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Defeng Sun, Hui Pan, and Ruixue Li

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The Rapid Growth Trajectories and International Expansion of Geek+ and Multiway Robotics

Defeng Sun[1], Hui Pan[2], Ruixue Li[3]

Introduction

In recent years, China's smart logistics equipment industry has experienced rapid growth, driven by the explosive expansion of e-commerce, rising labor costs, and increasing demand for safety and quality assurance in warehousing and manufacturing. At the core of this industry are robotics technologies, such as autonomous mobile robots (AMRs) and automated guided forklifts (AGFs). A number of start-ups have emerged around these technologies and are experiencing rapid growth.

However, relatively few case studies have concretely described the growth processes, business models, and internationalization paths of individual firms in this sector based on field-level information. This paper addresses the gap by examining two Chinese smart logistics equipment start-ups: Geek+ (極智嘉), which centers its business on AMRs, and Multiway Robotics, which specializes in AGFs.

Both companies have leveraged China's domestic manufacturing and technology clusters to expand their product portfolios, strengthen their R&D capabilities, and enter overseas markets in a short period. Thus, they can be viewed as both representative and contrasting cases of Chinese smart logistics equipment start-ups.

This case study aims to first clarify how Geek+ and Multiway Robotics established their R&D and manufacturing systems and built integrated smart logistics solutions that combine hardware and software. Second, we examine the evolution of their marketing and sales models, including solution-based sales in the domestic market, the process of standardizing products, and collaboration with system integrators and distributors, thereby extracting the unique market development patterns of smart logistics equipment start-ups. Third, we compare the internationalization strategies of both companies, which pursued aggressive overseas expansion from the early stages of their founding, and organize the similarities and differences in their deployment approaches tailored to regional characteristics.

Based on interviews with the companies and publicly available materials, this study traced the growth

[1] College of Economics, Nihon University
[2] Faculty of Business, Aichi Shukutoku University
[3] Faculty of Business Administration, Hosei University

trajectories of Geek+ and Multiway Robotics and analyzed their organizational, technological, and market strategies. By comparing their commonalities and differences, the study sheds light on the growth mechanisms of Chinese smart logistics equipment start-ups.

Geek+ (極智嘉): A Logistics Innovation Company Leading the Global AMR Market

An innovative company moving the world with AMRs

Beijing Geek+ Technology Co., Ltd. (hereafter "Geek+") provides smart logistics solutions centered on autonomous mobile robots (AMRs) that enhance efficiency and optimize warehouse operations. Against the backdrop of labor shortages, safety requirements, and the need to respond to rapidly growing e-commerce, Geek+ adopted the slogan "Moving the World Intelligently." By leveraging advanced robotics and artificial intelligence (AI) technologies, the company delivers efficient, flexible, and reliable logistics solutions to customers across a wide range of industries worldwide, thereby rapidly increasing its global presence..

Geek+ was founded in 2015 by four graduates of Tsinghua University. Each member brought practical experience in fields such as robotics, industrial engineering, investment, and supply chain management. One of the founders, CEO Zheng Yong, previously worked as a senior manager at the investment firm New Horizon Capital. In 2014, while researching Amazon's logistics modernization and its use of robotics, he recognized the enormous growth potential of warehouse automation. This insight led him to establish Geek+ together with three other Tsinghua graduates.

From the outset, Geek+ did not position itself as merely an AMR manufacturer. Instead, it pursued a style that emphasized the fusion of technology and operations grounded in a deep understanding of warehouse processes. A key aspect of this approach is its development philosophy of "refining products in the field." From 2017 to 2018, Geek+ opened and operated its own warehouse as a third-party logistics (3PL) provider, running logistics operations while continuously improving its products and systems. By acting as its own user and collecting feedback directly from practice, Geek+ differentiated itself from competitors who depended primarily on customer sites for product validation.

The company's first product was a robot picking system, launched for China's "Double 11" (Singles' Day) shopping festival on November 11, 2015. Geek+ began with AMRs specializing in picking operations. In 2016, just a year after its founding, the company's systems were introduced on major Chinese e-commerce platforms, such as Tmall (Alibaba), VIP.com, and Suning. Through these projects, Geek+ quickly built its track record, and the performance and reliability of its products were widely recognized. The fact that product development and market validation proceeded in parallel illustrates its strategic agility, a typical feature of successful start-ups.

