

Article

# Analysis of the Success Factors of Shenzhen as a Location

Ronghui Mu <sup>1,\*</sup>

<sup>1</sup> College of International Education, Shandong Agricultural University, Tai'an, China

\* Correspondence: Ronghui Mu, College of International Education, Shandong Agricultural University, Tai'an, China

**Abstract:** This paper takes Shenzhen, a city that has achieved rapid development from a small fishing village to an international metropolis, as the research object, aiming to explore the core factors driving its economic development and location success. First, the paper sorts out the theoretical basis of location success factors, including their definition, effective operation process, and core objectives. It then adopts the PEST analysis model to systematically elaborate on the influence of economic, political, social, and technological factors on urban development, with a focus on the decisive role of economic factors. On this basis, the paper conducts an in-depth empirical analysis of Shenzhen, exploring its performance as an economic-oriented city in terms of employment, corporate agglomeration, GDP, and technological innovation. It further dissects Shenzhen's key location success factors from six economic dimensions: investment and capital accumulation, industrial structure optimization, employment and labor market construction, consumer demand growth, opening-up to foreign trade, and technological innovation and application. Finally, the paper summarizes the comprehensive driving role of multi-dimensional factors in Shenzhen's development, points out the research limitations caused by time constraints on data and literature, and proposes future research directions related to opportunities and challenges in Shenzhen's sustainable development.

**Keywords:** Shenzhen; Location Success Factors; PEST Analysis; Economic Development; Technological Innovation

---

## 1. Introduction

### 1.1. Problem

The acceleration of globalization and the advancement of urbanization have made urban development an important issue in today's world. The development model of many developed cities has become an important reference for the development of emerging cities around the world. It not only provides reference experiences for these emerging cities, but also injects new vitality into the development of globalization [1]. Forty years ago, Shenzhen was just a small fishing village on the southeast coast of China. However, the city has since developed into an international metropolis with unique development advantages, a population of 17.7901 million and a regional GDP of 3,460.64 billion yuan. As a rapidly growing city, Shenzhen's success has attracted a great deal of attention worldwide [2].

The outstanding success of the city of Shenzhen is largely attributable to its economic development and economic success. In order to examine the factors behind Shenzhen's success, it is therefore necessary to first identify the factors behind Shenzhen's success in terms of economic development.

### 1.2. Objectives

Received: 29 January 2026

Revised: 14 March 2026

Accepted: 29 March 2026

Published: 02 April 2026



**Copyright:** © 2026 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

The purpose of this paper is to enable the reader to understand the factors contributing to Shenzhen's economic development and the factors influencing Shenzhen's economic development.

### 1.3. Structure of the work

The first chapter of this bachelor thesis has three subsections. The problem statement serves as an introduction and roughly describes the background of the bachelor thesis and the topics and content to be analyzed. The objectives describe the goals and research problems of the bachelor thesis, and the section 'Structure of the thesis' presents the general structure of the bachelor thesis and the general content of each chapter.

Chapter 2 consists of the theoretical part and is divided into two subsections, 2.1 and 2.2. Chapter 2.1 is further divided into two subsections. The first section defines what success factors are, and the second section discusses the effective process in which success factors operate.

Chapter 3 consists of two subsections. Chapter 3.1 consists of four subsections in which the most important analytical approach of this paper, the PEST analysis model, is examined and discussed, as well as explained and defined in four ways. Chapter 3.2, on the other hand, describes the most important economic influences on cities with economically oriented development.

Chapter 4 deals with a concrete example in which some of the theoretical findings are applied in practice. It consists of two subsections. Chapter 4.1 gives an example of the rapid development of Shenzhen as an economically oriented city and its great external attractiveness. Chapter 4.2 analyses the success factors of Shenzhen's location development.

The final chapter summarizes the entire bachelor's thesis by briefly presenting the most important parts of the individual chapters and answering the research questions posed in the first chapter.

