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# Research on the Current Status and Trends of Reverse Service Outsourcing in China

## -- A Case Study of Huawei's Overseas R&D Centers

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## Abstract

**Driven by both globalization and information technology innovation, reverse service outsourcing has emerged as a new business format, becoming an important path for enterprises in developing countries to upgrade their value chains. This paper adopts case study, literature research and data analysis methods, focusing on the high-end service sector. Combining the measurement of China's reverse service outsourcing index and industry difference analysis, and taking Huawei's overseas R&D centers as a typical case, it explores the operational logic and implementation effects of reverse service outsourcing. The study finds that global reverse service outsourcing presents a pattern of "contracting by emerging countries and undertaking by developed countries". China's reverse service outsourcing index shows a fluctuating upward trend, and reverse service outsourcing in the R&D and innovation industry is characterized by high-end and specialization. Through the layout of global R&D centers, Huawei has integrated top-tier technology and talent resources, achieving an all-round improvement in financial performance, technical strength and global market competitiveness. The research provides certain theoretical support and practical references for Chinese enterprises to carry out reverse service outsourcing.**

## Keywords

**Reverse Service Outsourcing; R&D Innovation; Huawei R&D Centers.**

## 1. Research Background and Significance

### 1.1. Research Background

Driven by the deepening advancement of globalization and the rapid iteration of information technology, the global service outsourcing industrial structure is undergoing profound changes. The traditional offshore outsourcing model is gradually extending to diversification and high-end development, and reverse service outsourcing has emerged as a new business format. The global economy has shown a clear trend of transformation from an "industrial economy" to a "service economy". Servitization of manufacturing has become a new production model under the global value chain, and a large number of producer service elements are embedded in manufacturing production links and exported accordingly.

The rise of reverse service outsourcing is not accidental. Its core motivations include: from the perspective of developing countries, taking reverse service outsourcing as a new globalization strategy to achieve their own industrial upgrading, changing the traditional passive situation of "exchanging market for technology"; from the perspective of developed countries, the rising costs of some outsourced industries force developed countries to withdraw these industries

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back to their home countries, and reverse service outsourcing is a passive choice for developed countries.

From the perspective of Chinese enterprise practice, China has met the prerequisites for reverse outsourcing: first, it has a broad domestic market; second, it has strong resource integration capabilities[1]; third, outsourcing is highly developed. At the same time, China's manufacturing reverse service outsourcing shows the characteristics of structural optimization. Although the overall outsourcing rate fluctuates, reverse service outsourcing in technology-intensive industries continues to rise, becoming an important driving force for industrial upgrading. Against this background, the demand for Chinese enterprises to integrate global innovation resources and enhance core competitiveness through reverse service outsourcing is increasingly urgent.

## 1.2. Research Significance

### 1.2.1. Theoretical Significance

Current domestic and foreign research on reverse service outsourcing mostly focuses on macro-level quantitative analysis, such as trade value-added measurement, impact mechanisms on productivity or value chains (Cheng Dazhong, 2017; Wu Fengyu et al., 2015)[10]. In-depth case studies targeting specific industries and enterprises are relatively scarce. Based on the analysis of reverse service outsourcing indexes of various service industries in China, this study takes the R&D and innovation industry as the entry point and selects Huawei's overseas R&D centers as a typical case to analyze the implementation process and effects of reverse service outsourcing. It can enrich the case research results in the field of reverse service outsourcing and deepen the theoretical research on China's reverse service outsourcing.

### 1.2.2. Practical Significance

At the enterprise level, as a benchmark enterprise for the internationalization of China's manufacturing industry, Huawei's reverse service outsourcing practice in overseas R&D centers covers multiple dimensions such as location selection, operation mode and risk control (Zhang Zhengang et al., 2021)[3]. Its experience can provide practical operational references for similar Chinese enterprises to carry out reverse service outsourcing, helping enterprises avoid potential risks and improve resource integration efficiency. At the government level, the research conclusions can provide decision-making basis for China to formulate service trade support policies, optimize the business environment, and promote the coordinated upgrading of manufacturing and service industries, helping China transform from a major service trade country to a strong one.

## 1.3. Research Methods and Innovations

### 1.3.1. Research Methods

(1) Case Study Method

Huawei's overseas R&D centers are selected as a typical case, focusing on the reverse service outsourcing practice in the R&D and innovation industry. By analyzing its operation mode, implementation effects and influencing factors, generalizable experience and enlightenment are extracted.

(2) Literature Research Method

Systematically sort out domestic and foreign research literature on service outsourcing, reverse service outsourcing, global value chain, servitization of manufacturing and other fields, clarify the theoretical context and research status, and lay a theoretical foundation for case analysis.

