disease (COVID-19), the integration of online service and offline resources is more likely to maximize the sales efficiency and consumption experience, therefore the offline stores is expected continue to increase.

Total Number of Retail Stores (the PRC), 2018-2023E



Source: National Bureau of Statistics, Frost & Sullivan

Agenda

Overview of the PRC and Global AIDC Devices and Solutions Market

Definition and Classification (1/7)

- **AIDC (Automatic Identification and Data Capture)** refers to a variety of technologies applied to automatically identify objects, collect relevant data, and enter that data directly into computer systems without human intervention. AIDC systems are used to manage inventory, delivery, assets, security, and logistics, and can significantly increase the efficiency and accuracy by reducing time and labor, and corresponding human error.

- The followings are core AIDC technologies that directly engage in the process of reading or sensing data from items, individuals, or environments, and then capturing that data for further processing. Further, printing systems and printing technology, particularly specialty printer, is used to generate machine-readable barcodes, labels, and other markers that are integral to the identification and tracking processes within AIDC workflows. In the AIDC ecosystem, specialty printers are not merely output devices but play a crucial role in driving the overall data capture and processing workflows. For instance, receipt printers in retail or logistics environments generate receipts embedded with machine-readable barcodes or QR codes that can be scanned for real-time verification, inventory updates, or tracking. Similarly, labels produced by barcode and label printers in manufacturing or supply chain environments often contain advanced machine-readable data that facilitates automated sorting, tracking, and compliance with regulatory requirements. The printed outputs can also include RFID tags or encoded details to support automated scanning and processing further down the workflow. In healthcare settings, specialty printers allow for on-demand printing of patient identification wristbands, specimen labels, or prescription details, which are machine-readable, traceable and critical information, thereby reducing human error, improving patient safety, and streamlining workflows.
  - Barcode Scanning
  - Smart Cards and Magnetic Stripe Cards
  - Optical Character Recognition (OCR)
  - RFID Scanning
  - Biometric Systems
  - Others

- Building upon the foundational AIDC technologies that have been established, a wide array of devices has been developed to leverage and integrate these core systems, thereby extending their capabilities and applications. Below outline the major AIDC devices:

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Definition and Classification (2/7)

- **POS Devices**: POS systems often incorporate several AIDC technologies such as barcode scanners, RFID readers, and sometimes even biometric systems for employee authentication.

- **PDA Devices**: PDAs used in AIDC applications typically include barcode scanning or RFID reading capabilities, making them multifunctional devices that can also handle data processing and communication.

- **Scales**: is considered AIDC device as it is used to automatically identify and collect data about objects, and then enter that data directly into computer systems without human intervention

- **Specialty printer (Receipt printer, Barcode and label printer, and Portable student printer):** create the identifiers but also ensures that the data captured is standardized and in a form that can be universally read and understood by the AIDC devices. Portable student printer leverages OCR technology, which involves automatic identification of student work.

- **Others including but not limited to:**
  - Barcode Readers: automatically read barcodes on items as they pass through a scanning zone, mainly adopted in retail and logistics settings
  - Vehicle Mount Terminalss: rugged devices attached to vehicles such as forklifts, trucks and warehouse vehicles, enabling operators to capture and access data on the move
  - Access Control Systems: use a variety of AIDC technologies, including RFID, biometrics, and smart cards, to manage entry to secure areas
  - Electronic Article Surveillance Systems, used primarily in retail settings, these devices detect and deter theft by recognizing tags that are not deactivated or removed
  - Smart Cabinets: used in healthcare and other industries for managing inventory of high-value items, these cabinets use RFID technology to track items in real-time

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Definition and Classification (3/7)

- In this report, the scope of definition of AIDC device will only include (i) specialty printer, (ii) point-of-sale terminals ("POS terminals"), (iii) personal digital assistants ("PDAs"), and (iv) scales.
- All the industry information, including market size, market ranking and market trends of each product category are including the sales of equipment, software development and associated services.

- **Specialty printer** refer to printing devices designed for specific applications, which includes receipt printer and barcode and label printer. Unlike general-purpose printers, specialty printers are tailored for specific industry such as manufacturing, healthcare, education, and supply chain environments where precision, durability, and efficiency are critical and essential for identification and tracking. Receipt printer is a tool to facilitate and handle customer transactions through producing customers receipts and credit card slips and other related documents during a sales transaction at the point of sale and operation. They are commonly used in retail, manufacturing, shipping, and logistics industries to label products, packages, and shipments for tracking and inventory management purposes. Barcode and label printers come in various sizes and capacities. Major types of specialty printers include thermal, dot matrix and inkjet.

- **POS terminals** is the system used to process sales transactions at a business. POS terminals typically includes hardware, such as a cash register or computer, and software that allows the business to process sales, manage inventory, and generate reports. Modern POS terminalss often include features like barcode scanning, credit card processing, and customer relationship management tools and are adopted in business circumstances including but not limited to retail, hospitality and healthcare. Major types of POS terminals include terminals, mobile and tablet, and online.

- **PDAs** are handheld electronic devices that function as a data terminals for customers to collect data efficiently and achieve digital management of their businesses. Similar to POS terminalss, most of our PDAs also have Wi-Fi, Bluetoothand GPS support, and come with built-in printing capabilities, cameras for code scanning, and NFC readers. Our PDAs are commonly applied to logistics and delivery, warehouse inventory tracking, production and manufacturing, retail e-commerce, and store management.

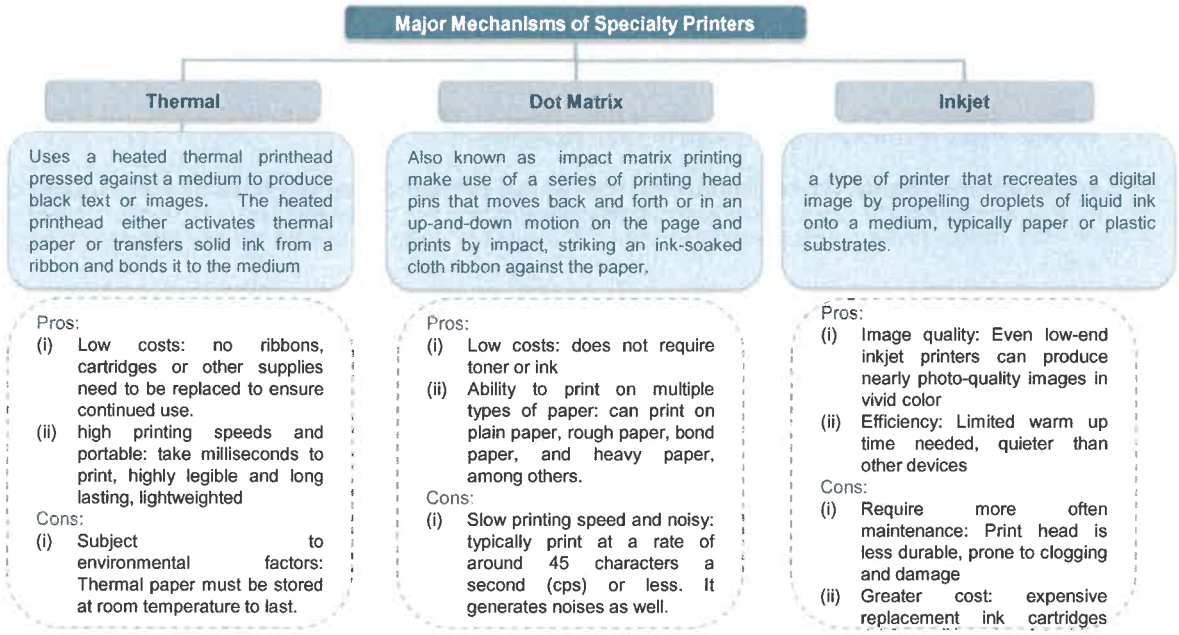
- **Scales** is used in businesses or commercial settings to accurately measure the weight of goods or products being sold or purchased. AIDC technology enhances scales by improving accuracy and efficiency. It uses barcode scanning and RFID tags to quickly identify products and capture weight data without needing direct line-of-sight. AIDC integrates with inventory management systems for real-time tracking and automatic updates, while mobile connectivity allows users to manage data through smartphones.

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Definition and Classification (4/7)

- Specialty printers can also be classified by the operating mechanism. Receipt printer and barcode and label printer adopt the three types of mechanism i.e. thermal, dot matrix and inkjet, depending on the product design of each product. For portable student printer("错题机"), thermal mechanism is adopted extensively.



Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

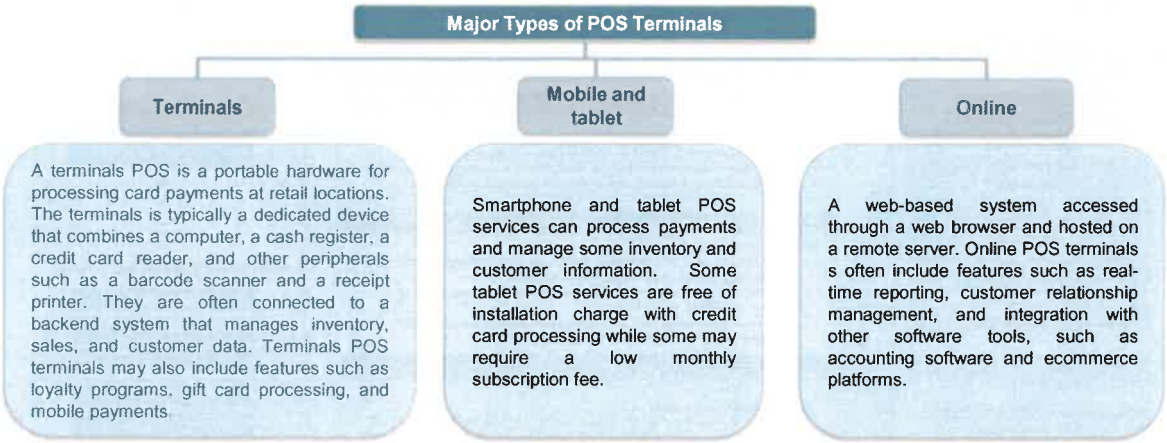
Definition and Classification (5/7)

- **POS terminals** is the system used to process sales transactions at a business. POS terminals typically includes hardware, such as a cash register or computer, and software that allows the business to process sales, manage inventory, and generate reports. Modern POS terminals s often include features like barcode scanning, credit card processing, and customer relationship management tools and are adopted in business circumstances including but not limited to retail, hospitality and healthcare.
- **PDAs** are handheld electronic devices that function as a data terminals for customers to collect data efficiently and achieve digital management of their businesses. Similar to POS terminalss, most of PDAs also have Wi-Fi, Bluetooth and GPS support, and come with built-in printing capabilities, cameras for code scanning, and NFC readers. PDAs are commonly applied to logistics and delivery, warehouse inventory tracking, production and manufacturing, retail e-commerce, and store management
- **Weighing apparatus** is a type of scales that is used in businesses or commercial settings to accurately measure the weight of goods or products being sold or purchased. These scaless are typically larger and more durable to be are designed to handle heavier loads and frequent use. It serves various purposes such as weighing packages for logistics shipment. Weighing apparatus are often regulated by government agencies to ensure accuracy and fairness. For instance, the Digital Indicating Weighing Instruments "中华人民共和国国家计量检定规程- 数字指示秤)" promulgated by the General Administration of Quality Supervision, Inspection and Quarantine of the PRC, sets out the standards including but not limited to the accuracy, maximum permissible error, and the verification and inspection required prior to usage for digital scales

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

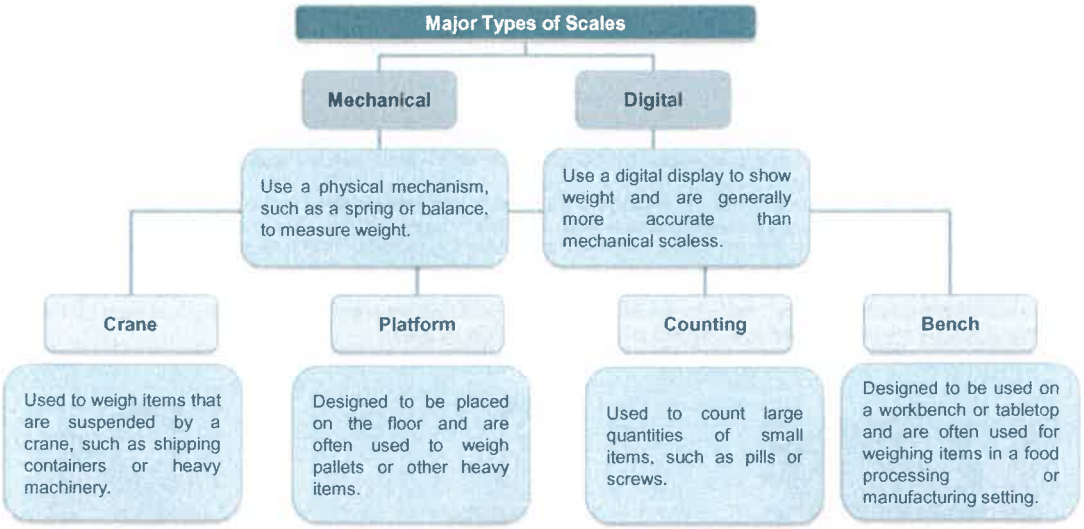
Definition and Classification (6/7)



Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

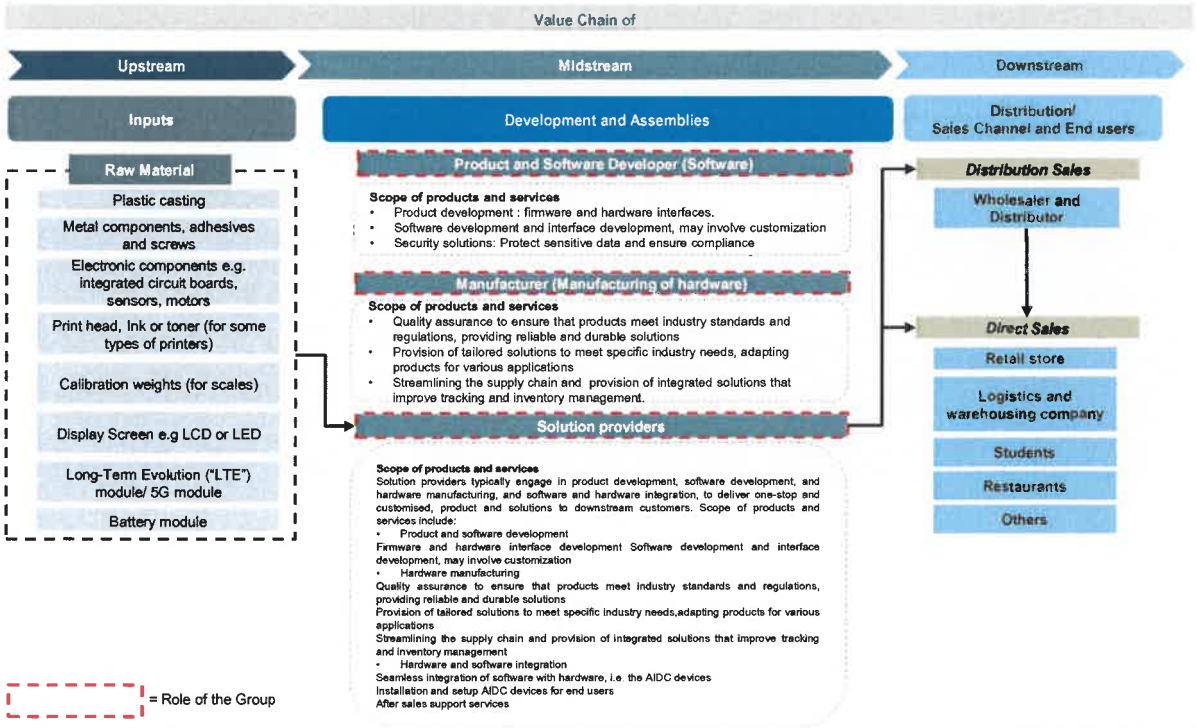
Definition and Classification (7/7)



Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Value Chain Analysis



Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Value Chain Analysis (Cont'd)

- The value chain of the retail AIDC devices and solutions market first involves the upstream raw material providers, including the manufacturers of plastic which are then forged into casting, metals which refers to the components and parts, electronic components such as integrated circuit boards, sensors, motors, display screen, as well as print head, ink or toner for some types of specialty printers and calibration weights for scales.

- In the midstream of the value chain, collaboration between hardware manufacturers and software developers plays a critical role. Hardware manufacturers work closely with software developers to ensure seamless integration between physical components and advanced software solutions. The collaboration helps create devices that are not only functional but also capable of delivering enhanced performance through features such as real-time data processing, connectivity, and analytics. Product and Software Developer are deeply involved in product design and software development processes that enable these devices to meet the dynamic needs of the market. Their efforts are centered on enhancing product features and design to improve usability and performance, as well as developing advanced software solutions that elevate device functionality and enrich customer interaction. Through prototyping and rigorous iterative testing, R&D ensures that the products not only adhere to the highest standards of quality and reliability but also remain compliant with evolving regulatory standards. Moreover, they keep a keen eye on technological trends, allowing for timely adaptations that align with the future direction of the industry.

- On the other hand, the raw materials from upstream are transported to midstream manufacturer and solution providers to be assembled and manufactured into a complete specialty printer, POS terminals and scales. This step includes design, development, prototyping, testing, mass production and final quality assurance. The Group is at the midstream of the value chain and is principally engaged in the R&D and manufacturing of AIDCs devices, including specialty printer, POS terminals, PDA and scales. Once the products are manufactured, they are distributed to retailers, wholesalers, or directly to end-users. This step includes logistics and transportation of the products to the intended locations.

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Value Chain Analysis (Cont'd)

- It is important to note that within the midstream segment of the value chain, there are companies that embody a dual role as both a Product and Software Developer and a Manufacturer and Solution Provider. Such organizations offer a one-stop solution by not only engaging in the development of innovative software and the design of sophisticated hardware but also overseeing the assembly and manufacturing of the finished products. The close integration between hardware manufactures and software developers enables the delivery of devices that are highly optimized for specific use cases, such as retail point-of-sale systems, logistics tracking, and warehouse management. The ability to customize software for specific industries or operational needs ensures that AIDC devices are versatile and future-ready. Such integrated approach allows these companies to tightly control the quality, integration, and delivery of their AIDC devices and solutions.

- Subsequently, the manufacturer and solution providers offer various of one-stop services to the downstream end-users including retail stores, logistics and warehousing companies and others, such as installation and setup, which includes configuring the software, connecting the hardware, and testing the system at the point-of-sale. The role of software extends to the downstream segment as well, where end-users benefit from features like real-time reporting, data analytics, and automated workflows, which enhance operational efficiency and decision-making capabilities. In particular, the manufacturers perform quality assurance, offers customized products and streamline the supply chain.