A defining feature of Geek+ is its ability to fundamentally transform on-site logistics efficiency by combining standardized AMR products with advanced robot management software (RMS). All its solutions are based on AMRs, and the company offers a broad lineup capable of handling a wide range of warehouse processes: shelf-to-person picking, tote handling, pallet handling, sorting, conveyance, and even robotic forklifts.

Armed with the product portfolio and solution capabilities, Geek+ expanded to major markets worldwide within only a few years of its founding. It has been ranked No. 1 globally in the AMR market for five consecutive years and has held the top position in the warehouse logistics robotics market for three consecutive years. The speed of its growth has attracted considerable attention, both within and outside China.

A strong R&D system and field-driven validation

Geek+'s rapid growth has been underpinned by its consistent focus on R&D investment and field-driven development systems that prioritize practicality. Of the company's approximately 990 employees, more than half belong to the R&D department, and many of them are software engineers. This composition reflects the company's strategic emphasis on system development, including control software and algorithms.

This R&D structure has supported not only improvements in hardware but also the development of software assets that comprehensively orchestrate logistics operations, such as its proprietary RMS, warehouse execution system (WES), and digital management platform (DMP). Algorithms that optimize the behavior of robot fleets are continually refined based on operational data accumulated from each project and have become a core intellectual asset of the firm.

A major characteristic of Geek+'s development strategy is the use of in-house warehouses as testbeds for product validation and improvement. Around 2017, the company operated a 3PL warehouse of approximately 100,000 square meters, carrying out real logistics operations using its own robots. Through this experience, Geek+ identified numerous challenges on both the hardware and software and was able to address them quickly on site. The company continued these internal operations until it was confident in providing sufficient quality to customers, which laid the foundation for the stability and reliability of its products.

Owing to these efforts, by 2023, Geek+ had filed more than 1,800 patent applications, and its product portfolio covered a wide range of applications in warehouse robotics. In particular, the P-series for

shelf-to-person, the RS-series for tote-handling, and the four-way shuttle for pallet transport are each applied to advanced warehouse operations, featuring a high level of integration between algorithms and mechanisms.

These R&D activities were also evaluated externally. Geek+ has received numerous prestigious awards, including the RBR50 Robotics Innovation Award, the Red Dot Design Award, and the iF Design Award. Solutions introduced by the company, such as PopPick and SkyCube, have been recognized as representative innovations in warehouse automation. In recent years, Geek+ has been the only Chinese company to receive some of these global robotics innovation awards, providing further evidence of its technological credibility.

A comprehensive AMR product portfolio tailored to diverse on-site needs

All Geek+ products are based on AMRs and designed to respond to diverse requirements for transport, storage, and sorting in logistics operations. Representative categories include the following:

- Shelf-to-person AMRs (P-series)
- Tote-handling AMRs (RS-series)
- Four-way shuttle AMRs (SkyCube)
- Sorting AMRs (S-series)

These systems have been deployed across warehouses and factories to support a wide range of operational processes.

Shelf-to-person AMRs (P-series)

P-series robots transport shelves or pallets containing inventory items to picking stations. When combined with the PopPick station, P-series robots can move large container racks equipped with multiple storage bins to the PopPick station, which then automatically presents the appropriate container to the operator.

Tote-handling AMRs (RS-series / RoboShuttle)

RoboShuttle combines two types of robots with distinct roles: autonomous case-handling robots (ACRs) capable of handling storage heights of up to 12 meters and AMRs that shuttle totes. This architecture enables the flexible handling of mixed loads, such as plastic totes and cartons, and maximizes the use of warehouse space.

Four-way shuttle AMRs (SkyCube)

SkyCube employs four-way shuttle robots across multiple levels, using a shuttle-based storage structure. By adopting goods-to-person (GTP) picking at the ground level and multilayer shuttle storage above, it achieves both high-density storage and high throughput.

Sorting AMRs (S-series)
Sorting robots automate item sorting within distribution centers. The S100-series can handle loads up to 100 kg, while the S20-series is designed for planar sorting and multifloor operations, enabling flexible responses to various sorting requirements.

Solutions such as PopPick (shelf-to-person), RoboShuttle (tote storage), and SkyCube (pallet storage with four-way shuttles) are not standalone machines but integrated systems that redefine conventional automation approaches. They combine dedicated workstations and storage systems with Geek+'s proprietary RMS and upper-layer software to jointly optimize storage density, picking accuracy, and operational efficiency. In addition, Geek+ provides comprehensive support ranging from a system design tailored to each customer's site conditions to post-deployment operational support.