(3) Data Analysis Method

Using ADB input-output tables, Huawei's public annual reports and industry statistical data, analyze the current status and future development trends of China's reverse service

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outsourcing. At the same time, quantitatively analyze Huawei's overseas R&D centers' R&D investment, revenue, patent output, etc., to enhance the objectivity and persuasiveness of the case study.

#### 1.3.2. Innovations

(1) Research Perspective Innovation: Focusing on the high-end service field of R&D and innovation, breaking through the limitation of existing research mostly focusing on general service outsourcing, and deeply analyzing the uniqueness and regularity of reverse service outsourcing in technology-intensive industries.

(2) Case Selection Innovation: Selecting Huawei's overseas R&D centers as the case. This case has the characteristics of wide global layout, high technical content and strong data availability, which can fully reflect the core operational logic and effects of reverse service outsourcing.

## 2. Literature Review

### 2.1. Definition and Origin of Reverse Service Outsourcing

Definition of Reverse Service Outsourcing

Reverse service outsourcing is a new outsourcing model relative to traditional service outsourcing. Its core feature is the reverse location of the contracting party and the undertaking party: enterprises from emerging markets or developing countries act as contractors, outsourcing knowledge-intensive and technology-intensive core businesses (such as R&D, design, high-end consulting, etc.) to enterprises or institutions in developed countries, or setting up factories in developed countries to obtain advanced production factors, advanced technologies and management experience (Zhang Yabin et al., 2016)[6]. Compared with traditional service outsourcing, reverse service outsourcing has significant differences: in terms of business nature, traditional outsourcing mainly focuses on non-core, labor-intensive businesses, while reverse service outsourcing focuses on core business links; in terms of factor flow, traditional outsourcing is for developed countries to obtain cheap labor from developing countries, and reverse service outsourcing is for developing countries to obtain high-end talents, technologies and other advanced production factors from developed countries; in terms of strategic orientation, traditional outsourcing focuses on cost saving, while reverse service outsourcing aims at capability improvement and value chain upgrading (Wu Fengyu et al., 2015)[4].

From the development stage, reverse service outsourcing has gone through three evolutionary stages: the first stage focuses on talent acquisition, where enterprises in developing countries recruit high-end talents by setting up branches in developed countries; the second stage focuses on technology learning, absorbing advanced technologies from developed countries through joint R&D, technology mergers and acquisitions; the third stage focuses on value chain dominance, where enterprises build independent innovation networks through global resource integration, realizing the role transformation from "passive undertaking" to "active contracting" (Chen Yu et al., 2014)[5].

### 2.2. Theoretical Basis of Reverse Service Outsourcing

#### 2.2.1. Theory of Comparative Advantage

The theory of comparative advantage is one of the core theoretical supports for reverse service outsourcing. This theory holds that different countries have differences in production factor endowments (such as technology, talent, capital). Enterprises can use the comparative advantages of developed countries in high-end production factors through reverse service outsourcing to make up for their shortcomings in technology R&D, management experience, etc. (Chen Qifei et al., 2013)[2]. For example, Chinese manufacturing enterprises can quickly obtain

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advanced technologies and innovative concepts by outsourcing R&D businesses to European and American enterprises, realizing optimal resource allocation.

#### 2.2.2. Core Competence Theory

The core competence theory holds that the competitive advantage of an enterprise comes from its core competence. Enterprises should focus on core businesses and outsource non-core but key business links to external professional institutions to improve resource utilization efficiency and core competitiveness (Chen Yu et al., 2014)[5]. In reverse service outsourcing, enterprises in developing countries outsource R&D, design and other businesses to institutions in developed countries, not to give up core businesses, but to strengthen core competence through external resource integration, realizing a strategic layout of "doing what is necessary".

#### 2.2.3. Global Value Chain Theory

The global value chain theory holds that in the global production network, different links of the value chain are distributed in different countries, and enterprises in developing countries are often locked in low value-added links (Cheng Dazhong, 2017)[10]. Reverse service outsourcing provides a path for enterprises in developing countries to embed in the high-end links of the global value chain. Through cooperation with enterprises in developed countries, enterprises can learn advanced technologies and management models, and gradually climb to both ends of the value chain (R&D, marketing) to realize industrial upgrading (Chen Qifei et al., 2013)[2].

