UDC 338.45:004.738.5

ANALYSIS OF THE DEVELOPMENT OF CHINA'S INTERNET OF THINGS INDUSTRY

Xie Tianci, master's degree student,
Mihutski I., associate professor,
Sednina M., senior lecturer
Belarusian National Technical University
Minsk, Belarus

Abstract. This paper provides an in-depth analysis of the current state, characteristics, and future direction of china's Internet of Things (IoT) industry. It begins by introducing the fundamental concepts, developmental history, and core features of IoT, emphasizing its capabilities in intelligent control, information identification, location monitoring, and dynamic tracking surveillance. Employing the PEST analysis method, the paper examines the impact of external factors – including policy, economic, social, and technological influences – on the IoT industry. Based on the current industrial landscape and user demands, it proposes suitable business models and industry strategies. The article notes that China has elevated the IoT industry to a national strategic level, with the sector projected to exceed 5 trillion yuan in scale by 2025. It also identifies challenges facing IoT development, such as the lack of unified standards and immature business models, and offers corresponding strategic recommendations – particularly for telecom operators and device manufacturers on leveraging their strengths to drive industry growth.

Keywords: Internet of Things, China, Industry.

Current Status of Internet of Things Development.

Chapter provides a detailed overview of IoT concepts, historical development, and fundamental characteristics [1]. It begins by clarifying IoT definitions, highlighting differing interpretations across organizations and technological contexts, and emphasizing IoT's core role as an extension and expansion of the internet. The chapter then reviews key technological milestones from the concept's inception in 1995 to 2023, demonstrating IoT's rapid advancement and widespread adoption. Additionally, the chapter describes fundamental IoT characteristics – comprehensive sensing,

reliable transmission, and intelligent processing – while introducing diverse international and domestic classification approaches for IoT architectures [2–4]. Finally, it demonstrates the technology's critical role and immense potential through practical applications such as smart agriculture and industrial monitoring. Chapter One establishes a robust theoretical and historical foundation for understanding the IoT industry [5–7].

Corporate Portfolio in the IoT Industry.

From an industrial chain perspective, sensor device manufacturing constitutes the upstream segment of the IoT supply chain. Rooted in manufacturing industries, it also serves as the technological core of the chain. The IoT manufacturing chain is extensive, encompassing not only computer, communication, and network equipment but also components and materials such as chips, sensitive devices, and sensors. Products like sensors perform the function of perceiving objects [8]. Due to their application across various industries, sensor devices and equipment with industry-specific characteristics may emerge. At the perception level, the emergence and development of technologies such as nanotechnology and optoelectronics have enabled sensors and sensitive components to achieve broader perception ranges, higher sensitivity, and lower costs.

The industrial application of IoT represents the downstream segment of the industry chain, playing a crucial role in IoT development while offering the broadest scope for growth and collaboration. Currently, the market scale for IoT applications remains relatively small, leaving many industries uncertain about how to proceed. Therefore, driven by both government initiatives and market forces, accelerating the development of applications across various sectors is essential. This will enable IoT to rapidly expand its application scope and coverage, better serve the public, and demonstrate its value. Application solution providers and integrators in the IoT sector will encounter significant growth opportunities, developing applications for individuals, government agencies, and enterprises alike. We are already witnessing successful implementations in:

– mobile payment systems for individuals;

– industrial production process control, safe city monitoring systems for urban management, and environmental protection monitoring systems for government agencies;

– as well as logistics management systems, smart security fencing, and automated greenhouse crop environment management systems for enterprises.

Analysis of the IoT Industry Environment.

IoT middleware resides between the integrated server layer and the embedded devices at the perception and transmission layers. Server-side middleware, termed IoT business foundation middleware, is typically built upon traditional middleware frameworks with added modules for device connectivity and graphical configuration displays. Embedded middleware consists of modules and runtime environments supporting diverse communication protocols. A defining characteristic of middleware is its encapsulation of generic functionalities; however, specific industry requirements often necessitate secondary development for customization. Consequently, IoT middleware must provide rapid development tools or technical support mechanisms.

However, recent trends in embedded software development indicate that single-purpose middleware providers struggle to profit due to industry barriers and intellectual property protection issues. Currently, most domestic middleware software exists as open-source solutions or integrated within hardware systems. Consequently, IoT middleware must evolve in tandem with chipset, smart terminal, and application platform technologies.

Table of contents

1. Kotler, P. Marketing Management / P. Kotler, T. Mei. – 12th ed. – Shanghai : Shanghai People's Publishing House, 2006. – 812 p.

2. Kim, W. C. Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant / W. C. Kim, R. Mauborgne, J. Anderson. – Beijing : Commercial Press, 2005. – 264 p.

3. Long, Z. Macroeconomics / Z. Long [et al.]. – Chengdu : Southwest Jiao-tong University Press, 2005. – 385 p.

4. Liang, J. Corporate Ecology and Enterprise Development / J. Liang [et al.]. – Beijing : Science Press, 2005. – 298 p.

5. Johnson, G. Exploring Corporate Strategy / G. Johnson, K. Scholes ; transl. by Z. Jin, X. Jia. – Beijing : Huaxia Publishing House, 2005. – 620 p.

6. Moore, J. F. The Demise of Competition: Leadership and Strategy in the Age of Business Ecosystems / J. F. Moore. – Beijing : Beijing Publishing House, 1999. – 297 p.

7. China Mobile Presentation Materials for the 2009 International Communications Exhibition. – Beijing, 2009. – 56 p.

8. Siemens Smart Home Solutions // Internet Weekly. – 2008. – P. 42–45.