## 2. Theoretical Foundations

### 2.1. Success Factor

#### 2.1.1. Definition of success factors

Success factors (also known as success criteria) are those factors that are largely responsible for the success of a location [3]. They affect the economy, population and pace of development of a city and are therefore crucial to its long-term development. Success factors can be internal or external, including economic, political, social or technological in nature [4].

#### 2.1.2. An overview of the success factors for effective process orientation in location development

At first glance, some checkpoints seem obvious and can be traced back to the 'GMV' method.

However, this is not the case when one considers the realities and complexity of change processes [5]. These are characterized by the fact that it is not just a matter of 'common sense', but also of abandoning old patterns and learning new ones.

#### 2.1.3. Attractive vision of the future and goals

It is necessary to determine whether all factors have a uniform vision that can be optimized by working on and with processes, and what personal benefits process orientation brings [6].

To what extent does the location benefit, and to what extent do the companies in the city benefit from process orientation?

In addition to the most significant influencing factors, there are also other important influencing factors.

#### 2.1.4. Clear focus on the location and stakeholders

It must be determined whether external and internal factors are supported by process maps with a good visualization of the interrelationships of location development.

Can the processes depicted be used as a consistent success factor and control instrument with clear goals and handover points?

#### 2.1.5. Economically oriented city and business development

Have the processes been combined with political, social, technological, urban and international contexts and practiced?

It must be determined whether the city is in a position to build on these factors and attract businesses and foreign investment.

Furthermore, it must be examined whether the city has identified the main factors for its development and is clearly using these factors to attract the target group [7].

Identification and attraction of target groups through unique urban development advantages

Transparent and clearly visible responsibilities and duties

In the development process, the company's capabilities and responsibilities should be defined and divided Usable data, information and in-depth knowledge

It must be determined in what form data and information are available and whether they can be used in a practical manner.

Can sufficient data quality be established to ensure its use for urbanization and modernization processes?

#### 2.1.6. Objectives and tasks of the success factors

There are companies that are successful and know the reasons why. However, there are also companies that are successful without knowing the reasons for their success [8]. Similarly, there are companies that are not successful and usually do not know the reasons why. Companies that are not successful, on the other hand, can usually identify the reasons why [9].

Those who are successful and know why they are successful, who have recognized and developed their strengths and who are aware of their weaknesses and eliminate them, are undoubtedly in the best position. All others can be helped methodically [10].

Success factors are decisive criteria and influencing factors that are crucial for the successful development and achievement of a company's goals [11]. Paying attention to certain success factors and recognizing additional factors is a promising approach. Since the 1970s, a large number of studies have been conducted in the field of success factor research. However, due to their different methodological approaches and objectives, these studies are only comparable to a limited extent and therefore have only limited significance [12]. Taking into account the directly determined, generally more practice-oriented results, it can be deduced that a kind of 'checklist' can be created for entrepreneurs and managers (senior executives), which guides them through the most important areas of tension with regard to entrepreneurial success.

The studies by Kurt Nagel and Hermann Simon convinced me the most. The studies are mainly based on personal interviews, experiences and feedback from executives. Furthermore, the works of Christian Böing, Andreas Kroiß and Thomas Kowallik are indirect and quantitative in nature and also very interesting and useful. They are closely related to e-commerce, were published recently and focus in particular on start-ups.

This is also of great importance for urban development, which focuses on success factors, and is the main factor in urban development and a wise and important choice for the development of various cities. Making good use of the main factors of urban development can integrate other factors into a whole and form a positive cycle in development, which also benefits the long-term development of the city. At the same time, the influence and development of special location factors of cities can also provide a constructive reference for other developing cities, which can enable people to discuss the applicability of a factor in urban development and pay attention to the unique development advantages.