#### 2.2.4. Resource-Based View Theory

The resource-based view theory emphasizes that the competitive advantage of an enterprise comes from the scarce and difficult-to-imitate resources it owns. High-end talents, advanced technologies, brand resources, etc. in developed countries are scarce strategic resources. Enterprises in developing countries can obtain these resources through reverse service outsourcing, build their own resource advantages, and then enhance long-term competitiveness (Zhang Yabin et al., 2016)[6].

### 2.3. Literature Review of Reverse Service Outsourcing

In terms of model research, Koopman et al. (2014) proposed a value accounting framework for reverse service outsourcing based on the value-added decomposition method, providing methodological support for accurately measuring the scale of reverse service outsourcing[15]; Hausmann et al. (2007) verified the promoting effect of reverse service outsourcing on enterprise technology upgrading through export sophistication indicators[14]. Cheng Dazhong et al. (2017) re-measured China's service trade export scale from 2000 to 2014 based on WIOD data using the forward value-added decomposition method, and found that traditional statistical methods seriously underestimated the service trade value brought by reverse service outsourcing[10]; Chen Qifei et al. (2013) constructed a reverse service outsourcing index and found that the structure of China's manufacturing reverse service outsourcing is continuously optimized, and the outsourcing rate of technology-intensive industries continues to rise[8].

In terms of influencing factors, Baldwin et al. (2015) believed that technological progress and reduced trade costs are the core driving factors for the rise of reverse service outsourcing; Fontagné et al. (2017) pointed out that the trend of servitization of manufacturing has intensified enterprises' demand for high-end services and promoted the development of reverse service outsourcing; Zhang Yueyou et al. (2013) believed that the factors driving reverse outsourcing include service quality meeting innovative resources, realizing cost arbitrage, being guided by national policies or enterprise strategic layout, and being close to overseas markets[7].

In terms of economic effects, Amiti et al. (2009) empirically found that reverse service outsourcing can improve enterprise productivity[13]; Rodrik (2006) believed that developing countries can achieve the upgrading of export product quality through reverse service

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outsourcing. Wu Fengyu et al. (2015)[4] analyzed the impact of three reverse service outsourcing models on manufacturing productivity, and found that the negative impact of information technology outsourcing is the smallest, and the long-term positive impact of knowledge process outsourcing is the largest; Chen Qifei et al. (2013) empirically verified the significant promoting effect of reverse service outsourcing on manufacturing value chain upgrading[8], and Hu Zhaoling (2023) believed that reverse service outsourcing can promote the optimization and upgrading of export product quality by improving production efficiency[12], promoting innovation, and promoting the import of capital goods.

### 2.4. Deficiencies of Existing Research

Existing research mostly conducts quantitative analysis from the macro-industry level, lacking in-depth case studies of specific industries and enterprises, and it is difficult to reveal the micro-operational logic of reverse service outsourcing. There are few studies on reverse service outsourcing in high-end service fields such as R&D and innovation, which cannot reflect the heterogeneous characteristics of reverse service outsourcing in different industries.

## 3. Analysis of the Development Status of Reverse Service Outsourcing

### 3.1. Development Status of Global Reverse Service Outsourcing

#### 3.1.1. Overall Trend

Global reverse service outsourcing shows a steady growth trend, becoming a new bright spot in the development of service trade. With the deep integration of servitization of manufacturing and digital technology, the tradability of services has been significantly improved, and the business scope of reverse service outsourcing has been continuously expanded, extending from traditional R&D outsourcing to design, consulting, finance and other fields (Wang Qingchen et al., 2019)[9]. In terms of scale, the proportion of service trade in major economies continues to rise. The proportion of service trade in emerging countries such as China and Brazil remains at about 40%, and the proportion of service trade in developed countries such as the United States and the United Kingdom has exceeded 50% and shows a continuous upward trend.

#### 3.1.2. Regional and National Roles

Global reverse service outsourcing has formed a core pattern of "contracting by emerging countries and undertaking by developed countries", but the roles of different countries are significantly different. Relying on their advantages in high-end talents and technology R&D, developed countries have become the main undertakers of reverse service outsourcing, especially the United States, the United Kingdom, Germany and other countries, which have undertaken a large number of R&D and innovation-oriented reverse service outsourcing businesses relying on their strong R&D capabilities (Zhang Zhengang et al., 2021)[3]; among emerging countries, China and India are the main contractors. Relying on the scale advantage of manufacturing, China's reverse service outsourcing focuses on R&D, technical consulting and other fields, while India mainly focuses on business process outsourcing and knowledge process outsourcing (Zhang Yabin et al., 2016)[6]. In addition, the center of global reverse service outsourcing is evolving from "UK-US dominance" to "China-US dominance", and China's position in the global reverse service outsourcing network continues to rise.