- Manufacturers may engage wholesalers or distributors, which are IT solution providers or pure resellers to leverage their sales network to distribute their products, while it is also common for manufacturers to engage directly with end customers, especially sizeable corporate users. After sales support services are provided as users need to be trained on how to use it effectively. Additionally, ongoing support is needed to address any issues that arise, provide software updates, and ensure the system is running smoothly. Besides, the transaction data is collected and analyzed to provide insights, which is stored in cloud platform provided by the manufacturer and solution providers of specialty printer, POS terminals and scales or other third-party IT solution providers.

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market size of Global AIDC Devices by Production Value

- The global AIDC Devices market by production value is driven by the rising demand for personalised shopping experiences, the need for real-time inventory management, and the growing trend of online-to-offline retail, with the market size increasing from US$42.7 billion in 2018 to US$62.9 billion in 2023, at a CAGR of 8.1%. Increasing adoption of cashless payment systems and advancements in AI and machine learning are expected to drive the market. The global market size of AIDC Devices by production value is expected to rise at a CAGR of 10.9% from 2024 to 2028, reaching US$106.7 billion in 2028.
- The global PDAs market by production value experienced the highest CAGR of 16.3% advancements in AI, and a growing demand for voice-activated technologies. As consumers are seeking automation solutions to streamline tasks and enhance productivity, the rise of the Internet of Things (IoT) creates more opportunities for PDAs to interact with connected devices. The global PDAs market by production value is expected to grow at a CAGR of 14.9% from 2024 to 2029.
- The global market for POS terminals, measured by production value, recorded the growth at a CAGR of 9.2%, the second highest growth rate among the AIDC segments. The expansion of both physical retail and online shopping has escalated the demand for efficient and versatile POS systems. Technological advancements, including mobile POS, cloud-based solutions, and contactless payment technologies, are enhancing user experience and operational efficiency. The global market for POS terminals by production value is expected to rise at a CAGR of 12.7% from 2024 to 2028.
- As retailers seek to streamline their operations and improve the customer experience, the adoption of point-of-sale (POS) systems and mobile POS solutions is on the rise, which in turn increases the demand for specialty printer and scale, including receipt printers and commercial scale. The market size of specialty printer by production value increased from US$1.7 billion in 2018 to US$2.0 billion in 2023, at a CAGR of 3.3%. The market size of scale by production value recorded the growth from US$2.5 billion in 2018 to US$2.9 billion in 2023, at a CAGR of 3.0%.
- As specialty printers and scales are more often durable and have longer lifespans than PDAs and POS terminals, their replacement cycles are slower. Specialty printers and scales would only be upgraded if there is a significant improvement in functionality or a critical need for replacement, which lead to a slower growth rate of specialty printers and scale than PDAs and POS terminals. Advancements in printing technology, such as the development of thermal and inkjet printing and increasing use of online ordering and delivery would continue to serve as the driver to the market. The market size of specialty printer by production value is expected to reach US$2.6 billion in 2028, at a CAGR of 4.3% from 2024 to 2028. Innovations in automation, AI, and data analytics enhance operational efficiency and productivity of commercial scale. The market size of scale by production value is expected to rise at a CAGR of 3.1% from 2024 to 2029.

Note: Market size is derived basis (i) global export volume of retail devices, sourced from trade map (ii) the weighted average price, the penetration rate and the replacement cycle of various AIDC Devices in historical period, sourced from trade interviews and desk research on respective merchandises on e-commerce platform, and (iii) referenced, complied and cross-checking of information from other notable research agencies, e.g. Statista.

The market size include all application industries including but not limited to retail, educational, manufacturing, logistics and warehousing, healthcare, accommodation and catering etc

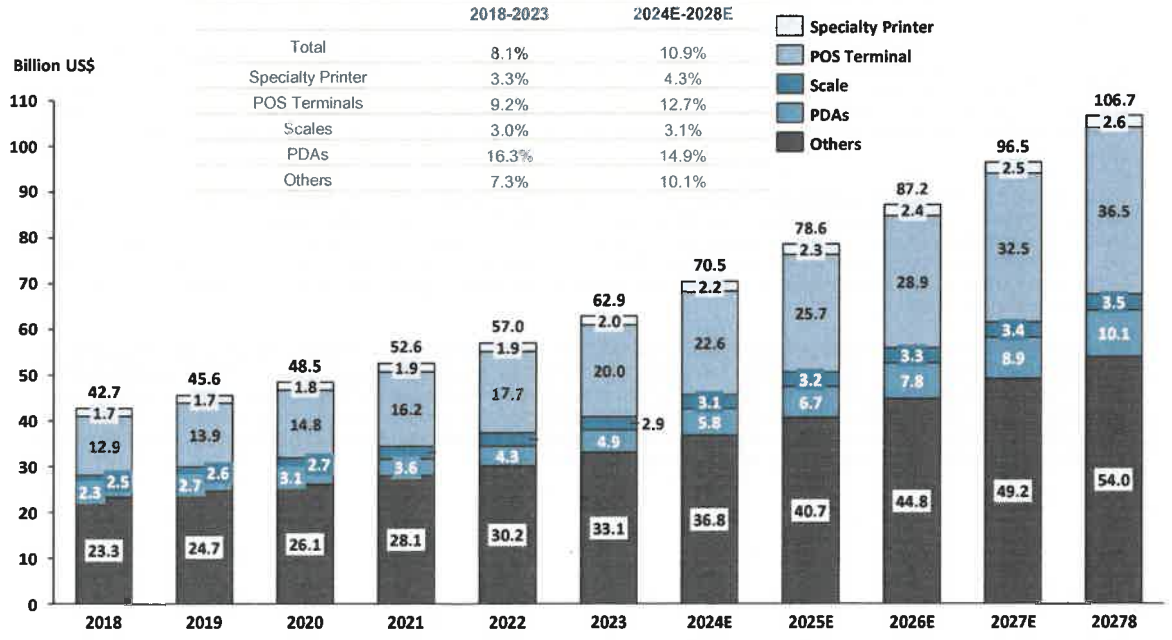
Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market size of Global AIDC Devices by Production Value (Cont'd)

Market Size of AIDC Devices by Production Value (Global), 2018-2028E

	2018-2023	2024E-2028E
Total	8.1%	10.9%
Specialty Printer	3.3%	4.3%
POS Terminals	9.2%	12.7%
Scales	3.0%	3.1%
PDAs	16.3%	14.9%
Others	7.3%	10.1%



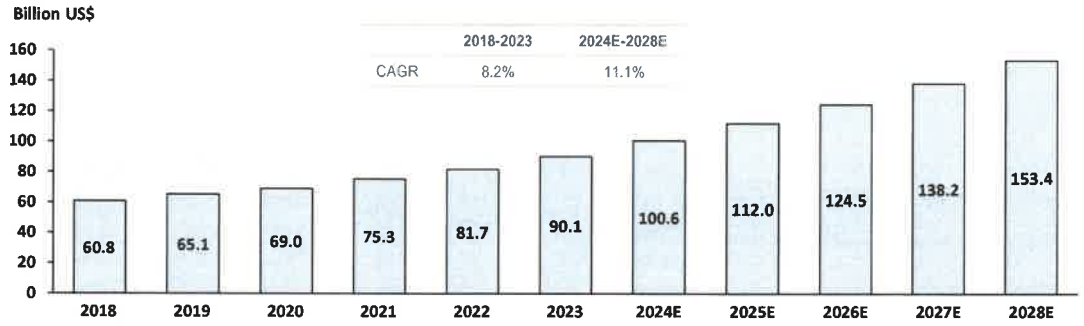
Source: IMF, Trade Map, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market size of Global AIDC Devices and Solutions by Sales Value

- The market size of global AIDC devices and solutions by sales value increased from approximately US$60.8 billion in 2018 to approximately US$90.1 billion in 2023, at a CAGR of 8.2%. The market growth drivers include increase in demand for efficient automated retail solutions and the reduction of operation cost, as well as the increasing establishment of smart warehouses. With the recovery of global economic and sustained technology innovations, the market size of global AIDC devices and solutions by sales value is expected to reach approximately US$153.4 billion in 2028, at a CAGR of 11.1%.

Market Size of AIDC Devices and Solutions by Sales Value (Global), 2018-2028E



Note: Market size is derived basis (i) global export volume of retail devices, sourced from trade map (ii) the weighted average price, the penetration rate and the replacement cycle of various AIDC Devices in historical period, sourced from trade interviews and desk research on respective merchandises on e-commerce platform, and (iii) referenced, complied and cross-checking of information from other notable research agencies, e.g. Statista.
The market size include all application industries including but not limited to retail, educational, manufacturing, logistics and warehousing, healthcare, accommodation and catering etc

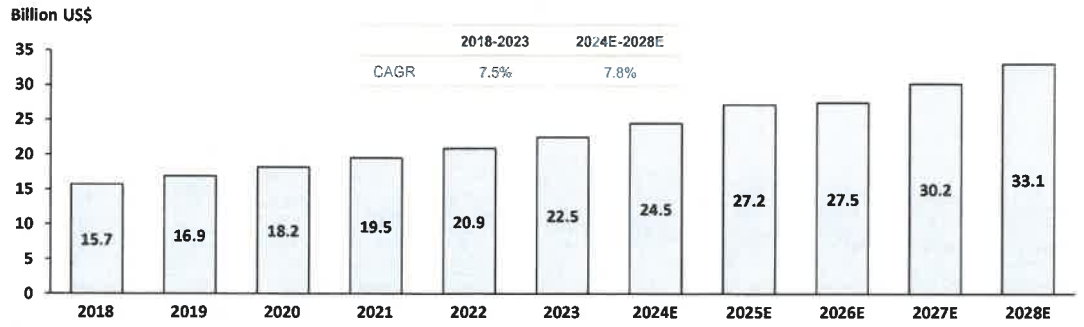
Source: Trade Map, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market size of Global AIDC Devices and Solutions by Sales Value in United States

- The market size of AIDC devices and solutions by sales value in United States increased from US$15.7 billion in 2018 to US$22.5 billion in 2023, at a CAGR of 7.5%. The AIDC devices and solutions market in the United States is rapidly expanding, driven by the increasing demand for automation and efficiency across various sectors, including retail, logistics, healthcare, and manufacturing. Technological advancements in RFID, barcode scanning, and data collection by mobile are also enhancing the effectiveness of AIDC devices and solutions, enabling real-time tracking and inventory management. The rise of e-commerce has further accelerated the adoption of AIDC technologies to streamline operations and improve customer service. The overall market outlook remains positive, with ongoing innovation and investment poised to drive significant growth in the coming years. The market size of AIDC devices and solutions by sales value in United States is expected to rise at a CAGR of 7.8% from 2024 to 2028.

Market Size of AIDC Devices and Solutions by Sales Value (United States), 2018-2028E



Note: Market size is derived basis (i) global export volume of retail devices, sourced from trade map (ii) the weighted average price, the penetration rate and the replacement cycle of various AIDC Devices in historical period, sourced from trade interviews and desk research on respective merchandises on e-commerce platform, and (iii) referenced, complied and cross-checking of information from other notable research agencies, e.g. Statista.
The market size include all application industries including but not limited to retail, educational, manufacturing, logistics and warehousing, healthcare, accommodation and catering etc

Source: Trade Map, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market size of Global AIDC Devices and Solutions by Sales Value in Germany

- The AIDC devices and solutions market in Germany witnessed steady growth from US$3,080.0 million in 2018 to US$4,505.0 million in 2023 at a CAGR of 7.9%, driven by the rising demand for optimised supply chains and regulatory compliance is propelling the adoption of AIDC technologies. The AIDC devices and solutions market in Germany is poised for further expansion as businesses continue to seek innovative solutions to improve productivity and accuracy. The market is expected to rise at a CAGR of 10.8% from 2024 to 2028, reaching US$7,670.0 million in 2028.

Market Size of AIDC Devices and Solutions by Sales Value (Germany), 2018-2028E

Note: Market size is derived basis (i) global export volume of retail devices, sourced from trade map (ii) the weighted average price, the penetration rate and the replacement cycle of various AIDC Devices in historical period, sourced from trade interviews and desk research on respective merchandises on e-commerce platform, and (iii) referenced, complied and cross-checking of information from other notable research agencies, e.g. Statista.
The market size include all application industries including but not limited to retail, educational, manufacturing, logistics and warehousing, healthcare, accommodation and catering etc

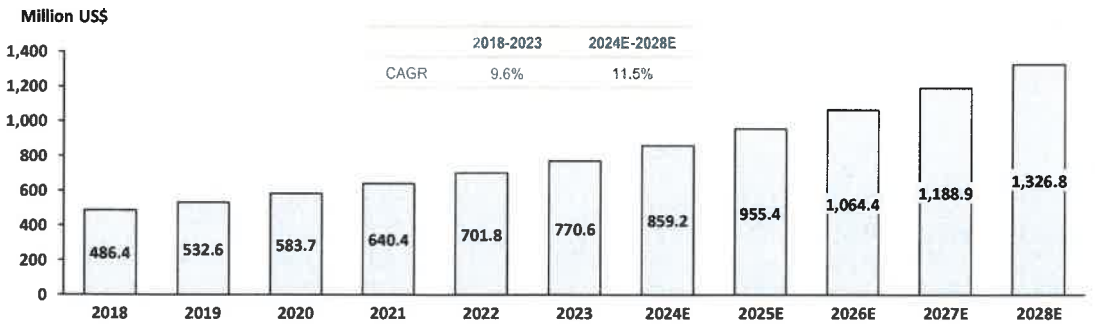
Source: Trade Map. Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market size of Global AIDC Devices and Solutions by Sales Value in Singapore

- The AIDC devices and solutions market in Singapore experienced a rapid growth from US$486.4 million in 2018 to US$770.6 million in 2023, fueled by the country's strategic emphasis on technology adoption and innovation under initiatives, namely the Smart Nation programme. The rapid expansion of e-commerce further drives demand for efficient inventory management and order fulfilment solutions, while advancements in technologies like RFID and mobile scanning make AIDC systems more user-friendly. The AIDC devices and solutions market in Singapore is forecasted to rise at a CAGR of 11.5% from 2024 to 2028.

Market Size of AIDC Devices and Solutions by Sales Value (Singapore), 2018-2028E



Note: Market size is derived basis (i) global export volume of retail devices, sourced from trade map (ii) the weighted average price, the penetration rate and the replacement cycle of various AIDC Devices in historical period, sourced from trade interviews and desk research on respective merchandises on e-commerce platform, and (iii) referenced, complied and cross-checking of information from other notable research agencies, e.g. Statista.
The market size include all application industries including but not limited to retail, educational, manufacturing, logistics and warehousing, healthcare, accommodation and catering etc

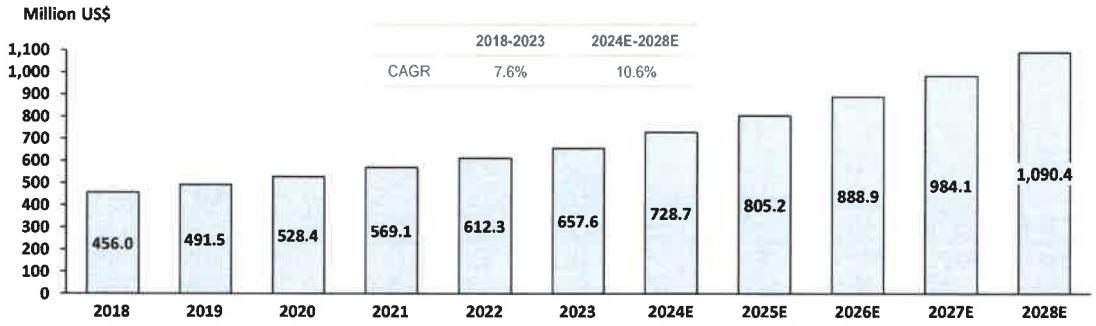
Source: Trade Map. Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market size of Global AIDC Devices and Solutions by Sales Value in United Arab Emirates

- The AIDC devices and solutions market in the United Arab Emirates increased from US$456.0 million in 2018 to US$657.6 million in 2023, driven by the government's commitment to digital transformation and smart technology initiatives, such as UAE Vision 2021 and Smart Dubai. Advancements in RFID, barcode scanning, and mobile data capture technologies are making AIDC systems increasingly accessible. Overall, the AIDC devices and solutions market in United Arab Emirates is set for continued growth and rise at a CAGR of 10.6% from 2024 to 2028 as businesses embrace automation and real-time data capabilities.

Market Size of AIDC Devices and Solutions by Sales Value (United Arab Emirates), 2018-2028E



Note: Market size is derived basis (i) global export volume of retail devices, sourced from trade map (ii) the weighted average price, the penetration rate and the replacement cycle of various AIDC Devices in historical period, sourced from trade interviews and desk research on respective merchandises on e-commerce platform, and (iii) referenced, complied and cross-checking of information from other notable research agencies, e.g. Statista.
The market size include all application industries including but not limited to retail, educational, manufacturing, logistics and warehousing, healthcare, accommodation and catering etc

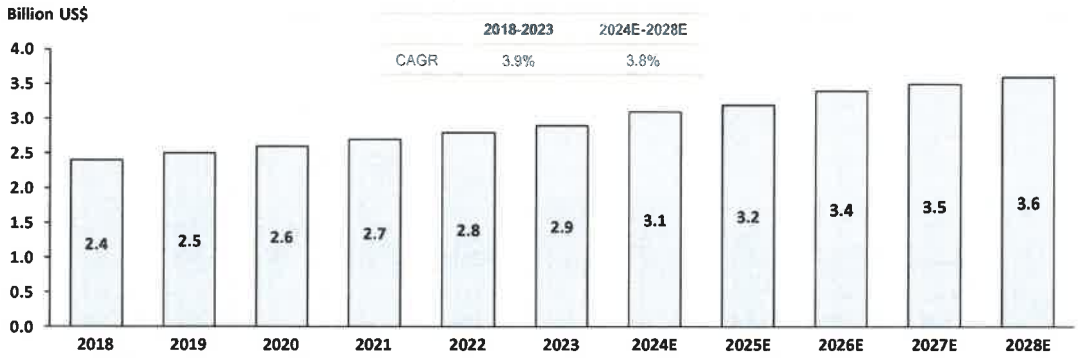
Source: Trade Map, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market size of Global Specialty Printer by Sales Value

- The market size of global specialty printers by sales value increased from US$2.4 billion in HKEX-3Q6(i) 2018 to US$2.9 billion in 2023, representing a CAGR of 3.9%, primarily supported by growing demand from downstream industries, including retail, hospitality, healthcare, banking and entertainment. The increasing adoption of mobile payment systems and the need for efficient and reliable printing solutions in the retail, food and beverage, accommodation, travel and tourism and entertainment and recreation industries have contributed to the growth of the global specialty printer market. With the sustained growth of the retail industry, the market size of global specialty printers by sales value is expected to grow at a CAGR of 3.8% from 2024 to 2028.