All robot fleets were centrally controlled by the company's RMS and WES. This enables multi-robot coordination, real-time path optimization, and autonomous responses to anomalies. The key source of Geek+'s competitive advantage lies not in the performance of individual robots but in system-level consistency and scalability.

From the supply-side perspective, Geek+ built its main manufacturing base in Nanjing, a major electronics manufacturing hub in China. The location offers proximity to component suppliers and access to human resources from universities and research institutes, as well as local government support programs and subsidies, which provide a favorable environment for rapid organizational growth.

In its early years, Geek+ procured some components from overseas. Today, however, nearly all parts are domestically sourced. The company carefully selects suppliers based on cost, lead time, and reliability for core components such as programmable logic controllers (PLCs), sensors, and communication modules. In some cases, high-precision components such as laser scanners from Japan or South Korea are used at the customer's request.

Notably, Geek+ does not insist on the in-house design of individual components. Instead, reliable off-the-shelf components are combined to achieve a balance between stability and cost competitiveness. This can be considered a rational product strategy based on the recognition that robotics is

fundamentally a high-level assembly industry.

Market development through solution selling and product standardization

Geek+'s growth in the domestic market was not driven by product sales alone. Rather, a distinctive feature is its commitment to thoroughly verifying whether the solutions actually "work in the field" and refining its proposals through repeated field trials.

In the start-up phase from 2016 to 2018, Geek+ collaborated with major Chinese e-commerce firms such as Tmall, VIP.com, and Suning. These projects served not simply as opportunities to sell products, but as "co-development with the market," where demonstration deployments and iterative improvements were carried out in partnership with leading customers. Through this process, the company established both product reliability and operational benefits.

Operating a 100,000 square-meter 3PL warehouse using its own systems also played an important role in building solution-oriented sales capabilities. By running real logistics operations, Geek+ enabled salespeople, engineers, and developers to work together to understand onsite issues and acquire the ability to design end-to-end workflows. This accumulated knowledge became the foundation for later expansion, both in China and overseas.

Today, Geek+ pursues a dual strategy of product standardization and solution-oriented customization while also shifting its sales channels. In the past, the company predominantly used direct-sales models, providing everything from system design and implementation to operational support. Currently, some mature product lines are gradually moving toward channel sales through their partners. This transition has been made possible by the extensive track record and market recognition of products that have already been developed. Geek+ is building a sales model that evolves from "solution-driven market entry" to "product standardization" and then to "partner-driven channel expansion."

International expansion and local adaptation: region-specific strategies

Within a few years of its founding, Geek+ expanded into major global markets and became a top player in the AMR industry. The driving force behind this success is a flexible approach that carefully considers the characteristics of each regional market.

The company's first step in internationalization was its entry into Japan in 2017. It began by collaborating with Nippon Express, a major Japanese 3PL provider, and gradually built a track record in the broader Asian market. In 2019, Geek+ established local subsidiaries in Germany and the United States, thereby creating a framework capable of handling global projects while maintaining regionally

embedded sales operations.

A notable point is the diversity of sales and distribution models across regions. In the United States, system integrators have strong customer networks and integration capabilities. Accordingly, Geek+ primarily provides its products, while system integrators are responsible for the overall solution design and implementation. In contrast, in Europe, Geek+ operates with a stronger direct sales presence to enhance its ability to handle local customization. In Asia, the company differentiates its channels by country and industry. In Japan, it has established a joint venture with a local partner as the basis of its sales structure.

The development and dissemination of flagship reference cases in overseas markets is another key part of Geek+'s strategy. Through large-scale projects with global companies such as UPS, Zara, Shein, and North Face, Geek+ has demonstrated that its solutions can be applied to standard warehouse operations worldwide. The introduction of more than 600 robots at the Polish apparel giant LPP significantly improved operational efficiency, and other benchmark projects subsequently stimulated similar deployments at multiple European firms. Such projects serve not only as sources of revenue but also as leverage points for building market awareness and trust.

At the same time, differences in safety standards, business practices, and brand recognition can pose barriers to adoption. For example, in Europe, even seemingly minor details such as the layout of control buttons must comply with strict safety regulations, and design changes inevitably increase costs. In response, Geek+ established systems to address certification requirements early and systematically incorporated local feedback. This has enhanced not only the adaptability of its products but also that of its operations and support services.