### 3.2. Analysis of Reverse Service Outsourcing in China's Service Industry

This paper draws on the practice of Chen Qifei (2013) and calculates the proportion of service intermediate product input in total intermediate product input (FH index)[8] based on Feenstra and Hanson (1997) to reflect the intermediate input of service industry in the production process of the industry. This paper mainly studies China's reverse service outsourcing, so it selects the input-output data of service industry in the ADB database, and calculates the

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dependence degree of China's reverse service outsourcing index based on the FH index, which can accurately describe the level of industry reverse service outsourcing.

$$FH_{fijt} = \sum_{j} \left(\frac{X_{fijt}}{Y_{fit}}\right)\left(\frac{M_{fjt}}{P_{fjt} + M_{fjt} - E_{fjt}}\right)$$

In the above formula, subscripts f, i, j, t represent the undertaking country, China's industry, service industry of the undertaking country, and year respectively. $FH_{fijt}$ represents the reverse outsourcing index of China's industry i with undertaking country f in year t. $X_{fijt}$ represents the intermediate input of China's industry i from service industry j of undertaking country f in year t, $Y_{fit}$ represents the total amount of intermediate inputs used by China's industry i in year t, $P_{fjt}$ represents the total output of service industry j of undertaking country f in year t, $M_{fjt}$ represents the total amount of intermediate inputs imported by China from service industry j of undertaking country f in year t, and $E_{fjt}$ represents the total amount of intermediate inputs exported by China to service industry j of undertaking country f in year t.

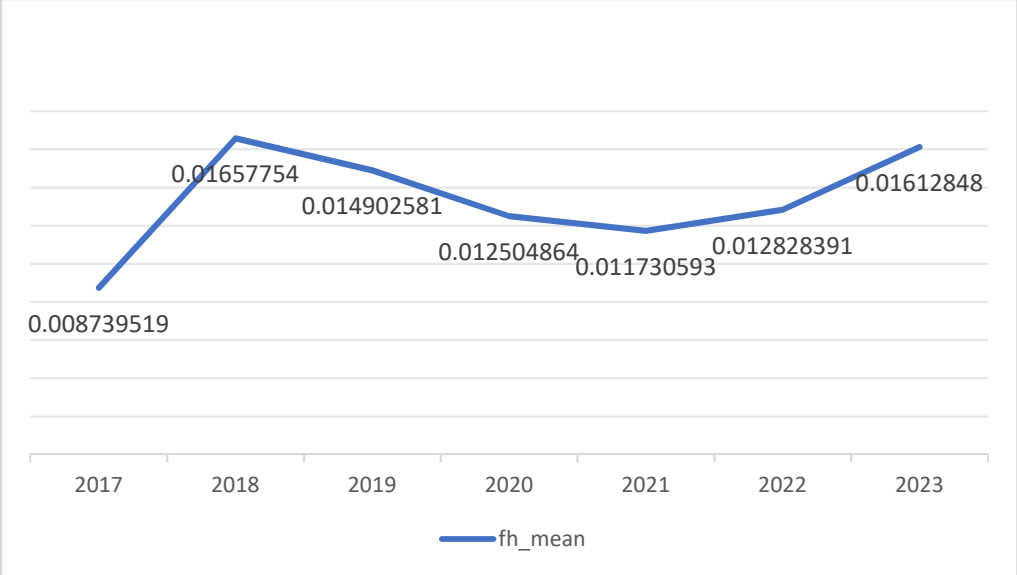


**Figure 1.** Annual Changes of China's Reverse Service Outsourcing Index from 2017 to 2023
Source: Calculated from ADB Input-Output Tables.

China's reverse service outsourcing index shows obvious fluctuations: rising from 2017 to 2018, falling from 2018 to 2021, and rising again from 2021 to 2023. The growth from 2017 to 2018 was mainly driven by the high-level opening-up and innovation-driven strategy. China accelerated the development of high-tech industries and high value-added service industries. Against the background of globalization, the demand for technology and knowledge-intensive outsourcing increased. Coupled with the initial emergence of Sino-US trade frictions, some enterprises took the initiative to strengthen cooperation with developed countries to obtain advanced technologies and management experience, driving the rise of reverse service outsourcing.

The decline of the index from 2018 to 2021 was mainly affected by the COVID-19 pandemic and US restrictions on China. The pandemic impacted the global supply chain and transnational cooperation, restricted personnel mobility and project implementation, and suppressed the demand for high-end service outsourcing. At the same time, the United States strengthened

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export controls on China's high-tech fields, making enterprises face higher risks in technical cooperation, further suppressing outsourcing activities.