Market Size of Specialty Printer by Sales Value (Global), 2018-2028E



Note: Market size is derived basis (i) global export volume of specialty printer, sourced from trade map (ii) the weighted average price, the penetration rate and the replacement cycle of various AIDC Devices in historical period, sourced from trade interviews and desk research on respective merchandises on e-commerce platform, and (iii) referenced, complied and cross-checking of information from other notable research agencies, e.g. Statista.
The market size include all application industries including but not limited to retail, educational, manufacturing, logistics and warehousing, healthcare, accommodation and catering etc

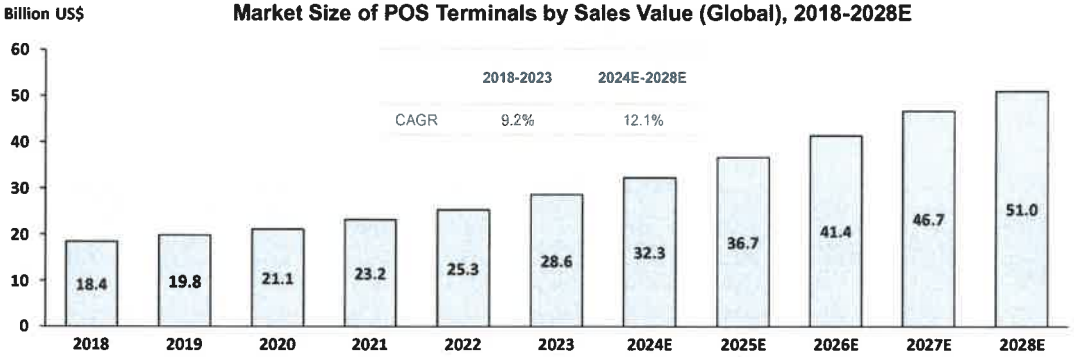
Source: Trade Map, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market size of Global POS Terminals by Sales Value

- The retail sector is a major user of POS terminals and the demand for these terminals are correlated to the growth of the retail industry. The shift from cash to digital payments, including credit/debit cards, mobile wallets, and contactless payments serve as a driver to the growth of POS terminals. The market size of POS terminals by sales value increased from US$18.4 billion in 2018 to US$28.6 billion in 2023, at a CAGR of 9.2%.
- Advancements in payment technology, such as the development of contactless payment systems, are driving the demand for POS terminals that can accept a variety of payment methods, which increases the efficiency and speed of transactions, and improve the customer experience In addition, cloud-based POS solutions, the system that allows businesses to process sales transactions over the internet rather than relying on traditional, on-premises hardware, are becoming more popular, as they offer greater flexibility, scalability, and cost-efficiency than traditional on-premise systems. The market size of POS terminals by sales value is expected to be US$51.0 billion in 2028, at a CAGR of 12.1% from 2024 to 2028.

Market Size of POS Terminals by Sales Value (Global), 2018-2028E



Note: Market size is derived basis (i) global export volume of POS terminals, sourced from trade map (ii) the weighted average price, the penetration rate and the replacement cycle of various AIDC Devices in historical period, sourced from trade interviews and desk research on respective merchandises on e-commerce platform, and (iii) referenced, complied and cross-checking of information from other notable research agencies, e.g. Statista.

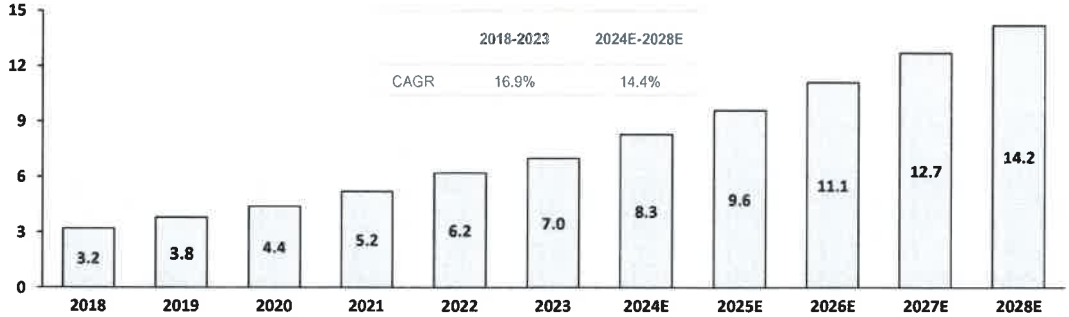
Source: Trade Map, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market size of Global PDAs by Sales Value

- The global market size of PDAs by sales value recorded the increase from US$3.2 billion in 2018 to US$7.0 billion in 2023, representing a CAGR of 16.9%. The growing adoption of smartphones, tablets, and wearable devices is driving demand for PDAs by creating a need for seamless integration and hands-free assistance. As users increasingly expect instant access to information and tools on the go, PDAs that offer real-time updates, voice activation, and personalised features become essential for enhancing productivity. This normalisation of digital assistance aligns with the mobile lifestyles of users, making PDAs indispensable for both personal and professional tasks. In particular, retailers strive to provide an enhanced customer experience, and PDAs play a crucial role in achieving this goal. PDAs equipped with features like barcode scanning, inventory management, and product information enable store associates to provide real-time assistance to customers, improving their shopping experience. PDAs also help reduce human error by providing automated reminders for tasks and deadlines, validating data entry to catch mistakes, and streamlining processes to ensure users follow structured workflows. The global market size of PDAs by sales value is expected to rise at a CAGR of 14.4% from 2024 to 2028.

Market Size of PDAs by Sales Value (Global), 2018-2028E



Note: Market size is derived basis (i) global export volume of POS terminals, sourced from trade map (ii) the weighted average price, the penetration rate and the replacement cycle of various AIDC Devices in historical period, sourced from trade interviews and desk research on respective merchandises on e-commerce platform, and (iii) referenced, complied and cross-checking of information from other notable research agencies, e.g. Statista.

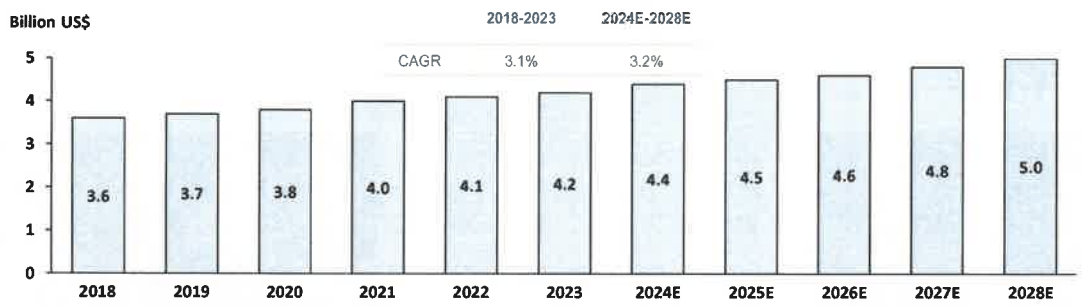
Source: Trade Map, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market size of Scales by Sales Value

- With precision and accuracy becoming increasingly important in a range of industries, including retail, food and beverage, and manufacturing, scales manufacturers continue to develop advanced solutions to deliver enhanced precision and accuracy, which drives the growth in the weighing scales industry. The market of scales by sales value increased from US$3.6 billion in 2018 to US$4.2 billion in 2023, at a CAGR of 3.1%.
- Advancements in technology, such as the development of digital weighing scales that provide precise measurements with high-resolution displays and load cells, are enabling scales manufacturers to produce more advanced and efficient solutions. Load cells are critical components in weighing scales, converting mechanical force into an electrical signal for accurate measurement, and are used to measure batch ingredients in production processes and monitor weight on conveyors and track inventory. Benefited from the growth of the downstream industries, namely the retail industry, the market size of scales by sales value is expected to increase from US$4.4 billion in 2024 to US$5.0 billion in 2028, at a CAGR of 3.2%.

Market Size of Scales by Sales Value (Global), 2018-2028E



Note: Market size is derived basis (i) global export volume of weighing machine, sourced from trade map (ii) the weighted average price, the penetration rate and the replacement cycle of various AIDC Devices in historical period, sourced from trade interviews and desk research on respective merchandises on e-commerce platform, and (iii) referenced, complied and cross-checking of information from other notable research agencies, e.g. Statista.
Only commercial scaless are included in the market size.

Source: Trade Map, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Global Market Drivers

Increase in demand for efficient automated retail solutions

There has been a significant increase in demand for efficient automated retail solutions in recent years, driven by the growing popularity of online shopping and the need for retailers to streamline operations and reduce costs. AIDC Devices and solutions, such as vending machines, kiosks, and self-checkout systems are becoming increasingly common in a variety of retail stores. These solutions offer a number of benefits, including increased efficiency, reduced labor costs, and improved customer convenience. In addition to traditional automated retail solutions, new technologies such as artificial intelligence and machine learning are being incorporated with AIDC Devices and solutions to create more advanced solutions that can tailor the shopping experience to each individual customer. This includes personalised recommendations, targeted advertising, and consumption pattern prediction. Overall, the demand for efficient automated retail solutions is likely to continue to grow, which in turn drive AIDC Devices and solutions.

Reduction of operation cost

AIDC Devices and solutions can significantly reduce operation costs for retailers. By automating the operation processes, retailers can save on labor costs and improve efficiency, resulting in increased profitability. For example, self-checkout systems equipped with smart POS terminalss reduce the need for cashiers, which can save retailers a significant amount of money in labor costs. Additionally, retailers can use data from automated retail devices, such as specialty printer and POS terminalss, to optimize inventory levels and reduce waste. Overall, the reduction of operation cost is one of the key benefits of AIDC Devices and solutions for retailers. By implementing these solutions, retailers can improve profitability and remain competitive in a constantly evolving retail landscape.

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Global Market Drivers

Increasing establishment of smart warehouses

Smart warehouses are becoming increasingly popular in the retail industry. These warehouses use advanced technologies such as automation, robotics, and Internet of Things (IoT) sensors to improve operational efficiency, reduce costs, and enhance inventory management. These technologies automate the tasks such as picking and packing, inventory management, and shipping, which can significantly reduce labor costs and improve efficiency. The use of sensors can track the location of products and monitor their condition, which can help retailers to identify potential issues such as expired or damaged products while the data collected help retailers to reduce transportation costs by optimizing shipping routes and reducing the need for multiple trips. Therefore, the increasing establishment of smart warehouses is a positive development for the retail industry and creates the needs for AIDC Devices and solutions market.

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Outlook of Global Specialty Printer

- One of the key drivers of the global specialty printer market is the increasing adoption of mobile payment systems. As more consumers use mobile devices to make payments, there is a growing demand for specialty printers that can print receipts for these transactions. Specialty printers are also becoming increasingly important in the hospitality industry, where they are used to print receipts for orders placed through mobile devices.
- Another driver of the global specialty printer market is the growth of the e-commerce industry. As e-commerce continues to grow, more and more customers are placing orders online. These orders need to be tracked and fulfilled, which often involves printing out receipts that can be included with the order. The receipts and labels are printed and attached to the order and used to track its progress. This is driving the demand for receipt printers that can produce high-quality, detailed prints quickly and efficiently.
- Finally, the need for efficient and reliable printing solutions in the retail and hospitality sectors is also driving the global specialty printer market as specialty printers are used extensively in these industries to print receipts for transactions.

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Outlook of Specialty Printer in Education Industry in the PRC

- Specialty printers, including 3D printers, large-format printers and mobile printers, are gaining popularity in China's education industry. These printers enable the creation of physical models and prototypes, as well as the printing of large-scales graphics and diagrams.
- 3D printers are particularly favored in education as they allow students to create three-dimensional models of complex concepts, providing a better understanding of challenging topics. They can also be used to produce physical prototypes for engineering and design projects, affording students an opportunity to experience the entire design and production process. Large-format printers are commonly used in classrooms and lecture halls to create visual aids, such as maps, charts, and posters that enhance students' comprehension and retention of information.
- Mobile printers are increasingly being used in the education sector, as they offer a versatile and convenient way to print documents, assignments, and other materials on-the-go. These printers can be easily transported and used in various settings, such as classrooms, libraries, and study halls. One of the main advantages of mobile printers is that they can enable students and teachers to print documents from their mobile devices, such as smartphones and tablets. This can be particularly useful in situations where access to traditional printing equipment is limited or not available. Portable Student Printer("错题机"), a type of mobile printer is increasingly prevailing among students in China for learning and reviewing mistakes, leveraging its capability in storing and printing mini test paper. Parents, teachers and students see these devices as useful tools to improve test performance. Mobile printers are also useful for printing materials during field trips or outdoor activities, where traditional printing equipment may not be feasible or practical. They can also be used for printing on-the-spot educational materials, such as maps, diagrams, and charts, which can enhance students' learning experiences. Besides, receipt printers, barcode printers and label printers have several useful applications in the educational sector, namely issuing student IDs, scheduling and exam papers, library management, fees and invoice printing.
- As educators continue to prioritize STEM (science, technology, engineering, and mathematics) education and demand more advanced teaching tools, the use of specialty printers in the PRC education industry is predicted to further increase. As such, specialty printers are poised to become an increasingly integral tool in enhancing students' learning experiences.

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Outlook of Global POS Terminals

- The demand for POS terminalss that support contactless payments has increased due to the COVID-19 pandemic, which has accelerated the adoption of such payment options. This trend is expected to persist even after the pandemic has subsided, as consumers have become accustomed to the convenience and safety of contactless payments. Furthermore, the growth of the e-commerce industry has also contributed to the expansion of the POS terminals market, as retailers seek to integrate their online and offline sales channels, with POS systems serving as a crucial tool for this purpose.
- The Asia-Pacific region is projected to witness the greatest growth in the POS terminals market, mainly driven by the adoption of POS systems in emerging economies like China and India. North America and Europe are also expected to remain significant markets for POS terminalss, fueled by the rising use of contactless payments and the growth of the e-commerce industry.

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Outlook of Global Scales

- The global scales market is expected to be bolstered by several factors, including the food and beverage industry, which is a major user of scales and is projected to continue driving market growth. Additionally, the pharmaceutical industry is anticipated to contribute to the expansion of the market due to the increasing demand for precise weighing solutions in pharmaceutical manufacturing.
- The market is also expected to benefit from technological advancements, such as wireless weighing technology and the integration of IoT and AI technologies. These advancements have resulted in the development of more efficient and accurate weighing solutions that can boost productivity and cut costs for businesses.
- Moreover, the trend towards automation and digitalisation is expected to propel the growth of the scales market, as businesses seek automated weighing solutions that can integrate with other systems and provide real-time data, which can improve efficiency and reduce costs.

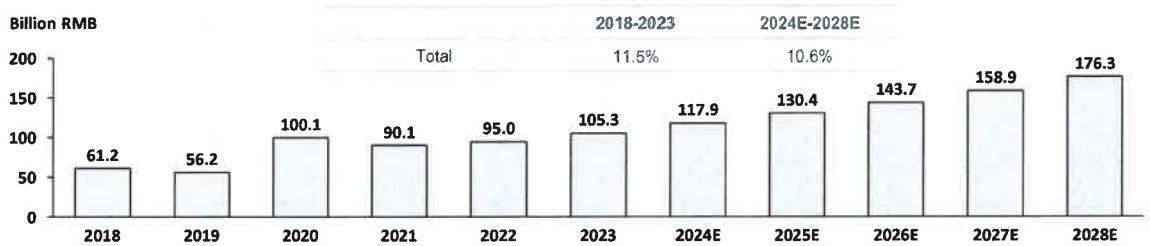
Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Size of AIDC Devices and Solutions in the PRC by Sales Value

- The market size of retail AIDC devices and solutions by sales value represents the aggregated market size of (i) specialty printer, which includes receipt printer and barcode and label printer, (ii) POS terminals, (iii) PDAs, (iv) weighing apparatus. Over the past five years, the market size has climbed steadily from RMB61.2 billion in 2018 to RMB105.3 billion in 2023, representing a CAGR of approximately 11.5%. The surging amount of consumers adopting mobile and contactless payment options contributes to the continuous growth, while the rise of e-commerce has increased the need for particularly barcode label printers to generate shipping labels and track inventory, as well as weighing apparatus for the precise measurement to determine the pricing mechanism behind. Benefitted by the robust local consumption and retail sales, coupled the considerable demand from logistics and warehousing, as well as the increasing adoption of automation and digitalisation during the manufacturing of smart retail devices which lead to greater output and better quality, the market size by sales value is expected to attain RMB176.3 billion in 2028, representing a CAGR of 10.6% during 2024 to 2028.

Market Size of AIDC Devices and Solutions by Sales Value (The PRC), 2018-2028E



Note: Market size is derived basis (i) the existing number of and yearly increment of establishments in applicable industries that adopts AIDC Devices and solutions, sourced from National Bureau of Statistics of China (ii) the weighted average price, the penetration rate and the replacement cycle of various AIDC Devices in historical period, sourced from trade interviews and desk research on respective merchandises on e-commerce platform, and (iii) referenced, complied and cross-checking of information from other notable research agencies, e.g. shipment figures of POS terminals from People's Bank of China, shipment figures of printers from IDC and others

The market size include all application industries including but not limited to retail, educational, manufacturing, logistics and warehousing, healthcare, accommodation and catering etc

Source: National Bureau of Statistics of China, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Size of AIDC Devices in the PRC by Production Value

- In line with the market size by retail value, the aggregated market size of AIDC Devices by production value in the PRC has risen from RMB46.2 billion in 2018 to RMB76.6 billion in 2023, representing a CAGR of approximately 10.6% during 2018 to 2023. The fluctuation in the market size of AIDC devices by production value in recent years can be attributed to the significant growth in the adoption and deployment of POS terminals that connect multiple components, devices, and platforms to create an integrated retail or payment ecosystem in the PRC. The surge, coupled with the growth in shipments of POS, which increased from RMB11.6 million in 2019 to RMB15.0 million in 2020, drove a notable boost in the AIDC device market in 2020. However, the market stabilised in 2021 and 2022 as the number of such POS terminals remained flat during these years, reflecting a temporary plateau in growth, which was due to the strong uptake of new POS terminals in 2020, satisfying near-term demand, and thereby leading to fewer businesses requiring new terminals following the significant expansion in prior years. Additionally, business owners were able to enhance their existing payment systems with new features or functionalities through software updates, rather than purchasing new POS terminals, further contributing to the stabilisation in shipments. Additionally, other AIDC devices benefited from the rapid growth of e-commerce and online shopping during the pandemic, with gross merchandise value of e-commerce increased at a year-on-year rate of 6.9% and 13.7% in 2020 and 2021, respectively. The COVID-19 pandemic significantly increased online shopping and drove demand for AIDC devices as barcode scanners and RFID tags are widely used for managing the surge in online orders, inventory tracking, and logistics. The demand for barcode readers and vehicle mount terminals increased due to the need for efficient inventory management and logistics optimisation in warehouses and distribution centres. Meanwhile, access control systems experienced growth as contactless solutions and real-time inventory tracking became essential in workplaces and healthcare settings.
- The discrepancy in production value and retail value over years are characterised by the degree of involvement of intermediaries including wholesalers and distributors, as well as the premium charged by wholesalers and distributors to clients. Going forward, it is expected that the aggregated market size of AIDC Devices by production value in the PRC will grow steadily at a CAGR of 9.7% during 2024 to 2028, attributable to the continuous downstream demand and developed supply chain in the PRC which contribute to a stable supply of AIDC devices. The slower forecasted CAGR is closely linked to the deceleration of related markets, such as e-commerce, which is expected to grow at a reduced CAGR of 11.6% during 2024 to 2028, as compared to 18.9% during 2018 to 2023, suggesting that the rapid growth experienced during the earlier period, driven by the pandemic-fueled surge in online shopping and logistics, is stabilising as the market matures. Additionally, fewer businesses are expected to upgrade their specialty printers in the coming years, as many of them already made significant upgrades between 2020 and 2022. During this period, the demand for specialty printers was driven by the adoption of advanced features, including enhanced printing speed, higher resolution capabilities, and improved connectivity options such as Wi-Fi and Bluetooth integration. Businesses also sought printers that supported multi-functional operations, such as printing, scanning, and labelling, to streamline their workflows. There was a notable pattern of upgrades among industries such as retail, logistics and warehousing, where high-capacity and durable specialty printers were adopted to accommodate the surge in e-commerce activities during and following the COVID-19 pandemic. Moreover, many businesses upgraded to specialty printers compatible with cloud-based software for real-time tracking and inventory management, ensuring seamless integration with their existing digital ecosystems. Such wave of upgrades was particularly prominent in urban areas and among large-scale enterprises, which were early adopters of these advanced technologies. As a result, the current market reflects a level of maturity, with fewer businesses requiring immediate upgrades in the near term. However, sectors like manufacturing and healthcare are expected to sustain demand, ensuring that the market remains on a stable upward trajectory despite the slower growth rate. In manufacturing sector, specialty printers are essential for labelling, traceability, and compliance, particularly in industries like automotive, electronics, and food production. The shift toward customised and small-batch production further drives demand for adaptable, on-demand printing solutions. In healthcare sector, specialty printers facilitate operation of medical institutions through accurate labelling of wristbands, prescriptions, and medical records while supporting regulatory compliance. The expansion of diagnostic labs and testing facilities has also fueled demand for precise labelling solutions. Sustainability initiatives, such as ecofriendly materials, also contribute to their growing relevance.