## 2.2. State of research

### 2.2.1. PEST analysis

PEST analysis refers to the analysis of the macroeconomic environment, where P stands for politics, E for economics, S for society and T for technology. When analyzing a company's external environment, these four factors are typically used to analyse the situation of the corporate group. At the same time, the PEST analysis model can also be used to analyse the development of a city. In urban development, economic factors are the main factor for these aspects, which control the speed and quality of urban development. Other success factors include cooperation within the company. Management should actively promote cooperation, including by providing the right working environment. Interaction between members, which is aimed at co-creation of content and decisions, plays an important role. Economic factors as the main factor are combined with political, social, scientific and technological factors to jointly influence the development of the city.

### 2.2.2. Economic factors

Economic factors are the main driving force behind urban development. As a leading factor, economic factors play a decisive role in optimizing the industrial structure, attracting investment and trade, promoting employment, enriching the labor market and completing the construction of the resource infrastructure. Leading the world. Thanks to its leading position in the fields of information technology and innovation, the country has attracted the world's best scientific and technological talent and innovative companies. Advanced research institutes and universities provide constant intellectual support for scientific and technological innovation, and high-speed networks and convenient transportation increase the flow of information and people to accelerate and promote the transformation and application of scientific and technological achievements, thereby driving the city's economic growth and industrial modernization.

### 2.2.3. Political factors

Political factors often play a leading and securing role in urban development. Factors such as the level of urban administration and favorable government policies for regional development also have a significant impact on urban development. Local government leadership, policy formulation and implementation, infrastructure development and administrative efficiency influence the overall development of the city. Clear direction and appropriate organization are the means of implementing measures that are recognized as appropriate. In the case of Brasilia, the construction of Brazil's new capital was a strategic plan implemented by the government for political reasons. The government's enormous investments and concentration of resources led to the rapid development of Brasilia in a short period of time. Take Washington, D.C., for example: as the capital of the United States, the city has a unique advantage due to its political location. The concentration of government agencies has led to significant investment in employment, infrastructure and resources. Government policy decisions can also directly influence the direction of urban development, for example through tax incentives and spatial planning to attract businesses and talent. National political support and a stable political environment can attract investment, promote infrastructure and public services, and create favorable conditions for the economic and social development of cities.

### 2.2.4. Social factors

Social factors also have a profound influence on urban development. Social factors include natural social factors and human social factors. Among the natural and social factors, regional geographical location is an important reason for development. Location factors refer to all aspects that should be considered when choosing a location for a business. Location factors always result from the conditions of the location itself and its surroundings. Zhuhai is an important transport hub in southern China, and with the opening of the Hong Kong-Zhuhai-Macao Bridge in 2018, Zhuhai has become the only city on the Chinese mainland with direct land access to Hong Kong and Macao. With a state-of-the-art international airport and a deep-water port, Zhuhai has developed into a

transport hub connecting the southwestern region with Hong Kong and Macao after the completion of several railway lines. In addition to its geographical location, the natural environment, such as the flat terrain and abundant natural resources, also influences the city's development. A city's cultural environment and resources are an important asset. An open, inclusive and multicultural city can also attract a large number of immigrants from all over the world, and the integration of ethnicities, religions and cultures can contribute to the city's economic development. Sydney is known for its diverse and inclusive socio-cultural environment. Immigrants from all over the world bring with them different cultures, skills and ideas that enrich the city's cultural offerings and enhance its innovative strength and vitality.

#### 2.2.5. Technological factors

Technological factors have become increasingly important in the development of modern cities. The biggest weakness is the promotion of creativity and innovation - precisely the area that is of paramount importance for the growth of companies. Advances in science and technology have contributed significantly to the construction and optimization of urban infrastructure. In the transport sector, for example, the use of intelligent transport systems (ITS) has made urban traffic management more efficient. In Singapore, for example, advanced sensors and data analysis are used to enable intelligent control of traffic signals, reduce congestion and improve traffic flow and travel efficiency. Technology also plays an important role in urban energy management. Many cities are promoting renewable energy technologies such as solar and wind power, as well as the development of smart grids, to achieve sustainable energy supply and efficient energy use. Freiburg, Germany, has been a leader in the use of renewable energies, effectively reducing dependence on conventional energy sources and cutting carbon emissions. They create meaningful, high-quality jobs, use resources sparingly and develop concrete solutions for the future. They are the backbone of a liberal and sustainable market economy. This economy is primarily based on personal responsibility, competition and innovation. Science and technology are the driving forces behind urban development and continue to shape the form, function and future direction of urban development.