After 2021, the index rebounded thanks to the global economic recovery and China's economic transformation and upgrading. After the pandemic eased, the demand for technology, management and high-end services recovered, especially in the fields of digitalization and intelligent manufacturing. Chinese enterprises once again increased cooperation in high-end foreign services to enhance global competitiveness, promoting the recovery of reverse service outsourcing.

**Table 1.** China's Reverse Service Outsourcing Index by Industry


Source: Calculated from ADB Input-Output Tables.

When analyzing China's reverse service outsourcing index by industry, it is obvious that the outsourcing level of the service industry is generally higher than that of the manufacturing industry. This phenomenon mainly reflects the transformation of the modern economic structure and the improvement of the core position of the service industry in the economy. Compared with the manufacturing industry, the service industry is more dependent on

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knowledge-intensive and technology-intensive services, which usually involve high-level technological innovation, professional skills and global management experience. Therefore, the reverse service outsourcing level of the service industry is naturally higher.

In specific industry analysis, the reverse service outsourcing level of the financial industry is relatively high. With the gradual opening and internationalization of China's financial market, the financial industry needs to use the advantages of developed countries in financial technology, risk management, investment consulting and other fields to enhance the competitiveness and innovation capacity of the domestic financial system. Especially in the fields of capital market, derivative trading and cross-border financial services, Chinese financial institutions have an urgent demand for external advanced technologies. This makes the demand for reverse service outsourcing in China's financial industry increasing day by day. The outsourcing demand of other business service industries is also prominent. With the intensification of global scientific and technological competition, Chinese enterprises continue to seek cooperation with enterprises in developed countries to obtain advanced technologies and management experience and enhance independent innovation capacity. In the wave of global technological innovation, reverse service outsourcing has become an important way for Chinese enterprises to obtain advanced technologies and solutions, especially in the fields of R&D, design and technical support, the demand is more urgent.

## 3.3. Specific Analysis of Reverse Service Outsourcing in R&D and Innovation Industry

### 3.3.1. Industry Characteristics

Reverse service outsourcing in the R&D and innovation industry is characterized by significant high-end and specialization. The business content focuses on high-end links such as core technology R&D, cutting-edge technology exploration, and patent layout, which have extremely high requirements for the technical strength, talent reserve, and R&D facilities of the undertaking party; the cooperation mode is mainly long-term strategic cooperation, mostly in the form of joint R&D, joint construction of R&D centers, technology mergers and acquisitions, rather than short-term project outsourcing (Deng He, 2022)[11]; in terms of value creation, reverse service outsourcing in the R&D and innovation industry can quickly improve the technical level and innovation capacity of contracting enterprises, create high added value, and promote enterprises to climb to the high-end of the value chain.

### 3.3.2. Development Trends

With the rapid development of technologies such as artificial intelligence, big data, and cloud computing, digital transformation has become an important trend in all walks of life. Especially in the field of R&D and innovation, the model of reverse service outsourcing is gradually transforming to digitalization and intelligence. For example, new cooperation models such as remote R&D and virtual R&D teams are emerging, which have greatly changed the traditional service outsourcing methods. This transformation not only improves R&D efficiency, but also makes transnational cooperation more flexible and efficient.

In addition, with the continuous development of reverse service outsourcing, undertaking parties are gradually concentrating in regions with high concentration of global R&D resources. Typical examples are Silicon Valley in the United States, Munich in Germany, Cambridge in the United Kingdom and other places. Relying on strong technological innovation capacity and high-quality scientific research environment, these regions have formed industrial clusters with technological innovation as the core. These agglomeration effects have promoted the exchange and cooperation of technology and knowledge on a global scale, making reverse service outsourcing activities more frequent and in-depth.

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At the same time, the depth of cooperation between contracting enterprises and undertaking parties is constantly deepening. From the initial simple technology R&D cooperation, it has gradually developed into in-depth cooperation covering the innovation of the entire industrial chain. This cooperation not only includes technology R&D, but also involves patent sharing, market promotion and other links, forming a closer collaborative innovation network. This whole industrial chain cooperation model has promoted technological progress and market expansion, and enabled both parties to achieve common development in the fiercely competitive international market.