Note: Market size is derived basis (i) the market size of retail sales value of AIDC Devices and solutions, in accordance with the methodology set out in previous slides; and (ii) trade interview with industry experts in regard to the sales channel of AIDC devices, considering there are some products sold through direct sales model, while some are through intermediaries, it is concluded that the proportion of retail sales value to ex-factory sales value has been rising gradually in recent years, attributable to steadily grow of wholesalers and distributors, and premium charged by wholesalers and distributors to clients.
The market size include all application industries including but not limited to retail, educational, manufacturing, logistics and warehousing, healthcare, accommodation and catering etc

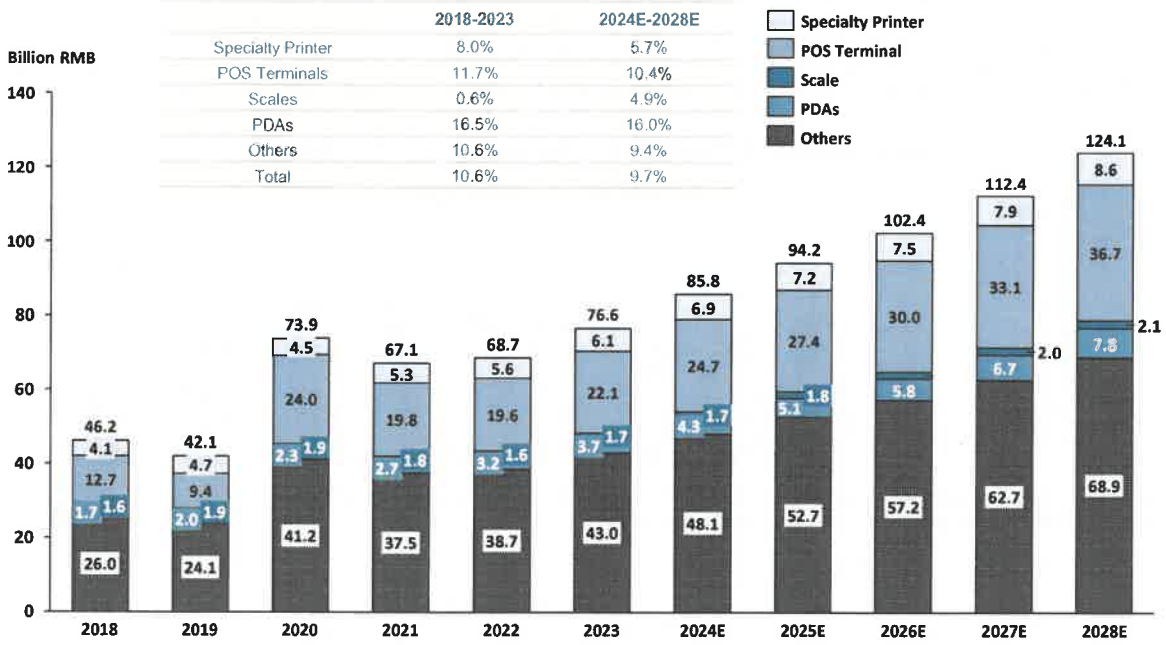
Source: People's Bank of China, Payment & Clearing Association of China, China Weighing Instrument Association, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Size of AIDC Devices in the PRC by Production Value

Market Size of AIDC Devices by Production Value (The PRC), 2018-2028E

	2018-2023	2024E-2028E
Specialty Printer	8.0%	5.7%
POS Terminals	11.7%	10.4%
Scales	0.6%	4.9%
PDAs	16.5%	16.0%
Others	10.6%	9.4%
Total	10.6%	9.7%



Source: People's Bank of China, Payment & Clearing Association of China, China Weighing Instrument Association, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Size of Specialty Printer and Solutions in the PRC by Sales Value

- The market growth of the specialty printer and solution market is highly associated with the growing disposable income and hence the retail sales in the PRC, the continuous adoption and penetration of specialty printers owing to thriving urbanisation and digitalisation, informalisation of retail stores, as well as the development of the logistics and warehousing industry and educational industry where receipt, barcode and label printing is required. The market size of specialty printer and solutions by sales value has grown from approximately RMB5.5 billion in 2018 to approximately RMB8.4 billion in 2023, representing a CAGR of approximately 8.8%. In 2020 particularly, the market size by sales value slightly declined due to the slight downturn of number of establishment in key industries, as well as the outbreak of the COVID-19 which led to reduced consumption in brick and mortar store and temporary stagnation in regard to logistics and warehousing services across the nation. Going forward, with the growing development of new retail, which converges digital and offline consumption experiences, the market size of specialty printer and solutions by sales value is expected to grow from approximately RMB9.4 billion in 2024 to approximately RMB12.2 billion in 2028, representing a CAGR of approximately 6.6% during 2024 to 2028.

Market Size of Specialty Printer and Solutions by Sales Value (The PRC), 2018-2028E

Note: Market size is derived basis (i) the existing number of and yearly increment of establishments in applicable industries that adopts AIDC Devices and solutions, sourced from National Bureau of Statistics of China (ii) the weighted average price, the penetration rate and the replacement cycle of various AIDC Devices in historical period, sourced from trade interviews and desk research on respective merchandises on e-commerce platform, and (iii) referenced, complied and cross-checking of information from other notable research agencies, e.g. shipment figures of POS terminals from People's Bank of China, shipment figures of printers from IDC and others
The market size include all application industries including but not limited to retail, educational, manufacturing, logistics and warehousing, healthcare, accommodation and catering etc

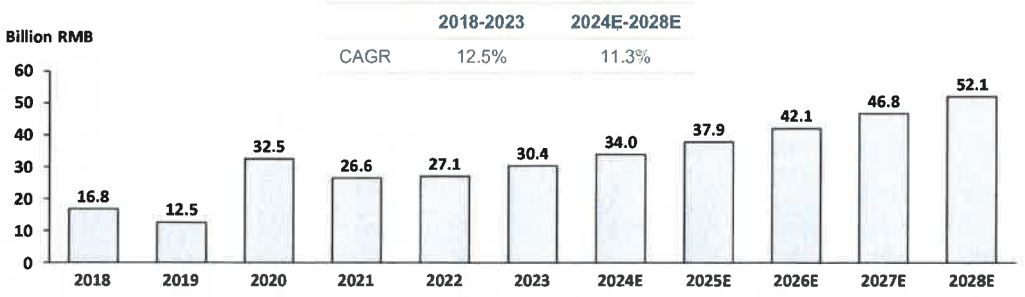
Source: National Bureau of Statistics of China, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Size of POS Terminals and Solutions in the PRC by Sales Value

- As the retail industry in China continues to expand and the government's push towards a cashless society, coupled with continuous technological development in expedite and convenient transaction through POS terminals, the market size of POS terminal in the PRC by sales value has increased from approximately RMB16.8 billion to approximately RMB30.4 billion during 2018 to 2023, representing a CAGR of approximately 12.5%. With growing urbanisation in the PRC, increasing from 59.6% in 2018 to 66.2% in 2023, and further expected to attain 72.3% in 2028, growing number of retailers are expected to adopt digitalised backend system including POS terminals, CRM and ERP system to manage inventory and transaction data. In turn, the market size of POS terminal in the PRC by sales value is expected to reach approximately RMB52.1 billion in 2028, representing a CAGR of approximately 11.3% during 2024 to 2028.

Market Size of POS Terminals by Sales Value (The PRC), 2018-2028E



Note: Market size is derived basis (i) 2022年支付体系运行总体情况 published by the People's Bank of China; (ii) 智能POS機出貨量 from online report; (iii) trade interviews and desk research on forecasted growth rate

Source: People's Bank of China, Payment & Clearing Association of China, National Bureau of Statistics of China, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Size of Scales in the PRC by Sales Value

The market size of scales in the PRC has demonstrated steady growth, expanding from RMB2.2 billion in 2018 to RMB2.3 billion in 2023, representing a CAGR of approximately 1.4%. Despite temporary challenges from COVID-19 in 2020, the industry showed remarkable resilience. The industry's essential role in product packaging and retail pricing helped maintain demand, which is propelled by the continuous growth in the e-commerce sector and logistics industry in recent years. The sector's stability was further supported by the rapid digitalisation of commercial operations which integrates digital technologies such as Internet of Things (IoT), AI, big data and 5G to enhance efficiency in processing digital information in business operations, services and consumer experiences. This has led to the growing adoption of digital weighing solutions, such as AI scales that are capable of efficient capture of weight data and transmission of data to POS systems for faster and accurate printing of price labels. Looking ahead, by optimising supply chains and adapting to the new normal, the industry is expected to regain its momentum. Consequently, the market size by sales value is forecasted to rise to RMB3.0 billion by 2028, signalling a recovery with a CAGR of approximately 5.7% from the post-pandemic period onwards.

Market Size of Scales by Sales Value (The PRC), 2018-2028E

Note: Market size is derived basis (i) China Weighing Instrument Industry Yearbook (中国衡器工业年鉴); (ii) referenced export value derived from Trade Map; (iii) trade interviews and desk research on forecasted growth rate

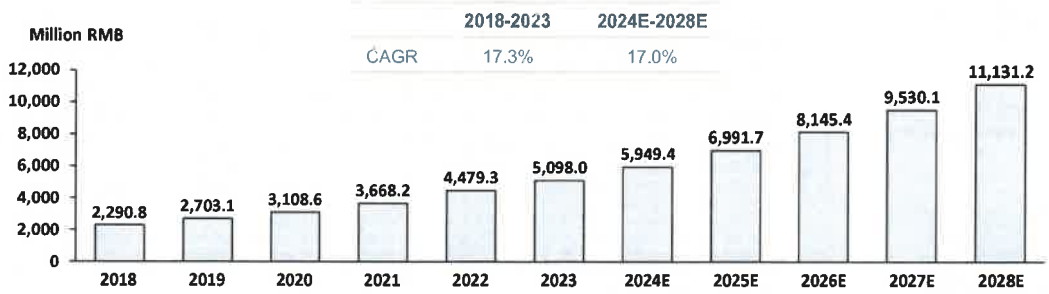
Source: China Weighing Instrument Association, National Bureau of Statistics of China, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Size of PDAs in the PRC by Sales Value

- The market size of PDAs by sales value increased from RMB2,290.8 million in 2018 to RMB5,098.0 million in 2023, at a CAGR of approximately 17.3% from 2018 to 2023. There is a rapid increase in the adoption of PDAs in the retail industry as it offers various advantages, such as enhanced data collection, quick responses, and minimised dependency on customer support. In particular, PDAs provide data on inventory turnover, customer preferences, and sales trends. The market size of PDAs by sales value in the PRC is projected to grow from RMB5,949.4 million in 2024 to RMB11,131.2 million in 2028, exhibiting a CAGR of approximately 17.0% during the forecasted period of 2024 to 2028, primarily driven by the increased adoption of smartphones and the integration of advanced technologies in AIDC systems. The growth of the PDA market is highly associated with the growth of the logistics and warehousing industry as well as manufacturing and retail industry. The expected CAGR shows a slight decrease, which can be attributed to the maturation of digital adoption within these industries, with a significant portion of these sectors will have already integrated digital solutions into their operations, and the market for PDAs will be moving from a phase of high-growth adoption to one of sustained, incremental growth. While the potential for new entrants and the expansion of current users remains, the explosive growth spurred by initial digitalisation is expected to stabilise.

Market Size of PDAs by Sales Value (The PRC), 2018-2028E



Source: National Bureau of Statistics of China, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Drivers

Increase in demand for efficient automated retail solutions

There has been a significant increase in demand for efficient automated retail solutions in recent years, driven by the growing popularity of online shopping and the need for retailers to streamline operations and reduce costs. AIDC Devices and solutions, such as vending machines, kiosks, and self-checkout systems are becoming increasingly common in a variety of retail stores. These solutions offer a number of benefits, including increased efficiency, reduced labour costs, and improved customer convenience. In addition to traditional automated retail solutions, new technologies such as artificial intelligence and machine learning are being incorporated with AIDC Devices and solutions to create more advanced solutions that can tailor the shopping experience to each individual customer. This includes personalised recommendations, targeted advertising, and consumption pattern prediction. Overall, the demand for efficient automated retail solutions is likely to continue to grow, which in turn drive AIDC Devices and solutions.

Reduction of operation cost

AIDC devices and solutions can significantly reduce operation costs for retailers. By automating the operation processes, retailers can save on labour costs and improve efficiency, resulting in increased profitability. For example, self-checkout systems equipped with smart POS terminals reduce the need for cashiers, which can save retailers a significant amount of money in labour costs. Additionally, retailers can use data from automated retail devices, such as specialty printer and POS terminals, to optimise inventory levels and reduce waste. Overall, the reduction of operation cost is one of the key benefits of AIDC devices and solutions for retailers. By implementing these solutions, retailers can improve profitability and remain competitive in a constantly evolving retail landscape.

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Drivers

Increasing establishment of smart manufacturing and warehouses

Smart warehouses are becoming increasingly popular in the retail industry. These warehouses use advanced technologies such as automation, robotics, and Internet of Things ("IoT") sensors to improve operational efficiency, reduce costs, and enhance inventory management. These technologies automate the tasks such as picking and packing, inventory management, and shipping, which can significantly reduce labour costs and improve efficiency. The use of sensors can track the location of products and monitor their condition, which can help retailers to identify potential issues such as expired or damaged products while the data collected help retailers to reduce transportation costs by optimising shipping routes and reducing the need for multiple trips. In 2022, the PRC Government promulgated the Development plan on smart manufacturing ("「十四五」智能製造發展規劃"), which outlined that by 2025, the majority of manufacturing enterprises shall achieve digitalisation, and the key industry players shall gradually integrate artificial intelligence into their production. It involves the concerted effort from the government, R&D companies and academia as well as industry players. Robotics, computer numerical controlled machineries are key technologies adopted by manufacturers of AIDC Devices as part of the strategic development of smart factories, with core benefits of improving production efficiency, ensuring product quality and achieving cost reduction. In addition, the adoption of predictive maintenance technology coupled with enterprise resources planning enabled manufacturers of AIDC Devices to closely monitor the inventory level and utilisation rate in an automatic manner.

Growing retail sales of consumer goods in the PRC

Increasing urbanisation and the growing economy have contributed to the rapid increase in demand for consumer products. Total retail revenue of consumption goods in the PRC rose from approximately RMB37,778.3 billion in 2018 to approximately RMB47.149.5 billion in 2023, representing a CAGR of 4.5%. The average per capita disposable income has surged from approximately RMB28,228 to approximately RMB39,218 during 2018 to 2023, representing a CAGR of approximately 6.8%. The National Development and Reform Commission of the PRC has promulgated The 14th Five-Year Plan Guideline on expanding domestic demand and fostering a sound domestic demand system (「十四五」擴大內需戰略實施方案) which maps out the implementation plan of boosting informatisation, urbanisation and circular consumption and propelling the development of domestic demand within the nation and hence for specialty printer and POS terminal. Particularly for POS terminal, the digitalisation of payment method such as the use of Wechat pay and Alipay in lieu of cash payment serve as a pivotal impetus to the deployment of POS terminal instead of physical cash register. Further, the PRC Government outlined in The 14th Five-Year Plan of National Informalisation Planning (「十四五」國家信息化規劃) regarding the importance of the acceleration of integration of digital technology and various industries, and making mobile payments widely available. The total transaction value of mobile payment in the PRC has risen from approximately RMB277.4 trillion in 2018 to approximately RMB555.3 trillion in 2023, representing a CAGR of approximately 14.9% during the period. Coupled with the evolvement of POS machines in terms of technology adopted behind, consumers and retailers are increasing adopting these machines in light of the affordability and accessibility in any application scenario. In turn, the total retail revenue of consumption goods in the PRC is expected to grow further in the future, which is expected to drive the demand for AIDC Devices in the PRC.

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Drivers

The Pivotal Role of AIDC Technologies in Digitalisation and Data Management in Various Industries

The accelerating drive towards digitalisation and effective data management in the medical sector and various other industries acts as a primary catalyst for the deployment of AIDC devices. Within medical and healthcare industry, the critical requirements for exact patient record-keeping, secure medication dispensing, and adherence to rigorous privacy regulations are driving the integration of specialised printers and PDAs. Similarly, in the hospitality industry, AIDC technologies such as mobile POS systems enable service providers to offer personalised, efficient service directly to guests, improving overall customer satisfaction. Furthermore, the growing field of industry such as event management is leveraging these devices for streamlined registration, attendee tracking, and access control, demonstrating the versatility and expanding utility of AIDC devices across various service-oriented sectors.

Continuous development of the education industry favouring portable study printer

Private education in China is experiencing significant growth, particularly among cram schools, online tutoring, and training institutions. To support this boom, educational companies are investing in high-quality teaching resources and incorporating advanced technologies into their operations. A notable innovation in this sector is the portable study printer, a device that is becoming increasingly relevant to the education industry. The portable study printer, with its compact and portable design, is tailored for educational settings, enabling students to print out study materials and problem sets in real-time and directly from their study spaces or classrooms. It facilitates immediate feedback on their work, allowing them to identify and correct errors on the spot, thereby enhancing their learning experience. The convenience of pocket-sized printers helps students to efficiently review mistakes and solidify their understanding of the subject matter. In turn, the portable study printer is expected to stands out as a practical tool that merges the physical and digital realms of learning, and such segment is poised to grow continuously.