Currently, approximately 70% of Geek+'s revenue is generated outside China. Rather than simply exporting products, the company established region-specific models for market penetration and solidified its position as a global AMR vendor.

Having long been a pioneer in the AMR market, Geek+ has attracted worldwide attention. On July 9, 2025, the company was listed on the Main Board of the Hong Kong Stock Exchange, becoming the first publicly listed company globally in the field of AGV/AMR warehouse robotics. This IPO was an important milestone not only for Geek+ itself but also for the entire smart logistics equipment industry. The company is expected to pursue further technological innovation and customer satisfaction, thereby reinforcing its position as an industry leader.

Multiway Robotics: Warehouse Automation Solutions Centered on Automated Guided Forklifts

A specialist in AGFs

Multiway Robotics (劢微机器人) is a provider of smart logistics solutions that focuses on AGFs as its flagship products.

The company was founded in 2019 by three co-founders with the vision of becoming "a top-tier provider of intelligent logistics solutions for warehousing and manufacturing sites."

CEO Chen Wencheng spent more than ten years in the mobile phone division of Lenovo, a leading electronics manufacturer in China, holding positions in R&D and product management as R&D director and project director. In 2017, he became the CEO of an AGV company in Xiamen and later founded Multiway Robotics in 2019.

CTO Lü Chaoshun is responsible for the company's technology domain and is also directly involved in product delivery and installation. The firm employs more than 70 people, and roughly two-thirds of the R&D and project-related functions are effectively overseen by Lü.

The third co-founder, Vice President Weng Chen, previously worked at HR at Linde (China), a major global forklift manufacturer. In this way, Multiway Robotics was established by the three founders with complementary professional backgrounds in the forklift industry: electronics and product development, robotics and systems engineering, and human resources.

From its founding in 2019 through 2020, Multiway Robotics has focused on R&D, developing AGFs and the total solutions based on them. As early as 2021, the company achieved commercialization.

The company's headquarter is located in Shenzhen, with a manufacturing hub in Hefei and additional domestic offices in Shenzhen, Hangzhou, and Xiamen. In the second half of 2022, Multiway Robotics began its full-scale overseas expansion, establishing subsidiaries with local operating teams in Atlanta (USA), North Rhine-Westphalia (Germany), Tokyo (Japan), and Seoul (South Korea). Currently, the company provides sales, implementation, and after-sales services in more than 30 countries and regions.

Why enter the forklift industry?

Even in China, the forklift market is extremely competitive, with many domestic and international players. In interviews conducted by the authors, Weng cited three main reasons for which Multiway Robotics decided to focus specifically on forklifts.

First, forklifts have a history of more than 100 years, and the surrounding equipment, such as pallets and racks, has been extensively standardized. Consequently, even if forklifts are automated in the context of industrial digital transformation (DX), major changes in customer environments are generally not required. Customers can introduce AGFs without fundamentally altering their existing working conditions, making automation easier to adopt. Moreover, because forklift operations are standardized, they represent an attractive entry point for smart factory and warehouse initiatives.

Second, the forklift industry remains a growing market, with a total market size of several hundred billion RMB.

Third, according to Weng's experience, even the industry giant Linde attempted to automate forklifts but struggled to achieve success. Linde's core competence lies in traditional manual forklifts, and the transition to AGFs which operate on a completely different principle proved difficult based on their past success in that area. This reinforced Multiway Robotics' belief that focusing exclusively on AGFs is strategically sound, and the company has consistently maintained this direction.

Building an in-house R&D system and developing a diverse lineup of AGFs

By the end of 2023, Multiway Robotics had approximately 70–80 employees, the majority of whom belonged to R&D department. Approximately 60 people are in R&D, with smaller teams devoted to hardware (approximately 5 members), electrical engineering (2–3 members), and algorithms (3–4 members), and these R&D activities are under Lü's leadership. The company strongly emphasizes in-house development and engages in relatively little joint R&D with external organizations. This is because robotics is a highly integrated field in which vehicle body design, sensor placement, and signal processing must be closely coordinated, and relying on external partners makes it difficult to achieve the development speed the company seeks.