# 4. Case Analysis-Taking Huawei's Establishment of Overseas R&D Centers as an Example

## 4.1. Overview of Huawei's Overseas R&D Centers

### 4.1.1. Basic Information of Huawei

As a leading enterprise in China's electronic and communication manufacturing industry, Huawei is a global leading ICT solution provider. The construction of its overseas R&D centers is a typical practice of reverse service outsourcing. Huawei has set up overseas R&D institutions in 20 countries around the world, covering many high-end R&D fields such as 5G, 6G, artificial intelligence, and chips. The reverse service outsourcing is large in scale, wide in scope and high in level, which can fully reflect the core characteristics and operational logic of reverse service outsourcing in the R&D and innovation industry.

From 2017 to 2024, Huawei's average overseas revenue reached 254.275 billion yuan. The cumulative R&D investment in the past decade exceeded 1,249 billion yuan. As of 2024, R&D personnel accounted for 54.1%, and the cumulative number of valid patents exceeded 150,000, with strong international operation capacity and R&D strength. Huawei's international development process and overseas business layout have laid a solid foundation for its reverse service outsourcing.

### 4.1.2. Business Model Analysis

Commercial presence, as the core way of the construction and operation of Huawei's overseas R&D centers, refers to enterprises carrying out R&D services by setting up independently operating commercial institutions within the territory of the host country. Specifically, Huawei directly invests in setting up wholly-owned R&D centers and research institutes in key global technology nodes, or jointly builds joint laboratories with local universities and scientific research institutions, or integrates R&D assets by acquiring local technology companies. As localized carriers of Huawei's global R&D network, these physical institutions not only realize the localized allocation of R&D resources, effectively avoid geopolitical and trade barriers, but also can absorb top talents nearby, quickly respond to regional market technology needs, and promote the global collaborative transformation of innovation achievements, constituting the core support of Huawei's R&D internationalization strategy.

Movement of natural persons, as an important supporting support for commercial presence, runs through the entire operation cycle of overseas R&D centers. Huawei has effectively applied this method through two core practices: on the one hand, it sends core technical experts and project managers from the headquarters to settle in overseas bases for a long time to undertake the output of technical standards and cross-regional collaborative coordination; on the other hand, it recruits professional R&D talents locally in the host country, and promotes short-term cross-border exchanges of global R&D personnel. This cross-border movement and localized services of natural persons not only ensure the technical synergy between overseas bases and the headquarters R&D system, but also activate the value of local talent resources, providing

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key talent and technical connection guarantee for the efficient operation of the commercial presence model.

### 4.1.3. Layout of Overseas R&D Centers

**Table 2.** Deployment of Huawei's Overseas R&D Centers

| Host Country | Business Layout of Overseas R&D Institutions | Location Factors of Overseas R&D Centers |
|---|---|---|
| UK | Focus on optoelectronics R&D and multi-field technological innovation | Dense European technical talents, top scientific research resources in optoelectronics, local market |
| Germany | Focus on 5G technology and hardware R&D, and carry out standard patent research and energy technology innovation | Profound accumulation in automotive electronics and industrial technology, sufficient engineering talent reserve, core hub of European market |
| France | Focus on mathematics and algorithm research, deeply engage in graphics chip R&D, and participate in standard patent-related research | Outstanding scientific research strength in mathematics and algorithms, concentrated graphics chip technical talents, key node of European patent layout |
| Sweden | Focus on 5G microwave technology R&D and 6G cutting-edge technology exploration, and carry out innovative research on core technologies in the communication field | Traditional advantages in Nordic communication technology, top engineer resources in wireless communication, friendly R&D and innovation environment |
| Finland | Focus on terminal operating system R&D and network security technology innovation | Reserve of mobile terminal system R&D talents, host country market |
| Belgium | Mainly carry out R&D related to application software architecture, providing technical support for architecture design and optimization of various software products | Close to EU headquarters and standard-setting institutions, strong university software architecture research strength, convenient cross-border technical cooperation |
| Ireland | Deeply engage in OSS system R&D | European software outsourcing and IT service industrial cluster |
| India | As Huawei's largest overseas R&D center, focus on communication technology R&D and software development, supported by a large number of engineer teams | Sufficient and cost-controllable software engineer reserve, South Asian market business support demand, convenient English communication, huge local market potential |
| Singapore | Focus on cloud computing technology R&D and industry solution innovation | Southeast Asian regional hub status, connecting Asia-Pacific markets |
| Japan | Carry out communication technology R&D, and focus on terminal product adaptation technology innovation to adapt to local terminal market demand | Leading electronic component technology, mature communication terminal market, precision manufacturing and technology iteration capacity |
| Australia | Focus on localized R&D of communication technology | Local market |
| Canada | Focus on 5G technology, cloud computing and AI fields | Dense North American high-tech talents, friendly policies |
| USA | Focus on AI and cloud computing R&D, and carry out communication technology innovation | Core of global high-tech industrial ecosystem, convenient cooperation with top tech enterprises and universities, gathering of cutting-edge technical information |
| UAE | Build data storage innovation center, focus on R&D of regional digital solutions | Middle East digital economy hub, strong demand for cross-border data centers, government support for digital transformation, connecting Eurasian and African markets |
| Saudi Arabia | As the largest innovation center in the Middle East, focus on digital transformation solution R&D and communication technology adaptation | Core of emerging Middle East market, demand for energy and communication integration, large government investment, need to build local cooperation ecosystem |
| Egypt | Rely on innovation laboratories to carry out communication technology adaptation and industry application R&D serving North Africa | North African regional business radiation hub, local ICT talent reserve, Arabic market technology localization demand |
| South Africa | Communication technology R&D and industry solution adaptation | Local market, talent cost advantage |
| Russia | Focus on algorithm research and big data technology R&D | Outstanding scientific research strength, relatively low R&D cost |
| Israel | Deeply engage in network security technology and chip R&D | Global network security and semiconductor innovation highland |
| Turkey | Communication technology adaptation and digital solution R&D | Local market, policy support for foreign-funded R&D institutions |