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Market Drivers

Rapid development of the logistics, warehousing and e-commerce industry in the PRC

Specialty printers are widely adopted in the logistics and warehousing industry to print labels, receipts, and other documents related to inventory management. In 2022, the State Council of the PRC outlined the Modern Logistics Development Plan of the 14th Five-Year Plan ("十四五" 現代物流發展規劃), which emphasis the acceleration of the construction of high-end standard warehouses and intelligent three-dimensional warehousing facilities (智能立體倉庫), which are advanced, space-efficient storage systems that utilise vertical space in addition to horizontal space and are characterised by the use of multi-level storage structures and automated systems, such as stacker cranes, conveyors, and automated guided vehicles, to efficiently store and retrieve goods. The initiative also aims to advance the intelligent transformation of logistics and warehousing by leveraging technologies like 5G, Beidou navigation, mobile Internet, big data, and artificial intelligence. In particular, specialty printer helps to streamline the shipping process, track inventory's location and status within the warehouse or logistics facility, ensure precise and timely labelling and delivery, reduce manual errors involved, and ensure the integrity of the product delivered. Besides, scale are essential tools for logistics, warehousing and manufacturing industry to ensure the correct amount of goods are loaded, manage inventory levels, compliant with regulations, enforce quality control as well as determine the pricing scheme to be charged to customers. The logistics and warehousing industry in the PRC is thriving continuously, with the cargo throughput by the transportation means of air and ocean climbing steadily from approximately 51.5 billion tonnes to approximately 55.7 billion tonnes during 2018 to 2023, representing a CAGR of approximately 1.6%. As consumers are seeking faster and more efficient deliveries, major logistics and warehousing operators nowadays are making increasing investments in related specialty printing machines which will likely contribute to more efficient and responsive supply chains and greater productivity to the industry. Accordingly, the demand stem from the rapid development of the logistics and warehousing industry and e-commerce will continue to stimulate the AIDC devices and solutions market.

Source: Frost & Sullivan

Rise of new retail

New retail refers to the integration of online and offline retail channels, as well as the use of advanced technologies such as big data and artificial intelligence to enhance the shopping experience. In 2020, the State Council of the PRC released measures in relation to developing new retail, which involves the improvement of the quality transaction process with innovative contactless model, promoting the integration of online and offline in terms of product delivery and business operation model of traditional services and the encouragement in adopting digital payment. Across the nation, brick-and-mortar stores are integrating digital upgrades such as transforming from cash payments or simple mobile phone POS setup to deploying POS terminal and specialty printers to offer a more convenient and efficient consumer experience and enhance operational productivity. Such demand is particularly seeing exponential growth especially in the second- and third-tier cities. The development of new retail in the PRC, driven by digitalisation, e-commerce growth, and consumer demand for personalisation, has transformed retail into an integrated customer experience. AIDC devices, such as POS terminals and PDAs feed real-time data into analytics systems to enable retailers to tailor promotions, optimise stock, and predict demand. Automation and connectivity of these devices support rapid order fulfillment, inventory updates, and payment processing, meeting the demand for speed and efficiency under the rise of new retail.

Big data analytics

Advanced information technology nowadays are elevating convenience of retailers and the deployment of AIDC devices are conducive to the overall digitisation and centralisation of valuable data. Subsequent to the use of POS terminal, specialty printers and scale, retailers are forming alliance with solution providers to evaluate the backend information of its customer, such as their demographics, locations, purchasing patterns, and preferences with a view to improving decision-making ability of the business. Supported by the backend analytic system such as customer relationship management and enterprise resources management system, businesses can make more informed decisions on which customers to pursue for added revenue, how sales teams are performing, how to service customers efficiently and appropriately. In turn, it is more likely for manufacturers of AIDC devices to offer one-stop services to provide the following analytics solution offerings.

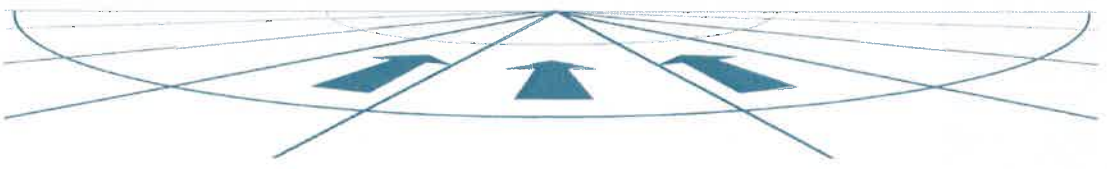
Source: Frost & Sullivan

Growing concerns over sustainability

With the growing concern for the environment, there are multiple eco-friendly related changes witnessed in recent years. For instance, barcode and other related labels are revamped by using sustainable materials that can be easily recycled or reused. Further, as advocated by the PRC government, more businesses are moving towards a circular economy, which implies that the markets would give incentives to reusing products, rather than scrapping them and then extracting new resources. POS receipts and barcode labels are useful tools to be used to track the lifecycle of products and materials, from production to disposal in order to ensure minimal waste. In regard to POS terminal and receipt printer, manufacturers are also targeting to assimilate sustainability by reducing the raw materials used and eliminating toxic substances, optimising the energy efficiency of printers and terminals and the recyclability of materials used.

Shift to 2D Barcodes

Global Standards 1, an organisation which develops and maintains barcode standards which are widely used in the world, is set to implement QR codes at POS systems by the end of 2027, under which the traditional barcodes will be phased out in favour of 2D barcodes (i.e. QR codes). This transition is an answer to supply chain demands and evolving consumer expectations, in which traditional barcodes prove insufficient. Because of this, businesses are turning to innovative technologies like QR codes, utilising their enhanced data capacity, interactive capabilities and robust security features to streamline operations and enhance end-user experience. In turn, the technology transition serve as a growing trend in AIDC market, creating opportunities for manufacturers of AIDC devices who develop AIDC devices that support the use of QR codes.



Source: Frost & Sullivan

Increased competition arising from rapid technological change

The AIDC devices and solutions industry is highlighted by rapid technological innovation, evolving industry standard and changing client requirements. Accordingly, response to rapidly changing technologies and continual improvement of market know-how is the key competition focus. Failure to catch up with industry trends would render the services to be obsolete and uncompetitive. Increased competition is seen in the AIDC devices and solutions industry in the PRC, especially when foreign companies specialised in the production of printers and POS terminals originated from Europe and Japan, including Company A and Company G, are gradually penetrating throughout the PRC market by leveraging their advantages in advanced R&D level, track record, established brand reputation as well as global sales network. The PRC-based players shall keep abreast of the market dynamics and offer customised, localised and specialised services to customer to secure competitive advantages.

Increasing cost of operations and disruption on supply chain

The rising operation costs, including labour cost, R&D cost and rental cost, along with the fierce price competition has added cost burden and affected the profitability of AIDC devices and solutions providers. In particular, the average monthly wage of professional technician in the PRC has increased from approximately RMB7,814.9 to approximately RMB11,173.8 during 2018 to 2023, representing a CAGR of approximately 7.4%. Further, the costs for production of AIDC devices is highly associated with the price of integrated circuit and printer circuit board, and the price of these two raw materials have increased at CAGRs of 10.8% and 1.1% respectively during 2018 to 2023. The disruption in supply chain owing to global events would lead to fluctuation in the price trend, coupled with rising labour cost would collectively adversely impact the cost of operation and delivery timeline of industry players.

Evolving regulatory regime in relation to privacy and data protection

The Personal Information Protection Law was passed by the Standing Committee of the National People's Congress on 20 August 2021 and was effective from 1 November 2021. It requires that the processing of personal information shall abide by the principles of legality, fairness, good faith, minimum necessity, openness and transparency. In the context of receipt, barcode, label printing and POS terminal where personal information might be embedded, businesses must ensure that any personal information collected from customers is collected and stored securely as it may contain sensitive information such as medical records or financial data.

Source: Frost & Sullivan

Integration of advanced technologies such as Artificial Intelligence ("AI") and Internet of Things ("IoT")
The integration of AI into AIDC systems is advancing the capabilities of supply chain management through concrete applications such as smart inventory management. For instance, RFID tags integrated with IoT enable real-time tracking of items across the supply chain, providing precise location data to warehouse management systems. Simultaneously, AI algorithms process this data to predict inventory needs, identify patterns, and optimise stock levels. In retail, this technology allows for innovative solutions like AI-enabled smart shelves that automatically detect when products are running low and need restocking, or when items are incorrectly shelved, prompting immediate corrective actions. The integration of AI and IoT not only streamlines inventory management but also enhances the customer shopping experience by ensuring product availability and enabling efficient store operations. Furthermore, machine learning algorithms can be adopted to continuously improve the accuracy and efficiency of AIDC systems by learning from patterns and making adjustments to operations autonomously. The symbiosis of AIDC with advanced technologies is propelling the automation of supply chain processes to new heights, fostering an era of innovation, precision, and speed in retail, logistics and inventory management.

Enablement of 5G technology improve AIDC efficiency and capability
The advent of 5G technology promises to significantly boost the performance of AIDC devices by offering faster data transfer rates, reduced latency, and increased reliability. The enhancement in connectivity ensures that AIDC devices can operate seamlessly in various environments, from bustling warehouses to remote outdoor locations. Mobile AIDC devices, such as handheld scanners and POS terminals and PDAs, are now being equipped with 5G capabilities, allowing for uninterrupted real-time data communication and access to cloud services, facilitating instant decision-making and streamlines logistics operations by providing workers with the ability to capture and share data on the go. The combination of high-speed connectivity and mobile form factors is transforming AIDC devices into indispensable tools for industries that require robust, always-on data capture solutions.

Source: Frost & Sullivan

Adoption of wearable technology and enhanced user experience
As the market increasingly demands efficiency and ergonomic solutions, wearable AIDC devices such as smart glasses and wrist-mounted scanners, portable PDA are gaining traction. These devices allow workers to interact with data capture systems with more convenience, boosting task efficiency and promoting safer working conditions by enabling them to maintain awareness of their environment. Concurrently, the emphasis on user experience is driving innovation in device interfaces, with the development of more intuitive software and user-centred designs. The focus on ergonomics and ease of use not only mitigates user fatigue but also streamlines the learning curve, enhancing the overall operational workflow.

In the AIDC industry in China, it is common for manufacturers to provide customised and standardised products. The AIDC industry in China is competitive with a large number of manufacturers. The established market participants have extensive manufacturing capabilities and focus on innovation and product development. The Group is positioned as the manufacturer to provide both customised and standardised products in the AIDC industry in China, by placing emphasis on innovation and differentiation, fostering direct customer relationships that provide valuable insights for product development.

By the provision of standardised products, the Group benefits from cost competitiveness due to China's manufacturing capabilities, leveraging economies of scale and lower labour costs. The Group also gains access to advanced technologies, ensuring the incorporation of the latest innovations in AIDC, while taking advantage of efficient supply chain networks for timely production. The flexibility and scalability of production allow the Group to meet varying market demands effectively, enabling companies to focus on their core competencies.

On the other hand, the provision of customised products allows the Group to establish strong brand identities by developing unique products that enhance competitive advantage and capture higher profit margins by selling directly to end-users. The Group gathers direct consumer insights to refine their offerings, invests in research and development for innovation, and explores various markets, broadening its reach and increasing sales opportunities. Together, these drivers enhance operational efficiency and profitability in the ADIC industry.

Source: Frost & Sullivan

- From 2018 to 2023, the labour cost in the manufacturing industry in the PRC increased steadily. In particular, the average monthly wage of professional technician in the PRC has increased from RMB7,814.9 to RMB11,173.8 during 2018 to 2023, representing a CAGR of approximately 7.4%. The increasing labour cost is attributable to increasing demand of skillful labour equipped with skills such as knowledge on computerised management system, modelling analytical skills and proficiency in foreign languages.
- Going forward, the average monthly wage of employed persons in manufacturing industry, including production and equipment operator, professional technician and managerial staff are expected to grow at a slower trend at a CAGR of 6.0%, 6.3% and 6.0% respectively, owing to the increasing amount of labour entrants, resulting in a stable growth of wage.
- Professional technicians refer to the staff who are engaged in research and development and engineering in the manufacturing industry. Professional technicians generally have higher wage rate than the general manufacturing staffs given that (i) professional technicians need longer training and education to acquire complex technical knowledge and hands-on skills, which are more difficult to obtain. Employers are willing to pay higher wages to attract and retain this talent; and (ii) professional technicians often take on higher levels of responsibility, such as complex design, troubleshooting, and ensuring product quality. The consequences of errors are also more severe, so employers need to compensate for this increased responsibility and risk.

Average monthly salary of employed persons in manufacturing industry (the PRC), 2018-2028E

RMB	2018	2019	2020	2021	2022	2023	2024E	2028E	CAGR (2018-2023)	CAGR (2024E-2028E)
Managerial staff	11,303.6	12,118.1	12,749.7	13,924.8	14,692.8	15,548.7	16,481.6	20,807.6	6.6%	6.0%
Professional technician	7,814.9	8,424.6	8,890.1	9,800.9	10,413.3	11,173.8	11,877.8	15,165.9	7.4%	6.3%
Production and equipment operator	4,493.9	4,863.0	5,110.3	5,668.7	5,886.8	6,192.7	6,564.2	8,287.2	6.6%	6.0%

Source: National Bureau of Statistics, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Cost Analysis (2/5)

- Integrated circuit and printed circuit board are the essential raw materials for Printed Circuit Board Assembly (PCBA) which serve as the backbone of AIDC devices. The price of these raw materials have increased at a CAGR of approximately 10.8% and 1.1% respectively during 2018 to 2023, and is expected to rise at a CAGR of 7.9% and 0.8% respectively during 2024 to 2028.
- Liquid crystal display is used in specialty printer, POS terminals and certain digital scales for users to maneuver functionalities, while many components of thermal printers, such as the housing and casing, are made of plastic including polycarbonate ("PC") and acrylonitrile butadiene styrene ("ABS"). The price of liquid crystal display decreased at a CAGR of approximately -2.4% from 2018 to 2023, while that of PC and ABS grown has grown at CAGRs of 1.6% and 9.9% respectively. Attributable to projected stable demand and supply in coming years, the cost of these raw materials will grow moderately going forward.

Price index of raw material cost of AIDC Devices in the PRC, 2018-2028E

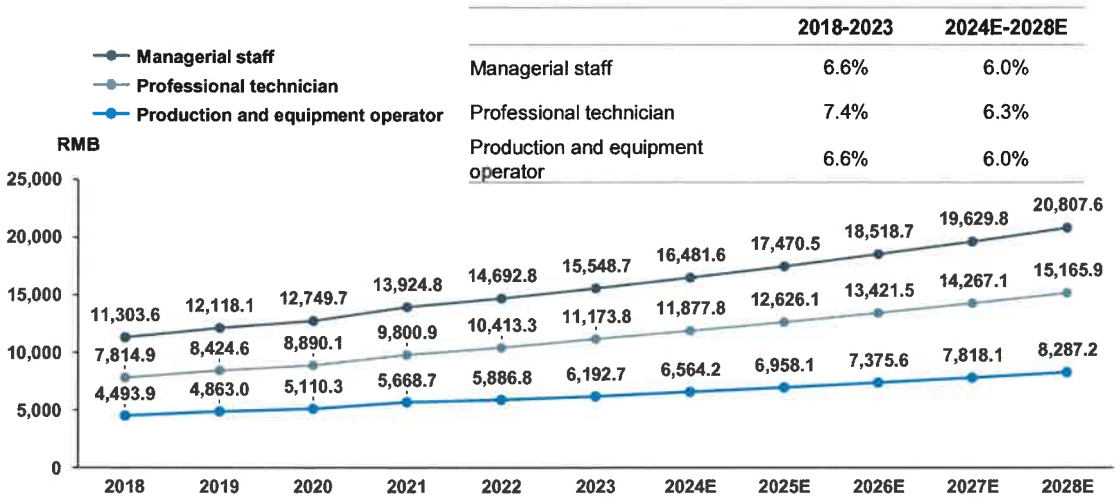
Price index (2018= 100)	2018	2019	2020	2021	2022	2023	2024E	2028E	CAGR (2018-2023)	CAGR (2024-2028E)
Integrated circuit	100.0	120.4	134.9	154.3	174.2	166.9	196.0	265.7	10.8%	7.9%
Printed circuit board	100.0	100.0	102.9	108.4	112.2	105.8	125.2	129.3	1.1%	0.8%
Liquid crystal display	100.0	100.2	103.2	104.3	106.0	88.6	119.6	113.5	-2.4%	-1.3%
Polycarbonate (PC)	100.0	83.9	80.2	105.3	107.4	108.3	159.8	166.9	1.6%	1.1%
Acrylonitrile Butadiene Styrene (ABS)	100.0	99.0	128.2	168.4	181.8	160.3	160.3	196.4	9.9%	5.2%

Source: WIND, Trade Map, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Cost Analysis (3/5)

Average Monthly Salary of Employed Personnel in Manufacturing Industry (the PRC), 2018-2028E



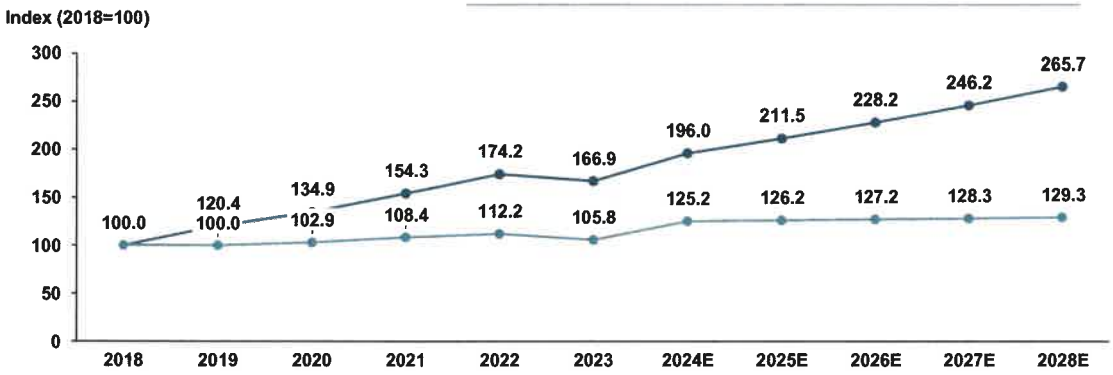
	2018-2023	2024E-2028E
Managerial staff	6.6%	6.0%
Professional technician	7.4%	6.3%
Production and equipment operator	6.6%	6.0%

Source: National Bureau of Statistics, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Cost Analysis (4/5)

Price Index of Major Raw Material Cost of AIDC Devices in the PRC, 2018-2028E



	2018-2023	2024E-2028E
Integrated circuit	10.8%	7.9%
Printed circuit board	1.1%	0.8%

Source: National Bureau of Statistics, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Cost Analysis (5/5)

- The range of monthly salary of professional technican in instrumentation manufacturing in Fujian province is RMB6,946.8-RMB9,442.8, which is in line with the Company's range.