In its early stages, Multiway Robotics actively customized systems to meet specific customer needs, thereby providing a high perceived value. However, this approach has led to challenges, such as prolonged project lead times and heavy staff workloads. Thus, in recent years, the company has pursued "convergence" through standardization and modularization. Specifically, it accumulates cases in particular industries, abstracts and modularizes the solutions, and deploys them across similar sectors. In selecting target industries, the company first focused on high-growth sectors, such as new energy, automotive, and food, and then applied successful solutions to other industries. This process confirmed that differences in industry attributes do not fundamentally hinder the introduction of AGFs.

Multiway Robotics develops everything in-house, from core sensors and algorithms to the AGF body and upper layer systems, offering end-to-end solutions. The hardware lineup includes AGFs (pallet-moving, stacker, counterbalance, reach, three-way fork, omnidirectional, and cold-storage), four-way shuttle carts, and unmanned towing vehicles.

Representative products include:

WeFrontX20S

An AGF that automates hand pallet trucks. It weighs 580 kg and has a maximum payload of 2 tons, accommodating a wide range of pallet types, including "field-shaped" (田の字型) pallets.

WeFrontX20

A lighter version of WeFrontX20S. With a self-weight of 480 kg and a 2-ton payload, it is designed to meet elevator weight limits and is suitable for transporting materials across multiple floors. The MW-WCS control system can be integrated with lifts, automatic doors, and other equipment to automate inter-area transportation.

α1 / α2

The α1/α2 AGFs can transport two pallets simultaneously. They offer a positioning accuracy of ±10 mm and a payload of 1,500 kg × 2. The α1 model can move freely in all directions (forward, backward, left, and right).

SE12C

A forklift designed for refrigerated and frozen warehouses. It operates in environments from –25°C to 45°C, using a vehicle body, sensors, and algorithms specifically designed for low temperatures, thereby improving efficiency in cold-storage loading and transport.

These hardware products are integrated and controlled via Multiway's proprietary software systems, which include Multiway Cloud, WMS, RCS, WCS, site management systems, and various visualization tools, enabling optimal smart logistics solutions tailored to each customer.

Manufacturing is conducted at partner factories in Hefei using an OEM model. Multiway Robotics provides the designs and drawings, whereas partner plants handle production. The company specifies key components, and all other parts selected by the factories must be approved by Multiway. Some customers request that the bodies of the Linde forklifts be converted into automated versions, but such cases remain rare. This suggests that the main source of competitive advantage in AGFs lies not in hardware alone but in control software and system integration.

Rapid sales growth through a "doubling game"

In its initial phase, Multiway Robotics concentrated management resources on R&D to improve product quality. A turning point occurred in June 2020, when the company established a dedicated sales team and shifted decisively toward market development. By 2022, it had already achieved cumulative deliveries of 400 units and has since built a track record of "doubling" annual sales.

In 2023, the company sold approximately 1,000 units, and by 2024, its annual revenue reached roughly 200 million RMB. In the smart logistics equipment industry, it is often said that revenue growth tends to slow temporarily once sales reach the 200–300 million RMB range; to move beyond this "plateau," companies must redesign their product portfolio and market positioning. For Multiway Robotics, the challenge is to break through the so-called "1-billion-RMB wall," and it is actively working to optimize its lineup and reconfigure its market footprint accordingly.

The company's sales models clearly differentiate between domestic and overseas markets. In China, sales to system integrators and direct sales to end users are roughly balanced. For integrators, Multiway offers packages that combine AGFs and control software that can be seamlessly integrated into the integrators' own projects. Within approximately five years of initiating full-scale sales activities, the company secured more than 400 benchmark projects, over 30% of which involve Fortune China 500 firms, industry leaders, or "hidden champion" companies. Rather than merely increasing the unit volume, Multiway emphasized building a portfolio of referenceable success cases, which, in turn, facilitates subsequent project acquisition.

Early and proactive internationalization

Multiway Robotics is distinctive in that, from the outset, it was designed with overseas expansion in mind. The company established local subsidiaries and showrooms in Tokyo, Japan; Seoul, South Korea; North Rhine-Westphalia, Germany; and Atlanta, United States. At each location, it built its capability to handle sales, implementation, and after-sales services in an integrated manner. Rather than merely "testing the waters" abroad, Multiway internalized local operating capabilities at an early stage. In contrast to many start-ups that hesitate to invest overseas because of perceived risks, Multiway proactively invested overseas from an early stage, positioning overseas demand as a primary driver of its growth.