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#### 4.1.4. Background and Purpose of Huawei's Implementation of Reverse Service Outsourcing

From the location reasons of Huawei's overseas R&D centers above, the main reasons for its implementation of reverse service outsourcing can be summarized as valuing the local scientific research strength, having a broad local market, second, the local government's support for R&D, and third, the external environment forcing enterprises to develop to both ends of the value chain.

First of all, an important reason for Huawei to implement reverse service outsourcing is to make up for technical shortcomings and enhance core competitiveness. Especially in the early stage of Huawei's expansion, the lack of core technologies led to its disadvantage in the fierce market competition. Huawei integrated global top-tier technical resources through overseas R&D centers and broke through core technical bottlenecks such as 5G and chips. In addition, the construction of overseas R&D centers can help enterprises better approach target markets, carry out localized R&D, and improve product adaptability and market competitiveness. This market expansion is not only based on the improvement of technical R&D, but also reflected in the implementation of the enterprise's internationalization strategy.

Secondly, reverse service outsourcing also helps to optimize the R&D cost structure. Many countries provide tax reductions and R&D funding support, which attract a large amount of foreign investment and help enterprises reduce R&D costs. By outsourcing R&D to regions with low talent costs, enterprises can effectively control costs while maintaining technological innovation, thereby enhancing global competitiveness.

Changes in the external environment have also promoted the implementation of reverse service outsourcing. With the intensification of competition in the global ICT industry, technological innovation has become the core competitiveness of enterprises, and reverse service outsourcing has gradually become a key way to obtain high-end R&D resources. At the same time, the transformation of manufacturing to a service-oriented economy has made high-end services such as R&D and design an important source of product added value, and enterprises have enhanced the market competitiveness of technologies and products through outsourcing.

### 4.2. Impacts and Enlightenments of Huawei's Overseas R&D Centers

#### 4.2.1. Implementation Effects

At the financial level, Huawei's overseas revenue continues to grow. The technological upgrading brought by reverse service outsourcing promotes the improvement of product added value, and profitability is significantly enhanced. In 2024, Huawei's sales reached 862 billion yuan, and net profit was 79.361 billion yuan, showing a strong financial performance. At the scientific and technological R&D level, core technical capabilities have been significantly improved, with a large number of patent achievements in 5G, 6G, chips and other fields, with more than 150,000 patents applied for cumulatively; market competitiveness continues to increase, products cover more than 170 countries and regions around the world, serving more than 3 billion people, occupying a leading position in the global ICT market; the internationalization process is accelerated, and overseas R&D centers have become an important support for Huawei to expand the international market, promoting its transformation from a Chinese enterprise to a global enterprise. Successfully realized value chain upgrading, transforming from a traditional manufacturing enterprise to a technology-leading enterprise, occupying a high-end link in the global value chain; built a global integrated R&D network, formed a unique technological innovation advantage, and laid a solid foundation for long-term development.