Source: Fujian Human Resources and Social Security Bureau, Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Industry Standard and Regulation

Name	Issued Time	Issued Department	Key Messages
Three-Year Action Plan for the Development of New Data Centers 《新型数据中心发展三年行动计划》	2021	Ministry of Industry and Information Technology 工业和信息化部	• Accelerate the integration of traditional data centers with networks and cloud computing, accelerate the evolution to new data centers, and build an intelligent computing ecosystem with new data centers as the core
Notice of the State Council on Issuing the Action Outline for Promoting the Development of Big Data 《促进大数据发展行动纲要》	2015	the Sate Council of the PRC 国务院	• Create a new mode of social governance with precise management and multi-dimensional cooperation • Establish a new mechanism for the smooth, safe and efficient functioning of the economy • Build a new people-oriented system serving people's livelihood and benefiting all citizens • Create a new innovation-driven pattern of business startups and innovations from all walks of life
The 14th Five-year Plan for Software and Information Technology Services Industry 《软件和信息技术服务业“十四五”发展规划》	2021	National Development and Reform Commission 国家发展与改革委员会	• Support the industry development thorough upgrading of innovation capability, enhancement of information security, talent management. • Set data management as a national key construction direction of information service industry.
Implementation Opinions of the People's Government of Beijng Municipality on Actively Rolling out the Internet plus Initiative 《国务院关于积极推进“互联网+”行动的指导意见》	2015	the Sate Council of the PRC 国务院	• Integrate mobile Internet, cloud computing, big data and the Internet of Things with modern manufacturing • Encourage the healthy development of e-commerce, industrial networks, and Internet banking, and to help Internet companies increase their international presence • Deepen the integration of the Internet with the economic and social sectors, making new industrial modes a main driving force of growth by 2018
GB 28008-2011 General Technical Requirements for Supermarket Shelves GB 28008-2011《超市貨架通用技術條件》	2021	State Administration for Market Regulation 国家市场监督管理总局	• The standard specifies the safety performance, structural requirements, manufacturing, installation and use requirements of supermarket shelves to ensure the safety performance and stability of the shelves.
Metrology Law of the People's Republic of China 《計量法》	1985	State Administration for Market Regulation 国家市场监督管理总局	• Strengthen the supervision and management of measurement, to protect the unity of the national system of units of measurement and the accuracy and reliability of the value, for the benefit of production, trade and scientific and technological development, to meet the needs of socialist modernization, to protect the country, the interests of the people, the development of this law.

Source: Frost & Sullivan

Overview of the PRC and Global AIDC Devices and Solutions Market

Industry Standard and Regulation (Cont'd)

Name	Issued Time	Issued Department	Key Messages
《中華人民共和國電子商務法》	2018	President of the People's Republic of China 中华人民共和国国家主席	• The regulations on e-commerce operators put forward requirements, including the protection of consumer rights, protection of consumer personal information, to maintain market order, the use of cash registers in e-commerce also need to meet the relevant requirements.
GB/T 1 8997-201Technical requirements for cash registers GB/T 1 8997-2015《收銀機技術要求》	2015	State Administration for Market Regulation 国家市场监督管理总局	• The standard specifies the technical requirements of cash registers, including hardware requirements, software requirements, operational requirements, and installation requirements, to ensure the proper operation and safety of cash registers.
《中華人民共和國稅法》	1996	State Administration of Taxation of the People's Republic of China 中华人民共和国国家税务总局	• The regulation requires all business units to issue legal invoices when selling goods or providing services, and cash registers can be used as one of the tools for issuing invoices, provided they meet the relevant technical requirements and management requirements.

Source: Frost & Sullivan

Agenda

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Competition Overview in global and the PRC

The global AIDC devices market is relatively fragmented, with established leaders in various sub-segments, including POS terminalss, PDAs, specialty printers, and scaless, in terms of business and product model development. The fast growth of the retail industry and the constant advancement of digital technology in recent years are driving up demand for AIDC devices in the APAC region. Simultaneously, numerous device makers and shipments from these countries, including the PRC, Japan, etc., are expanding, giving the region a higher market share in the worldwide AIDC devices market.

As a major market in Asia Pacific, the PRC accounts for approximately 16.6% of the global market share of the global AIDC devices market in 2023, which is overall fragmented with more than 2,500 industry participants. The market players in the PRC can be broadly classified by the geographical location of the company base, i.e. (i) international or (ii) domestic, and further segmented by the scope of services offered within the AIDC device solutions value chain.

Generally speaking, major domestic players in the POS terminals solution market are Newland, NEXGO, and NEW POS, who place greater emphasis on the local market. Foreign giants are primarily VeriFone and Worldline (Ingenico), mainly focusing on developed markets such as in Europe and the United States. In terms of the specialty printer market, major players are Zebra, Epson, and New Beiyang, etc., with international brands still dominating the overall market. In terms of PDAs and specialty printers, both fall under the AIDC (Automatic Identification Data Collection) category, foreign brands continue to have technological and product advantages on a global scales. Numerous brands, including Zebra, Honeywell, Denso, Epson, etc., are involved in these two segments. Notwithstanding this, the PRC market is dominated by domestic brands' primary players in the field of specialized printers, including the Group, Urovo Technology and the New Beiyang, which are able to do so on account of their large-scales production capabilities, product localization, and local resource networks. Prominent companies in the PDA industry include Urovo Technology, Newland, Chainway, iData, etc,. As for the retail scales market, it is relatively fragmented with a large number of small-scales players, leading players are brands such as Mettler-Toledo and Senssun.

From the manufacturing and marketing of hardware devices to the design and distribution of value-added software, market-leading companies have amassed substantial industry expertise. In addition, their devices are compatible with modern technology, such as third-party payment channels and cloud-based processing centers, and can be adapted to satisfy the complex requirements of a variety of industries, particularly retail chains. Smaller businesses, on the other hand, often specialize on one aspect of business, such as equipment manufacturing or software development, and have a history of serving customers in particular industries. To distinguish themselves from the competition, industry participants must exhibit (i) continual upgrades in accordance with the most recent technology and innovation, (ii) the capacity for customized services, and (iii) prompt and comprehensive management.

It is not uncommon for AIDC devices and solutions providers to adopt the Third Party Payment Arrangements for business convenience.

Remark: The Group's revenue generated from the provision of AIDC Devices and solutions is converted from HK$454.95 million to RMB390.46 million at the rate of HKD/RMB 0.85825.

Source: Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Success Factor

Success Factors

Advancement of technology and innovation

With the ability to design, develop, and manufacture the key basic parts and components, as well as intelligent terminalss and system integration products, manufacturers can maximize the efficiency of the supply chain and product delivery. It is particularly critical when new demands are generated due to the rapid expansion of the Internet of Things(IoT), 5G, and big data, including consumer data collecting, operation management, and financial services, etc. In order to meet the changing market demand and to increase their bargaining power in the industry, manufacturers need to constantly improve cutting-edge technology.

Capabilities of service customization

The AIDC device industry is relatively competitive with strong consumer bargaining power. In a market with varying needs across industries, manufacturers need to offer basic items at competitive costs and also be able to tailor and combine solutions to satisfy the specific requirements of clients. Businesses with proven technological systems and project delivery experience are more able to comprehend and implement product solutions for client demands. By providing further value-added services, companies are also more likely to improve client loyalty and build solid relationships, thereby establishing a solid market presence.

Comprehensive management

In order to sustain growth in the market, manufacturers need to continuously refine the management model to increase efficiency. Developing sound strategies for product development, marketing, production, quality control, human resources, and other systems in order to integrate the resources of each business chain and achieve the optimal allocation of key assets. Several stringent industry requirements in the AIDC device industry require that the manufacturers must comply with regulations in each production segment, in terms of payment security, patentability of printing technology, etc. Comprehensive management capabilities enable enterprises to innovate products and business models while controlling manufacturing costs and quality.

Source: Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Business Profile of Competitors

Business Profile of Leading AIDC Devices and Solutions Providers (the PRC),2022

Company	Location	Description	Core business focus	Year of Establishment
Zebra Technologies Corporation	International	It is a listed computer peripherals manufacturer (ZBRA NASDAQ) in Illinois, United States. Its operations consist of two segments, Asset Intelligence and Tracking ("AIT") and Enterprise Visibility and Mobility ("EVM"), mainly provide complementary products to clients, including ticket and barcode label printers, RFID smart label printers, fixed RFID readers and infrastructure, with a global footprint in excess of 170 countries.	Specialty printer PDAs	1969
Seiko Epson Corporation	International	It is a listed electronics manufacturer of printers and imaging equipment with a stock code of (TYO: 6724), based in Japan. The company provides primarily inkjet, dot matrix, and laser printers, scanners, POS docket printers, and cash registers, etc, with a global footprint in excess of 175 countries.	Specialty printer	1942
Shandong New Beiyang Information Technology Co., Ltd (新北洋)	Domestic	It is a listed company with stock code (002376.SZ), primarily engaged in R&D, production, sales, and services of specialty printers and related products, offering competitive and intelligent products, operation services, and scenario-based solutions for global clients, including receipt/log printers, barcode/label printers, and embedded printers, etc. Its sales network is spread across 40 countries and regions worldwide.	Scales	2002
Urovo Technology Co.,Ltd (优博讯)	Domestic	It is a listed company with a stock code of (300531.SZ) in Shenzhen, the PRC, primarily focusing on the design, development, production, and distribution of smart data and payment terminalss, PDAs, and specialty printers, in addition to the provision of related system solutions and cloud solutions. Gainscha Technologies, its wholly-owned subsidiary, mainly delivers high-value-added ticket printing solutions and services to commercial clients across 100 countries and regions worldwide.	POS terminals, Specialty printer PDAs	2006
TSC Auto ID Technology Co., Ltd.(鼎燴科技)	Domestic	It is a listed company with a stock code of (3611.TW) in Taiwan, mainly offers a wide range of barcode label printing solutions to clients worldwide, including portable, desktop, industrial and enterprise barcode label printers, RFID printers, integrated barcode verification and inspection systems, etc.	Specialty printer	1991
Mettler-Toledo International Inc.	International	It is a leading listed manufacturer of precision instruments with a stock code of (MTD.US) ,headquartered in Zurich, Switzerland. It offers precision equipment and solution for weighing, analysis, and testing for laboratory, industrial, and food retailing use in over 100 nations and areas worldwide. The retail weighing scaless include counter scales, self-service scales, and check out scales.	Scales	1945
Guangdong Senssun Scales Group Ltd.(香山衡器)	Domestic	It is a listed company (002870.SZ) based in Zhongshan, the PRC, mainly provides measurement and metrology solutions for medium and high-end domestic scaless, electronic scaless and industrial weighing instruments as well as corresponding software and services. Its sales network is spread across 90 countries and regions worldwide	Scales	1975

Source: Annual Reports, Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Business Profile of Competitors (Cont'd)

Business Profile of Leading AIDC Devices and Solutions Providers (the PRC),2022

Company	Location	Description	Core business focus	Year of Establishment
VeriFone	International	It is one of the world's leading providers of secure electronic transaction solutions, privatised since 2018. Verifone offers electronic payment systems, digital solutions and value-added services for merchants in the financial, retail, hotel, petroleum, government, and healthcare industries. Its sales network is spread across 140 countries and regions worldwide.	POS terminals	1981
Shenzhen Xinguodu Technology Co., Ltd(NEXGO) （新国都）	Domestic	NEXGO is a listed company(300130.SZ) in Shenzhen, mainly engaged in the R&D, sales and leasing of digital payment terminalss' hardware and software, as well as comprehensive solutions. It offfers products including intelligent POS, mobile POS, desktop POS, cryptographic keypads, external devices, etc., in more than 80 countries and regions.	POS terminals	2001
Newland Digital Technology Co., Ltd. (新大陆数字技术股份有限公司)	Domestic	It is a listed company with a stock code of (000997.SZ) in Fujian, primarily offering specialized services and products in information identification, mobile communication support, highway informatization, and electronic payment solutions, including smart POS, facial recognition FPOS, conventional POS, MPOS, PDA scanner, etc. for commercial banks and third-party payment service providers. Its sales network is spread across 70 countries and regions worldwide.	POS terminals, Specialty printer PDAs	1994
Fujian Landi Commercial Technology Co., Ltd. （福建联迪商用）	Domestic	It is a subsidiary of the Ingenico group in the PRC, primarily engaged in product development, sales, and service in the PRC region, providing financial POS, financial self-service terminalss, IC card machines, etc.	POS terminals	2005
New POS Technology Limited (深圳市新国都技术股份有限公司)	Domestic	It is a payment solution provider headquartered in Shenzhen, the PRC, mainly provides digital payment terminalss and solutions, including smart POS, traditional POS, scanning terminalss, MPOS terminalss, password keypads and payment software, etc,. Its sales network is spread across 60 countries and regions worldwide.	POS terminals	2007
Fujian Morefun Electronic Technology Co., Ltd.(魔方电子)	Domestic	It is a terminals product R&D and design company, dedicated to providing OEM and ODM services for various electronic products such as POS payment terminalss, barcode reading devices, industry application terminalss, and intelligent hardware.	POS terminals	2015

Source: Annual Reports, Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Business Profile of Competitors (Cont'd)

Business Profile of Leading AIDC Devices and Solutions Providers (the PRC),2022

Company	Location	Description	Core business focus	Year of Establishment
Honeywell (CHINA) Co., Ltd.	International	Founded in 1885, Honeywell entered China in 1935 and has established all four of its business groups in China. Honeywell's Safety and Productivity Solutions Group provides mobile industrial computers, voice software and workflow, barcode scanners, printing solutions, gas detection technology and personal protective equipment to more than 500 million workers worldwide.	POS terminals PDAs	1885
Datalogic (Shenzhen) Industrial Automation Company Ltd	International	Established in 1972 in Italy, Datalogic has gained global recognition as a leading manufacturer in the field of factory automation and automatic data capture. The company specializes in the conception and fabrication of vision systems, laser marking systems, barcode readers, mobile data terminalss, sensing, measurement, and safety devices, as well as vision systems. Its clientele includes the retail, transportation and logistics, manufacturing, and healthcare sectors.	PDAs	1972
DENSO WAVE	International	Denso is a member of the Denso Group and focuses on the development and manufacture of automatic identification equipment such as barcode, QR code, and IC card devices, industrial robots, etc.	PDAs	2003
Shenzhen Chainway Information Technology Co., Ltd.	Domestic	CHAINWAY is a global provider of professional data collection equipment and solutions, specializing in the development of industry applications and product development related to core technologies such as RFID and biometrics. The company supplies intelligent vehicle-mounted terminalss, handheld terminalss, RFID readers, and industrial flat panels to over 130 countries and regions worldwide.	PDAs	2005
Wuxi iData Technology Company Ltd	Domestic	iData is a manufacturer of intelligent hardware devices, providing industrial PDAs, tri-proof handheld PDA terminalss, RFID handheld devices, UHF data collectors, barcode scanning and other devices. The company covers more than 100 industry segments and is widely used in logistics, manufacturing, retail, health and utilities.	PDAs	2010
SEUIC Technologies Co., Ltd.	Domestic	It is a domestic professional intelligent terminals products and application solutions provider, the product line covers handheld terminalss, industrial PDAs, data collectors, industrial flat panels, RFID UHF handheld terminalss, explosion-proof handhelds, etc., and has successfully launched more than 200 products of various forms and intelligent collection and fusion technology solutions to the market.	PDAs	2002

Source: Annual Reports, Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Business Profile of Competitors (Cont'd)

Business Profile of Leading AIDC Devices and Solutions Providers (the PRC),2022

Company	Location	Description	Core business focus	Year of Establishment
Yongkang Huaying Scales Co., Ltd.	Domestic	It is one of the leading providers of scales in the PRC, specializing in the production of various electronic weighing scaless, electronic platform scaless, electronic weighing scaless, electronic counting scaless, spring scaless, industrial scaless and household scaless and other weighing products. Its sales network spread across Europe, America, the Middle East and South Asia. It has brands including "Big Red Eagle", "Golden Leopard", "Bliss", "Lonite".	Scales	1996
Kaifeng Group Co., Ltd.	Domestic	It is one of the earliest manufacturers engaged in R&D and production of electronic scaless in the PRC, providing electronic waterproof scales, balance scales, weighing scales, platform scales and other weighing products for customers in Japan and Europe countries.	Scales	1997
Shanghai CAS Electronics Co., Ltd.	International	It is a subsidiary of CAS Korea, specializing in manufacturing weighing scaless and balances, and provides locally-focused commercial and industrial weighing solutions mainly for the PRC market.	Scales	1994
Xiamen Hanin Electronic Technology Co., Ltd. (汉印HPRT)	Domestic	It is a system printing solution manufacturing company with expertise covering the manufacturing of POS printing, mobile printing, barcode label printing, photo printers, scanning devices, and the development of intelligent application software, multi-platform drivers, and embedded applications. HPRT provides products to more than 80 countries worldwide.	Specialty printer	2004
Jiangmen Dascon Computer Peripherals Co., Ltd. (江门得实)	Domestic	It is a professional printer R&D, manufacturing, and solution provider. Dascon has developed its brands to provide micro printers, self-service printing devices, label printers, barcode printers, portable printers, smart card printers, etc, for customers mainly in the PRC market.	Specialty printer	1988
Xiamen Lujiang Technology Co., Ltd. (厦门鹿匠)	Domestic	It is a smart printing solution provider, focusing on developing educational information services, including smart education IT services for primary and secondary school students, and pocket printing products. Additionally, it offers manufacturing and processing services for portable student printerbrands.	Specialty printer	2019

Source: Annual Reports, Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Ranking and Market Share of Overall AIDC Devices and Solutions Market in the PRC

The overall AIDC devices and solutions market in the PRC is highly fragmented with top 3 market players accounting for 3.3% of the entire market in terms of revenue. The Group recorded the total revenue of RMB176.5 million, accounting for a market share of 0.2% in 2023.

Ranking and Market Share of Leading AIDC Devices and Solutions Providers by Revenue (the PRC), 2023

Rank	Company	Estimated Revenue in 2023 (RMB$ Million)	Approximate Market Share (%)
1	Newland Digital Technology Co., Ltd. (新大陆数字技术股份有限公司)	1,385.3	1.3%
2	Zebra Technologies Corp.	1,067.7	1.0%
3	Honeywell International Inc.	971.5	0.9%
	Top 3 Sub-total	3,424.4	3.3%
	Total Revenue of AIDC Devices and Solutions in the PRC	105,300.0	100.0%

Source: Annual Reports, Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Ranking and Market Share of Overall AIDC Devices and Solutions Market in the PRC (For IO section)

Ranking and Market Share of Leading AIDC Devices and Solutions Providers by Revenue (the PRC), 2023

Rank	Company	Estimated Revenue in 2023 (RMB$ Million)	Approximate Market Share (%)
1	Company J	1,385.3	1.3%
2	Company A	1,067.7	1.0%
3	Company T	971.5	0.9%
	Top 3 Sub-total	3,424.4	3.3%
	Total Revenue of AIDC Devices and Solutions in the PRC	105,300.0	100.0%

Note:

Company T is a multinational and NASDAQ-listed company, with a market capitalisation of USD124.9 billion, specializing in consumer electronics manufacturing, engineering and technology services, and aerospace systems. Its Industrial Automation Group mainly offers a wide range of products including automation control systems, automatic identification and data acquisition, measurement control and safety inspection solutions, and safety and protective equipment, etc., to global customers.