International trade fairs serve as a starting point for overseas market development. For example, in Japan, Multiway first participated in a trade show in the Kansai region through an agent. Its visibility has increased through participation in various international fairs, thereby expanding its network of

agents and customers. Initially, contacts came mainly from agencies, but as showrooms were built and reference cases accumulated, the company received more direct inquiries and joint proposal opportunities.

The primary target markets are advanced economies such as Japan, South Korea, Europe, and the United States. Because logistics automation requires sufficient economic development and investment capacity, Southeast Asia is not currently positioned as the primary battlefield. However, Multiway is steadily developing projects in this region through targeting global companies from the United States and China operating in these countries and regions. While overseas sales were still lower than domestic sales in 2023, they reached approximately 50% of the total revenue by the end of 2024, and the company expects overseas sales to account for the majority in 2025.

Overall, Multiway Robotics is evolving from a “specialist in AGFs” into a platform provider of intelligent logistics infrastructure, integrating cloud systems, WMS, RCS, WCS, on-site management, and visualization solutions around its forklifts. By combining product completeness, a growing portfolio of reference projects, and locally embedded operating capabilities, the company is increasing the reproducibility of its “doubling growth” and advancing toward breaking through the “1-billion-RMB wall.”

Conclusion

This study examined the growth processes and business development of two Chinese smart logistics equipment start-ups, Geek+ and Multiway Robotics, through detailed case studies. The comparison revealed both shared growth logic and clear differences stemming from product domains and market positioning.

However, neither company is a simple hardware manufacturer. Both position themselves as end-to-end smart logistics solution providers that integrate robotic hardware with software such as RMS, WMS, and WCS. In both cases, R&D personnel account for a high proportion of employees, and software assets, including algorithms and upper-layer systems, serve as major sources of competitive advantage.

Moreover, both firms have embraced a “co-development with the market” stance from an early stage, refining their products through field trials and customer projects. They have accelerated project acquisition both locally and abroad by deploying successful cases as benchmarks. Simultaneously, they leverage China’s manufacturing clusters and supply chains to secure cost competitiveness and supply capabilities while pursuing aggressive early internationalization in advanced markets such as

Japan, Europe, North America, and South Korea.

The differences are clear. Geek+ has developed a diversified AMR-based product portfolio—shelf-to-person and tote-handling AMRs, four-way shuttles, and sorting robots, among others—and has strong capabilities in redesigning entire warehouses for industries such as e-commerce, apparel, and 3PL. In contrast, Multiway Robotics focuses on AGFs as its core, pursuing an approach that maintains existing pallets, racks, and operational processes, using forklift automation as an entry point for advancing factory and warehouse intelligence. In other words, Geek+ follows a strategy of "reconfiguring warehouses using new robotic infrastructure," whereas Multiway Robotics emphasizes "intelligent upgrading of existing forklift-based infrastructure."

Differences also appear in growth stages and market positions. Geek+ has an established history. It secured the top share in the global AMR market and holds numerous patents and design awards. It has also achieved a public listing on the Hong Kong Stock Exchange as a global leader. Multiway Robotics, a specialist in AGFs, is a younger firm in the scale-up phase characterized by rapid "doubling" growth, and it is now tackling the challenge of breaking through the 1-billion-RMB revenue threshold. In terms of manufacturing, Geek+ has established a self-directed production system based in Nanjing, whereas Multiway Robotics relies on OEM manufacturing at partner factories in Hefei, highlighting the differences in their supply chain strategies.

In summary, the comparison between Geek+ and Multiway Robotics demonstrates that the growth patterns of Chinese smart logistics equipment start-ups are far from uniform. While they share a common logic—R&D-intensive organizational design, emphasis on solution-oriented proposals, and early internationalization—they pursue different technological and market focal points: AMRs versus AGFs and transformative reconfiguration versus incremental upgrading. Further research that extends the comparison to other Chinese firms and Japanese, European, and American companies is essential. Such studies should examine the diversity of growth paths among smart logistics equipment start-ups and the ways in which these paths are shaped by industrial clusters, policy environments, and other institutional conditions.

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法政大学イノベーション・マネジメント研究センター
The Research Institute for Innovation Management, HOSEI UNIVERSITY

〒102-8160 東京都千代田区富士見 2-17-1
TEL: 03(3264)9420　FAX: 03(3264)4690
URL: https://riim.ws.hosei.ac.jp
E-mail: cbir@adm.hosei.ac.jp

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