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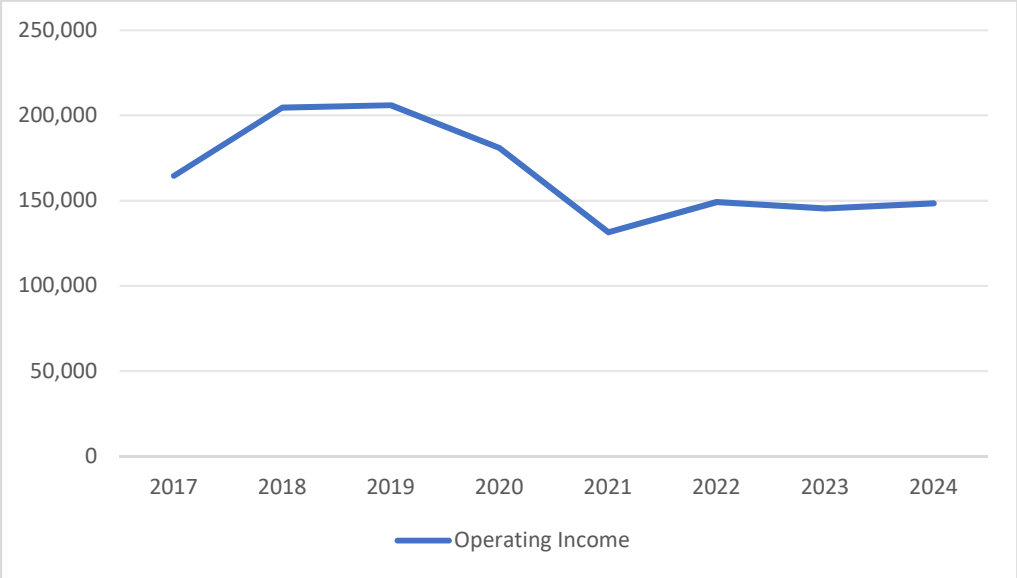
**Table 3.** Huawei's Operating Income (2017-2024)




Data Source: Huawei's Annual Reports 2017-2024

### 4.2.2. Experience and Lessons

Huawei has accumulated important experience in reverse service outsourcing of overseas R&D centers. First of all, it takes reverse service outsourcing as a core means to improve technical level and promote internationalization, especially in the field of high-end R&D. Through the layout of overseas bases, it integrates global talents and resources to promote technological breakthroughs in 5G, chips and other fields. Secondly, in terms of site selection, priority is given to regions with concentrated R&D resources and leading technologies, such as Silicon Valley and Europe, to improve resource acquisition efficiency and innovation quality. At the same time, Huawei pays attention to global resource integration, builds an international R&D team, strengthens collaborative innovation, and enhances global competitiveness. In addition, it ensures the stable and efficient operation of overseas bases through improving R&D management and risk prevention and control mechanisms.

In terms of risks, enterprises need to pay attention to core technology control and external policy impacts. Although reverse service outsourcing helps to obtain advanced technologies, excessive dependence may lead to core technology migration and leakage risks. Therefore, it is necessary to strengthen technology accumulation and confidentiality to achieve independent control. At the same time, changes in the international policy environment, especially the rise of trade protectionism, may restrict overseas R&D activities. Enterprises should closely follow policy dynamics, respond flexibly to uncertainties, and ensure sustainable business development.

### 4.2.3. Policy Support Suggestions at the Government Level

The government should introduce relevant policies, such as financial subsidies and tax incentives, to reduce enterprises' R&D costs and encourage more enterprises to carry out reverse service outsourcing. Secondly, the government can build a public service platform to provide information on target market policies, R&D resources, etc., to support enterprises in expanding overseas R&D centers. In addition, the government should strengthen the protection of intellectual property rights, improve relevant laws and regulations, and increase law enforcement to provide a good legal guarantee for enterprises. At the same time, the government should promote the construction of reverse service outsourcing industrial parks, optimize the industrial development environment by gathering relevant resources and enterprises, and further promote enterprises' technological innovation and globalization development.

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## 5. Conclusion

Reverse service outsourcing is an inevitable product of global economic transformation and technological iteration. The global reverse service outsourcing center has evolved from "UK-US dominance" to "China-US dominance". Reverse service outsourcing in the R&D and innovation industry is characterized by high-end, specialization and long-term development. Digital transformation and regional agglomeration are the main development trends, but it faces multiple challenges such as intellectual property protection, technical barriers and cross-cultural management.

As a typical case of reverse service outsourcing in the field of R&D and innovation, Huawei's overseas R&D centers have achieved remarkable results, realizing an all-round improvement in financial performance, business capacity and strategic position. Its successful experiences include focusing on core technologies, building a global R&D network, attaching importance to talent and system construction, etc. At the same time, it also faces challenges such as intellectual property risks and uncertainty of the policy environment.

Reverse service outsourcing is of great significance to enterprise development and industrial upgrading. It can help enterprises break through technical bottlenecks, expand international markets, enhance core competitiveness, and provide strong support for national industrial structure optimization and service trade development.

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