**Note: Market capitalisation figures were based on the latest data available as at April 22 2025.*

Source: Annual Reports, Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Ranking and Market Share of Specialty Printer Market in the PRC

The specialty printer market in the PRC is relatively competitive with more than 300 industrial enterprises above designated size participated. The top ten players contributed to 28.0% of the entire market in terms of revenue. The Group ranked the 9th with revenue of RMB153.8 million in 2023, accounting for 1.8% of the total specialty printer market share in the PRC. Meanwhile, the Group is the second largest specialty printer provider in Fujian province, China.

Additionally, the group has recorded a market share of 13.9% in terms of production value in the supply of portable study printers in the PRC in 2023 in terms of market share.

Ranking and Market Share of Leading Specialty Printer Providers by Revenue (the PRC), 2023

Rank	Company	Estimated Revenue in 2023 (RMB$ Million)	Approximate Market Share (%)
1	Zebra Technologies Corp.	711.8	8.5%
2	Xiamen Hanin Electronic Technology Co., Ltd(厦门汉印电子技术有限公司)	233.2	2.8%
3	Zhuhai Gainscha Technology Company Ltd. (珠海佳博科技有限公司)	219.5	2.6%
4	Jiangmen Dascon Computer Peripherals Co., Ltd. (得实集团)	199.0	2.4%
5	Shandong New Beiyang Information Technology Co., Ltd(山东新北洋信息技术股份有限公司)	184.0	2.2%
6	TSC AUTO ID TECHNOLOGY CO , LTD（铂科科技）	180.3	2.1%
7	Seiko Epson	166.3	2.0%
8	ZHUHAI XPRINTER ELECTRONIC TECHNOLOGY CO., LTD.(珠海芯烨电子科技有限公司)	165.2	2.0%
9	The group	153.8	1.8%
10	Xiamen Aiyin Technology Co., Ltd.(厦门爱印科技有限公司)	138.9	1.7%
	Top Five subtotal	2,351.4	28.0%
	Others	6,048.6	72.0%
	Total revenue of Specialty Printer in the PRC	8,400.0	100.0%

Source: Annual Reports, Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Ranking and Market Share of Specialty Printer Market in the PRC (For IO section)

Ranking and Market Share of Leading Specialty Printer Providers by Revenue (the PRC), 2023

Rank	Company	Estimated Revenue in 2023 (RMB$ Million)	Approximate Market Share (%)
1	Company A	711.8	8.5%
2	Company B	233.2	2.8%
3	Company C	219.5	2.6%
4	Company D	199.0	2.4%
5	Company E	184.0	2.2%
6	Company F	180.3	2.1%
7	Company G	166.3	2.0%
8	Company H	165.2	2.0%
9	The group	153.2	1.8%
10	Company I	138.9	1.7%
	Top Five subtotal	2,351.4	28.0%
	Others	6,048.6	72.0%
	Total revenue of Specialty Printer in the PRC	8,400.0	100.0%

Note: The number of enterprises is referenced from qichamao.com, with filtering criteria including "printer"; registered capital of "More than RMB10 million "; status of "Active", and "Industrial enterprises above designated size".

Source: Annual Reports, Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Ranking and Market Share of Specialty Printer Market in the PRC (For IO section)

Ranking and Market Share of Leading Specialty Printer Providers by Revenue (the PRC), 2023

Note:

Company A is a Nasdaq-listed computer peripherals manufacturer headquartered in Illinois, United States, with a market capitalisation of USD16.8 billion. Its Asset Intelligence and Tracking ("AIT") segment mainly offers ticket and barcode label printers, RFID smart label printers, fixed RFID readers, and infrastructure. Besides, it provides mobile computing, data capture, fixed industrial scanning, workflow optimization solutions, and related services under its Enterprise Visibility and Mobility ("EVM"), , which is a system focused on managing mobile devices, wireless networks, and other mobile computing services in a business context. Company A operates in over 170 countries and regions.

Company B is a system printing solution manufacturing company based in Fujian province, the PRC, with expertise covering the manufacturing of POS printing, mobile printing, barcode label printing, photo printers, scanning devices, and the development of intelligent application software, multi-platform drivers, and embedded applications. Company B provides products to more than 80 countries worldwide.

Company C is a subsidiary of a SZSE-listed company based in Shenzhen, the PRC, with a market capitalisation of RMB4.5 billion. The company is primarily engaged in the design, development, production, and distribution of smart data and payment terminalss, PDAs, and specialty printers, in addition to the provision of related system solutions and cloud solutions.

Company D is a professional printer R&D, manufacturing, and solution provider with sales headquarters in Guangdong province, the PRC, Germany and Singapore. Company D has developed its brands to provide micro printers, self-service printing devices, label printers, barcode printers, portable printers, smart card printers, etc, for customers in the globe.

Company E is a SZSE-listed company based in Shandong province, the PRC, with a market capitalisation of RMB5.2 billion. Company E is primarily engaged in the R&D, production, sales, and services of specialty printers and related products, offering competitive and intelligent products, operation services, and scenario-based solutions for global clients, including receipt/log printers, barcode/label printers, and embedded printers, etc. Its sales network is spread across 40 countries and regions worldwide.

Company F is a TWSE-listed company based in Taiwan, China, with a market capitalisation of TWD10.3 billion, mainly offers a wide range of barcode label printing solutions to clients worldwide, including portable, desktop, industrial and enterprise barcode label printers, RFID printers, integrated barcode verification and inspection systems, etc.

Company G is a TYO-listed electronics manufacturer of printers and imaging equipment based in Japan, with a market capitalisation of JPY951.8 billion. Company G provides primarily inkjet, dot matrix, and laser printers, scanners, POS docket printers, and cash registers, etc, with a global footprint in excess of 175 countries.

Company H is a Guangdong-based printer enterprise integrating research and development, production, sales and service, mainly engaging in thermal ticket printers, barcode printers, pin printers and related core components products, with business covering more than 150 countries and regions worldwide.

Company I is a digital label management solutions service provider based in Fujian province, the PRC, specializing in the integrated research and development, production, sales and service of printing equipment. Its business covers more than 90 countries and regions in the globe.

**Note: Market capitalisation figures were based on the latest data available as at February 20 2025.*

Source: Annual Reports, Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Ranking and Market Share of POS Terminals and PDAs Market in the PRC

The POS Terminals and PDAs market in the PRC is relatively competitive with more than 1,600 industrial enterprises above designated size participated. The top five players have contributed to 9.7% of the entire market in terms of revenue. The Group recorded the revenue of RMB0.8 million in the PRC in 2023, with a market share of 0.002% in the POS terminals and PDAs market.

Ranking and Market Share of Leading POS Terminals and PDAs Providers by Revenue (the PRC), 2023

Rank	Company	Estimated Revenue in 2023 (RMB$ Million)	Approximate Market Share (%)
1	Newland Digital Technology Co., Ltd. (新大陆数位技术股份有限公司)	1,169.3	3.3%
2	PAX Global Technology Limited (百富环球科技有限公司)	736.9	2.1%
3	Shenzhen Xinguodu Technology Co., Ltd. (深圳市新国都股份有限公司)	735.5	2.1%
4	FUJIAN LANDI COMMERCIAL EQUIPMENT CO.LTD(福建联迪商用设备有限公司)	456.8	1.3%
5	Fujian Morefun Electronic Technology Co., Ltd.(魔方电子)	335.2	0.9%
	Top Five subtotal	3,433.7	9.7%
	Others	32,064.3	90.3%
	Total revenue of POS Terminals and PDAs in the PRC	35,498.0	100.0%

Source: Annual Reports, Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Ranking and Market Share of POS Terminals and PDAs Market in the PRC(For IO section)

Ranking and Market Share of Leading POS Terminals and PDAs Providers by Revenue (the PRC), 2023

Rank	Company	Estimated Revenue in 2023 (RMB$ Million)	Approximate Market Share (%)
1	Company J	1,169.3	3.3%
2	Company K	736.9	2.1%
3	Company L	735.5	2.1%
4	Company M	456.8	1.3%
5	Company N	335.2	0.9%
	Top Five subtotal	3,433.7	9.7%
	Others	32,064.3	90.3%
	Total revenue of POS Terminals and PDAs in the PRC	35,498.0	100.0%

Note: The number of enterprises is referenced from qichamao.com, with filtering criteria including "Mobile Terminals Equipment Manufacturing"; registered capital of "More than RMB10 million"; status of "Active", and "Industrial enterprises above designated size".

Note:

Company J is a SZSE-listed company based in Fujian, China, with a market capitalisation of RMB20.5 billion, primarily offering specialized services and products in information identification, mobile communication support, highway informatization, and electronic payment solutions, including smart POS, facial recognition FPOS, conventional POS, MPOS, PDA scanner, etc. for commercial banks and third-party payment service providers. Its sales network is spread across 70 countries and regions worldwide.

Company K is a HKEX-listed company based in Shenzhen, with a market capitalisation of HKD54.9 billion, mainly offering electronic payment terminals solutions, including electronic payment terminalss in over 120 countries.

Company L is a SZSE-listed company based in Shenzhen, China, with a market capitalisation of RMB12.4 billion, mainly engaged in the R&D, sales and leasing of digital payment terminalss' hardware and software, as well as comprehensive solutions. It offers products including intelligent POS, mobile POS, desktop POS, cryptographic keypads, external devices, etc., in more than 80 countries and regions.

Company M is a subsidiary of a technology company in the PRC, primarily engaged in product development, sales, and service in the PRC region, providing financial POS, financial self-service terminalss, IC card machines, etc.

Company N is a terminals product R&D and design company, dedicated to providing OEM and ODM services for various electronic products such as POS payment terminalss, barcode reading devices, industry application terminalss, and intelligent hardware.

**Note: Market capitalisation figures were based on the latest data available as at February 20 2025.*

Source: Annual Reports, Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Ranking and Market Share of Scales Market in the PRC

The scales market in the PRC is relatively fragmented with more than 1,500 industrial enterprises above designated size participated. The top five players have contributed to 36.0% of the entire market in terms of revenue. The Group recorded the revenue of RMB21.9 million through the sales of scales in the PRC, accounting for a market share of 1.0% in 2023.

Ranking and Market Share of Leading Scales Providers by Revenue (the PRC), 2023

Rank	Company	Estimated Revenue in 2023 (RMB$ Million)	Approximate Market Share (%)
1	METTLER-TOLEDO INTERNATIONAL INC.	249.3	10.8%
2	YONGKANG HUAYING WEIGHING APPARATUS CO.,LTD. (永康市華鷹衡器有限公司)	216.6	9.4%
3	Kaifeng Group Co., Ltd. (凱豐集團有限公司)	165.6	7.2%
4	Guangdong Senssun Weighing Apparatus Group Ltd (廣東香山衡器集團股份有限公司)	128.6	5.6%
5	Shanghai Teraoka Electronic Co., Ltd (上海寺岡電子有限公司)	68.5	3.0%
	Top Five subtotal	828.6	36.0%
	Others	1,471.4	64.0%
	Total revenue of Commercial Weigting Apparatus / Scales in the PRC	2,300.00	100.0%

Source: Annual Reports, Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Ranking and Market Share of Scales Market in the PRC (For IO section)

Ranking and Market Share of Leading Scales Providers by Revenue (the PRC), 2023

Rank	Company	Estimated Revenue in 2022 (RMB$ Million)	Approximate Market Share (%)
1	Company O	249.3	10.8%
2	Company P	216.6	9.4%
3	Company Q	165.6	7.2%
4	Company R	128.6	5.6%
5	Company S	68.5	3.0%
	Top Five subtotal	828.6	36.0%
	Others	1,471.4	64.0%
	Total revenue of Scales in the PRC	2,300.00	100.0%

Note: The number of enterprises is referenced from qichamao.com, with filtering criteria including "Commercial Scales"; "Business Scope"; registered capital of "More than RMB10 million"; status of "Active", and "Industrial enterprises above designated size".

Note:

Company O is a leading NYSE-listed manufacturer of precision instruments ,headquartered in Zurich, Switzerland, with a market capitalisation of USD27.5 billion. It offers precision equipment and solution for weighing, analysis, and testing for laboratory, industrial, and food retailing use in over 100 nations and areas worldwide. The retail weighing scaless include counter scales, self-service scales, and check out scales.

Company P is a providers of scales in the PRC, specializing in the production of various electronic weighing scaless, electronic platform scaless, electronic weighing scaless, electronic counting scaless, spring scaless, industrial scaless and household scaless and other weighing products. Its sales network spread across Europe, America, the Middle East and South Asia.

Company Q is one of the earliest manufacturers engaged in R&D and production of electronic scaless in the PRC, providing electronic waterproof scales, balance scales, weighing scales, platform scales and other weighing products for customers in Japan and Europe countries.

Company R a SZSE-listed company based in Zhongshan, the PRC, with a market capitalisation of RMB4.1 billion, mainly provides measurement and metrology solutions for medium and high-end domestic scaless, electronic scaless and industrial weighing instruments as well as corresponding software and services. Its sales network is spread across 90 countries and regions worldwide

Company S is a company, specializing in the production of load cells, packaging machines, vending machines, barcode machines, electronic scaless, electronic weighing instruments and electronic cash registers for the PRC market.

Note: 1) Only commercial scaless are included in the ranking; 2)

**Note: Market capitalisation figures were based on the latest data available as at February 20 2025.*

Source: Annual Reports, Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Entry Barrier

Branding and project reference	Existing AIDC device and Solution providers have usually demonstrated the track record of successful project delivery and established sound reputation. Such track record and reputation pose as an entry barrier for new market entrants as they do not have successful precedents for marketing. Proven track record is the recognition of extensive technical skills and experience in provision of AIDC device and Solution as well as a demonstration of competitive edge in engaging complex and large-scales projects. However, establishing a sound image requires long time, thus forming a major barrier for entry.
Qualification Barriers	Due to the significance of payment security and technical patents, the AIDC device industry specifies particular quality certifications and standards for manufacturers' procurement and production, with some certifications requiring a more lengthy process. Furthermore, the complexity of qualifying varies for clients in different industry, such as card organizations, acquirers, or retail chain stores, clients generally place emphasis on various criteria, such as manufacturers' financial situation, operations, quality system, and technical level, etc,. Specifically, product solutions are normally selected through competitive bidding for large-scales business, which provides a significant barrier to new entrants who might not able to obtain certification quickly.
Market know-how	With strong local market know-how, the AIDC device and Solution providers establish the regional specific service portfolio which allows the retailers to improve operational efficiency and reduce costs. As consumer trends and digital technology are constantly shifting, the AIDC device and Solution providers are required to have a strong management team with expertise and market understanding to meet the fast-changing market needs, from inventory management, mobile payment to data analytics. As carriers of data collection and generation, electronic payment terminalss and specialized printers play a significant role in retailers' day-to-day operations, therefore manufacturers are always required to update technologies and optimize features to meet market demand. The new market entrants without such market expertise would not be able to easily access to major retailers.

Source: Frost & Sullivan

Competitive Landscape of the PRC and Global AIDC Devices and Solutions Market

Entry Barrier

High conversion costs	As the retail terminals manufacturing is client-oriented toward the specific requirements, R&D services and final product delivery are customized, particularly in light of a large number of institutional clients, various payment processes and application scenarios. In addition, manufacturers and clients have formed a strong working relationship, which will continue to strengthen with further product updates and iterations, resulting in a high cost of conversion for system replacement. For new market entrants, the stable client relationships between existing player has caused a certain of exclusivity that would hurdle their business development.
Technological requirement for payment security	The financial payment system has a strict confidentiality awareness, with encryption methods established for the network interface, protocol standards, and payment process settlement. Consequently, it poses high technological requirements for the POS hardware and software development. Manufacturers must have a mature industrial design, data self-destruction, mechanical structure, and switch settings to ensure that POS terminals hardware does not leak data due to physical damage. To ensure data storage and transaction security, manufacturers must also block unauthorized software incursion using algorithms and a multi-layer key system. Lack of technical accumulation and actual project experience in the financial payment industry makes it challenging for new entrants to achieve the relatively rigorous security technology standards.

Source: Frost & Sullivan

Agenda

Appendix- Verification Notes

Technical Terms	Description
"AI"	artificial intelligence
"AIDC"	automatic identification and data capture , a variety of technologies applied to automatically identify objects, collect data about them, and enter that data directly into computer systems without human intervention
"Bluetooth"	a short-range wireless technology standard for data exchange between fixed and mobiles devices over short distances
"CAGR"	compound annual growth rate
"ERP"	enterprise resource planning, an information technology system integrating internal and external information such as accounting, financial information, human resources management, inventory management and warehouse management to facilitate automation of business operations
"FOB"	free on board, which means that the seller pays for transportation of the goods to the port of shipment as well as loading costs; the buyer pays cost of marine freight transport, insurance, unloading and transportation from the arrival port to the final destination; and the passing of risks occurs when the goods are loaded on board at the port of shipment
"GPS"	global positioning system
"IC"	integrated circuit, an electronic circuit consisting of individual circuit elements and electronic components
"ISO"	acronym for International Organisation forStandardisation, a series of international standards, including quality management and quality assurance standards published by the Universal Certification Services Co., Ltd., a non-government organisation for assessing the quality system of business organisations

Appendix- Verification Notes

Technical Terms	Description
"NFC"	near-field communication, a set of communication protocols that enables two electronic devices or one electronic device and an NFC tag to communicate with each other
"PCB"	printed circuit board, a board base for physically supporting and wiring the surface-mounted and socketed components in most electronics
"PCBA"	printed circuit board assembly, a printed circuit board populated with electronic components
"PDA"	personal digital assistant, a hand-held electronic device that functions as a data terminals for users to collect data efficiently and achieve digital management of their businesses
"POS"	point of sale, the location where a transaction occurs
"R&D"	research and development
"RFID"	radio-frequency identification
"specialty printers"	a type of printing device designed to perform specific and niche tasks that require specialised printing capabilities and are not typically handled by standard, general-purpose printers
"Wi-Fi"	a wireless local area network certified by the Wi-Fi Alliance for wireless local area network products based on the IEEE 802.11 standards, and a common IoT communication protocol which is available in home and business environments

Appendix- Verification Notes

Technical Terms	Description
FeliCa	a contactless RFID smart card system primarily used in electronic money cards
MIFARE	a series of integrated circuit (IC) chips used in contactless smart cards and proximity cards
OCR	optical character recognition
GB2828 standard	a Chinese national standard that outlines the method for sampling and acceptance testing of attributes in a batch of products. It is widely used in quality control and assurance processes across various industries, especially in manufacturing. Purpose: The standard is designed to help organizations determine the acceptability of a batch of products based on sampling. It provides a systematic approach to assessing quality. Purpose: The standard is designed to help organizations determine the acceptability of a batch of products based on sampling. It provides a systematic approach to assessing quality. Sampling Plans: GB 2828 specifies different types of sampling plans, including: Single Sampling: A single sample is taken to determine acceptance or rejection. Double Sampling: Two samples are taken for a more flexible acceptance decision. Multiple Sampling: Multiple samples are taken in stages to make acceptance decisions. Acceptance Criteria: The standard defines criteria for acceptance based on the number of defective items found in the sample compared to predefined limits. Applications: GB 2828 is applicable in various sectors, including textiles, electronics, food products, and more, where quality assurance is critical.

Appendix- Verification Notes

Technical Terms	Description
OBM (Original Brand Manufacturer)	a company that designs and markets products under its own brand name. Such manufacturers typically assumes full responsibility and control over the product, from design to manufacturing to marketing, allowing it to establish a distinct brand identity and customer loyalty
OEM (Original Equipment Manufacturer)	a manufacturer that produces parts or products that are then sold by another company under its own brand name. OEMs often manufacture components or complete products primarily based on the specifications provided by the brand owner, who typically: (a) has control over the manufacturing process; (b) provides complete designs or detailed production blueprints to the manufacturers; (c) does not require any R&D or design input from the manufacturers; and (d) markets and sells the final products
ODM (Original Design Manufacturer)	a manufacturer that designs and manufactures products that are typically rebranded by another company for sale. Compared to OEMs, ODMs typically do not simply rely on the designs or production blueprints provided by the brand owners. Instead, ODMs handle both product design and development as well as the manufacturing process after receiving preliminary ideas from the customers, such as the intended purposes, functions, and physical attributes of the products

Appendix- Verification Notes

- The manufacturing industry has seen a change in supply chain in recent years.

- The Group's sales channels are generally in line with industry norm to sell AIDC products through direct sales and sales to distributors.
- The Group's adoption of distributorship business model is generally in line with industry norm.

- The Group did not carry any business interruption or litigation insurance policies, which are not mandatory according to the laws and regulations of the PRC, and it is considered consistent with customary practice in China.
- It is not uncommon in the AIDC device industry for engaging another third party to assist in developing the software, including the relevant source code, and for industry participants to lodge claims of infringement of intellectual properties, as in the Group's case in the Dispute.

- In general, the receipt printer is connected to a POS terminals and it is designed to efficiently and accurately print receipts to be delivered to customers as well as the invoice itself to keep track of the record.

- Printing equipment is typically thermal printing equipment which converts the received content data into dot matrix signals, controls the thermal print head and the stepper motor to heat up line by line, and heats the thermo sensitive coating on the thermal paper to output text and images.
- Receipts printers are used to print receipts, invoices and other types of transactional documents through thermal printing. They typically connect to POS terminals and are able to print in high speed with low noise.
- Barcode label printers are used to print text, barcodes, graphics, RFID tags and other content through thermal printing.
- Barcode label printers are widely used in logistics,, warehousing, supermarkets, retail, manufacturing and medical industries.
- Panel printers are complete printing units that can be integrated into other machines or devices for thermal printing. They are used for a variety of applications. For example, panel printers can be incorporated into self-service queue machines, medical self-services terminalss, ,wall-mounted terminals devices, and self-service devices for catering and retail industries.
- Portable study printer is a compact, portable device which allows students to record, print and track study materials, exercise and notes.
- Scaless are sued to weigh products and calculate prices based on weight. They are commonly used in retail transactions, such as in supermarkets and grocery stores, to ensure accurate pricing of the products.

- POS terminalss are electronic systems used to effect transactions at the point of sale. They typically include hardware such as a cash register or computer, and software that allows the business to process sales, manager inventory and generate reports. They are commonly used in the retail environment to handle electronic payment transactions, and are also widely used in other industries, such as restaurants, hotels, supermarkets and convenience stores.
- PDAs are handheld electronic devices that function as personal organizers and provide computing and information storage and retrieval capabilities. They allow customers to collect data efficiently and achieve digital management of their business.
- PDAs are commonly applied to logistics and delivery , warehouse, inventory tracking, production and manufacturing, retail e-commerce, and store management.

Appendix- HKEX Queries Reply

- In the AIDC industry in China, it is common for manufacturers to provide customized and standardised products. The AIDC industry in China is competitive with a large number of manufacturers. The established market participants have extensive manufacturing capabilities and focus on innovation and product development. The Group is positioned as the manufacturer to provide both customized and standardised products in the AIDC industry in China, by placing emphasis on innovation and differentiation, fostering direct customer relationships that provide valuable insights for product development.
- By the provision of standardised products, the Group benefits from cost competitiveness due to China's manufacturing capabilities, leveraging economies of scales and lower labor costs. The Group also gains access to advanced technologies, ensuring the incorporation of the latest innovations in AIDC, while taking advantage of efficient supply chain networks for timely production. The flexibility and scalability of production allows the Group to meet varying market demands effectively, enabling companies to focus on their core competencies.
- On the other hand, the provision of customized products allows the Group to establish strong brand identities by developing unique products that enhance competitive advantage and capture higher profit margins by selling directly to end-users. The Group gathers direct consumer insights to refine their offerings, invests in research and development for innovation, and explores various markets, broadening its reach and increasing sales opportunities. Together, these drivers enhance operational efficiency and profitability in the ADIC industry.
- The demand for portable study printers was indirectly stimulated by COVD-19, with student sprinting worksheets for study purposes due to social restrictions in 2022. The demand of our portable study printers were indirectly stimulated by theCOVID-19 pandemic as students tended to print worksheet for study purpose in light of the social restrictions.
- The decrease in sales of portable study printers was mainly due to the softened market demands for portable study printer, which was generally used for preparing and printing study exercises and notes, when physical lessons or tutoring had revived after the impact of COVID-19 in 2023.
- The domestic prices of ICs and PCBs in China are unlikely to experience material fluctuations in 2025. The impact of tariffs on the domestic prices of integrated circuits (ICs) and printed circuit boards (PCBs) in China is limited for several reasons: (i) many components used in the manufacturing of ICs and PCBs are sourced locally, which helps insulate domestic prices from the effects of tariffs that primarily target imported goods; (ii) China is one of the largest manufacturers of ICs and PCBs globally, and the scale of production allows for economies of scale that can mitigate price increases even when tariffs apply to certain components; (iii) manufacturers in China have integrated their supply chains, enabling them to adapt quickly to changes in material costs and minimize the impact of tariffs on pricing. Even though many components are sourced locally, some critical materials may still be imported, and tariffs on these can increase costs. This may lead to supply chain disruptions, causing shortages and driving prices higher. Additionally, speculative behavior in the commodities market can further inflate raw material costs.

Appendix- HKEX Queries Reply

- In the AIDC industry in China, it is not uncommon for companies to sell unused raw materials to overlapping customers and suppliers due to the following reasons:
- (i) It reduces waste by recovering costs associated with excess inventory or unused materials
- (ii) It strengthens relationships with existing customers and suppliers, fostering collaboration within the supply chain.
- (iii) Overlapping customers may have specific needs for these materials, making the sales mutually beneficial.
- (iv) It aligns with sustainability efforts by promoting the reuse of materials, in line with ESG practice.
- (v) Selling unused raw materials helps companies manage inventory more effectively, minimizing holding costs and freeing up warehouse space.

Appendix- HKEX Queries Reply

- The wholesale price of hazardous waste label printers in the PRC (B2B) ranges from RMB3,000 to RMB15,0000 per unit
- The increased competition among local scale manufacturers in the PRC drives lower profit margins, given that (i) there are around 1,500 market participants in the PRC competing on price, which reduces profit margins; (ii) domestic customers, including small businesses and factories, focus on affordability rather than brand reputation, compelling manufacturers to lower their prices; (iii) the scales for domestic sales tend to be functionally similar, making it challenging to differentiate products and resulting in commoditization.
- The decrease in sales of portable study printer was mainly due to the softened market demands for portable study printer forself-study when physical lessons or tutoring had gradually revived after the impact of COVID-19 in FY2023
- OEM businesses have extensive manufacturing capabilities, and they only produce standardised products; (b) OEM businesses benefit from cost competitiveness due to China's manufacturing capabilities, leveraging economies of scale and lower labour costs. They also gain access to advanced technologies, ensuring the incorporation of the latest innovations in AIDC, while taking advantage of efficient supply chain networks for timely production; (c) OEM businesses focus on core competencies in their flexibility and scalability of production to meet varying market demands effectively; (d) while the Group engages in the production of both standardised and customised products, it mainly focuses on innovation and brand development of AIDC devices. The Group has greater control over branding and marketing when compared with OEM businesses, and emphasises on innovation and differentiation, fostering direct customer relationships that provide valuable insights for product development; and (e) the Group has established strong brand identities by providing customisation services for its customers, as well as gathering direct customer insights to refine their offerings, investing in R&D for innovation, and exploring various markets, broadening their reach and increasing sales opportunities.

Appendix- HKEX Queries Reply

Glossary

- **GB2828 standard** is a Chinese national standard that outlines the method for sampling and acceptance testing of attributes in a batch of products. It is widely used in quality control and assurance processes across various industries, especially in manufacturing.
- Purpose: The standard is designed to help organizations determine the acceptability of a batch of products based on sampling. It provides a systematic approach to assessing quality.
- Sampling Plans: GB 2828 specifies different types of sampling plans, including:
  - Single Sampling: A single sample is taken to determine acceptance or rejection.
  - Double Sampling: Two samples are taken for a more flexible acceptance decision.
  - Multiple Sampling: Multiple samples are taken in stages to make acceptance decisions.
- Acceptance Criteria: The standard defines criteria for acceptance based on the number of defective items found in the sample compared to predefined limits.
- Applications: GB 2828 is applicable in various sectors, including textiles, electronics, food products, and more, where quality assurance is critical.

- **"FeliCa"** - a contactless RFID smart card system primarily used in electronic money cards
- **"MIFARE"** - a series of integrated circuit (IC) chips used in contactless smart cards and proximity cards
- **"OCR"** - optical character recognition

Appendix- HKEX Queries Reply

Set out below are the price range, target customers, functionalities and application scenarios of the Group and the Group's major competitors:

	Price Range of AIDC Devices	Target Customers	Functionalities	Application Scenarios
Company A	300-7000+	Logistics, retail, manufacturing	Commercial barcode/label high-speed printing, RFID integration, weather-resistant	Warehouse management, transport labels, retail pricing, manufacturing tracking
Company B	200-800+	Retail, F&B, healthcare	Portable Bluetooth printing, thermal receipt printing, low-noise design	Takeout orders, POS receipts, medical labels
Company C	100-800+	Retail, F&B, logistics	Label printing, receipt printing, supports multiple paper sizes, easy maintenance	Small supermarket pricing, restaurant kitchen orders, logistics waybills
Company D	800-2000+	Retail, healthcare, government agencies	Dot-matrix printing (multi-part forms), durability, high-load operation	Invoice printing, bank documents, medical reports
Company E	150-1200+	Logistics, retail, finance	Self-service terminals printing, barcode scanning integration, modular design	Parcel locker printing, ATM receipts, retail self-checkout
Company F	500-5000+	Logistics, manufacturing, retail	Desktop, enterprise-level, industrial label printing, high resolution, withstands high temperature/humidity environments	Logistics package labels, production line product identification, warehouse management
Company G	500-2000+	Retail, F&B, creative industries	High-precision color label printing, wireless connectivity, eco-friendly design	Luxury item labels, restaurant customized orders, art identification
Company H	100-1700+	F&B, small retail, e-commerce	Thermal receipt printing, Bluetooth/Wi-Fi connectivity, compact design	Takeout order receiving, e-commerce waybills, receipt printing
Company I	100-700+	Retail, F&B, warehousing, logistics, etc.	Mobile portable printing, multi-language support, low power consumption	Mobile stall orders, takeaway labels, service industry tickets

Appendix- HKEX Queries Reply

	Price Range of AIDC Devices	Target Customers	Functionalities	Application Scenarios
Company J	800-5000+	Retail, F&B, transportation payment	Smart POS terminals, supports QR code/NFC/facial recognition payment, cloud management platform	Chain supermarket checkout, fast-food ordering, public transport ticketing
Company K	N.A	Global retail, F&B, hospitality	Multi-language/multi-currency support, high-security payment module, supports mobile 4G/Wi-Fi, industrial-grade durability	International chain restaurants, hotel front desk checkout, high-traffic mall cashiering
Company L	N.A	Small retail, F&B, financial services	Portable POS machine, low power consumption, supports mainstream payment interfaces (UnionPay/WeChat/Alipay)	Street store cashiering, takeout delivery payment, financial service outlets
Company M	N.A	Banks, retail, transportation payment	Bank-level security certification, adaptable to multiple scenarios (fixed/mobile POS), withstands high-frequency use	Bank card payment, gas station payment, self-service ticket machines
Company N	N.A	Small F&B, individual retail, service industry	Basic payment functions, lightweight and portable, low-cost maintenance, supports thermal receipt printing	Snack shop cashiering, night market stalls, hair salon/beauty salon checkout

	Price Range of AIDC Devices	Target Customers	Functionalities	Application Scenarios
Company O	200-9000+	Food processing, laboratories, pharmaceuticals, precision industries	High-precision weighing, anti-vibration and interference resistance, cloud data integration	Laboratory drug compounding, food production line quality inspection, industrial raw material precision measurement
Company P	188-500+	Small retail, F&B kitchens, farmers' markets	Basic weighing, moisture-proof design, simple pricing function	Restaurant ingredient weighing, supermarket and small store product pricing
Company Q	120-500+	Logistics warehousing, industrial manufacturing, retail	High load capacity, anti-cheating function, industrial-grade impact resistance, supports barcode printing output	Logistics cargo weighing, factory raw material warehousing, large supermarket shelf restocking
Company R	180-550+	Retail, health industry, mixed home and commercial scenes	Smart touchscreen, automatic label printing, POS system integration	Fresh supermarket price tag printing, gym body fat measurement, chain pharmacy drug compounding and weighing
Company S	720-3000+	Large retail, F&B chains, logistics	High-speed dynamic weighing, multiple product presets, anti-theft tag integration, ERP system linkage	Supermarket self-checkout scaless, chain restaurant central kitchen ingredient preparation, logistics package automatic sorting
The Group	10-7,528	Include but not limited to retail, education, catering, logistics, warehousing, manufacturing, medical and hospitality	Specialty printers, scales, POS terminals and PDAs	Include but not limited to commercial, medical and education sectors

Note: Retail price ranges were based on the retail prices as extracted from the companies' official online stores. Company K-N prices are undisclosed due to the nature of its B2B sales model.

Wage Analysis in the PRC and Fujian Province

Unit: RMB	Lower Range	Upper Range	Median
Annual salary for engineering and technical personnel in the PRC	39600	182300	75400
Annual salary for other professional and technical personnel in the PRC	37500	185400	78200
Annual salary for engineering and technical personnel in the Fujian Province	41000	149000	70000
Annual salary for other professional and technical personnel in the Fujian Province	44700	157000	76800

	Mid-level and Senior Managers (RMB)	Professional and technical personnel (RMB)	Administration and related personnel (RMB)	Manufacturing and related personnel (RMB)
The PRC	186584	134086	95465	74312
Fujian province	161113	119103	92154	71748

Source: National Bureau of Statistics of China, Frost & Sullivan

R&D Centre in Wuhan

- Expanding the R&D centre in Wuhan will be advantageous and have strategic importance to the Group, considering, among others, (i) the talent pool in Wuhan in view of the presence of prestigious universities and research institutions, nurturing skilled graduates and technicians and fostering a strong R&D ecosystem; (ii) the demand for AIDC devices across industries such as logistics, retail manufacturing and healthcare exhibited in Wuhan and its surround areas; (iii) Wuhan's locatior as a transportation hub in central China which facilitates technical exchanges and collaborations with other regions domestically and internationally; and (iv) the support from Wuhan government for R&D projects such as funding, tax incentives and talent attraction policies. The Group's current Wuhan R&D centre is relatively small in scale and has limited capacity to accommodate growing number of R&D projects and staff.

Cost Benefit in Southeast Asia

- The establishment of a new production centre in Southeast Asia is mainly driven by the strategic need to serve the growing demand for AIDC devices in the Southeast Asian market and to achieve cost savings, rather than addressing capacity constraints at the Group's existing production facility, In selecting the location for the new production centre, the Group considered that (i) Southeast Asia offers strategic proximity to the Group's markets and customers in the Asia-Pacific region, which will reduce lead times and transportation costs; (ii) Southeast Asia offers competitive land and labour costs; and (iii) the region has well-developed logistics infrastructure including proximity to major ports and airports, which will enhance the Group's supply chain efficiency.

QR Code

- It is expected that the use of barcodes will gradually shift to QR codes by 2027.

Appendix- HKEX Queries Reply

- AIDC devices, such as scales, PDAs, and POS terminals feed real-time data into analytics systems to enable retailers to tailor promotions, optimize stock, and predict demand. Automation and connectivity of these devices support rapid order fulfillment, inventory updates, and payment processing, meeting New Retail's demand for speed and efficiency.
- While specialty printers generate labels for online orders, ensuring accurate packaging and delivery, scales integrated with inventory systems update stock levels in real-time, syncing online and offline inventory to prevent overselling or stockouts, and PDAs are used to update inventory across online and offline channels, which enable customers to check in-store stock availability online.

Assumptions and Parameters

- **The following assumptions are used in the F&S Report :**

- Founded in 1961, Frost & Sullivan has 40 offices with more than 2,000 industry consultants, market research analysts, technology analysts and economists globally. Frost & Sullivan's services include technology research, independent market research, economic research, corporate best practices advising, training, client research, competitive intelligence and corporate strategy. Frost & Sullivan has been covering the Chinese market since the 1990s. Frost & Sullivan has seven offices in Greater China and direct access to the knowledgeable experts and market participants in the AIDC devices and solutions and related industry and its industry consultants, on average, have more than three years of experience.
- Frost & Sullivan's independent research consists of both primary and secondary research obtained from various sources in respect of the PRC AIDC devices and solutions industry. Primary research involved in-depth interviews with leading industry participants and industry experts. Secondary research involved reviewing company reports, independent research reports and data based on Frost & Sullivan's own research database. Projected data were obtained from historical data analysis plotted against macroeconomic data with reference to specific industry- related factors.

Assumptions and Parameters (Cont'd)

- **The following assumptions are used in the F&S Report :**

- The supply and demand for products and services in the AIDC devices and solutions industry in the PRC are assumed to be stable and without hold-up over the forecast period ; and
- It is assumed that there is no external shock such as financial crisis or natural disasters in the PRC market to affect the demand and supply for the products and services of the AIDC devices and solutions industry over the forecast period
- the social, economic and political environments in the relevant markets are likely to remain stable in the forecast period, which ensures the stable and healthy development of the PRC AIDC devices and solutions industry;
- the PRC economy is likely to maintain stable growth in the next decade and the social, economic and political environment of the PRC is likely to remain stable in the forecast period;
- the PRC AIDC devices and solutions industry is expected to grow based on the macroeconomic assumptions of the economy; and
- additional key industry drivers include: supportive government policies, e-commerce development and rise of new retail

- **Regarding the market sizing and the forecast model used in the F&S report, the historical data are based on publicly available information as set out below and data beyond those periods are based on F&S 's estimates extrapolated from such publicly available information .**

- Nominal GDP
- Retail Sales of Consumption Goods
- Total Revenue of Software and Information Technology Services Industry
- Urbanization rate
- Population
- Per capita annual disposable income