#### 2.2.6. Influence of economic factors on location development

Economic factors play a decisive role in the rapid development of cities, which is reflected above all in the following aspects: (1) Investment and capital accumulation Large-scale investment is an important source of energy for urban development. Capital accumulation enables cities to build modern transport networks such as motorways, underground railways and airports to improve the efficiency of logistics and passenger transport, to establish modern communication facilities to increase the speed and quality of information exchange, and to invest in public services such as education, healthcare and culture to improve the quality and attractiveness of the city.

1. Optimization of the industrial structure A reasonable industrial structure is essential for sustainable growth and rapid development of the urban economy; this type of industrial modernization can increase the city's economic value added and labor productivity and attract highly skilled workers and leading companies.
2. Employment and the labor market Economic growth creates numerous employment opportunities and attracts a large influx of people to cities. This makes the urban labor market more complete and diverse and promotes the optimal distribution of human resources.
3. Growth in consumer demand The rising income levels of urban residents have led to an increase and diversification in consumer demand.
4. Opening up to trade with the outside world

Cities often function as centers of economic activity and are important hubs for trade and foreign exchange. International trade enables cities to fully exploit their comparative advantages. They can export locally advantageous products and services, import necessary resources and technologies, achieve optimal resource allocation and

complementary economic development, and promote innovation in the industrial modernization of cities.

Scientific and technological innovation and application

Economic development provides the means and market demand for scientific and technological innovation. Innovations are initially characterized by their usefulness to the user of a product or service. The introduction of new technologies can increase production efficiency, reduce costs and improve product quality. The widespread application of new technologies such as the internet, artificial intelligence and big data in cities has led to new economic forms and business models that are giving a strong impetus to the rapid development of cities.

### **3. Analysis of the practical example of Shenzhen**

#### *3.1. The city of Shenzhen as a business location*

Shenzhen is one of the strongest economic centers in China. By 2023, Shenzhen will have 12,559,000 employees and 196,600 new urban jobs, and by 2024, Shenzhen aims to create 185,000 new urban jobs in one year, with almost no other city having created so many jobs in such a short period of time.

Shenzhen is home to 10 Fortune 500 companies and the headquarters of 150 large and small domestic and foreign companies.

Shenzhen and its metropolitan area had the highest growth rate among comparable regions in China in terms of the number of active companies, employment and the employment rate.

Shenzhen's GDP is 3.46 trillion yuan, with a GDP growth rate of 6% and a per capita GDP of 195,200 yuan per person, of which 0.10% is accounted for by the primary industry and 62.30% by the tertiary industry, ranking third in China. Shenzhen is the third largest city in China in terms of import and export trade.

Shenzhen occupies a prominent position among Chinese foreign trade cities in terms of import and export volume. In 2023, the total import and export volume amounted to approximately 3.7 trillion yuan.

The number of patents granted in Shenzhen continues to increase every year. The number of invention patents granted is particularly noteworthy. In 2023, the city of Shenzhen will be the national leader in a number of intellectual property indicators. The number of domestic patents granted in the city will be 235,100, the number of trademark registrations will be 249,700, ranking first in the country, the number of patents per 100 million yuan of GDP will be 6.79, ranking first among large and medium-sized cities in the country, the number of high-quality invention patents per 10,000 inhabitants will be 98.36, which is 8.3 times higher than the national average, and the number of invention patents per square kilometer will be 150.38, ranking first for 18 consecutive years. The population will be 000 inhabitants, which is 8.3 times higher than the national average. The number of invention patents per square kilometer will be 150.38, ranking first for 18 consecutive years. Shenzhen is one of the most important financial centers in China.

Shenzhen is one of China's most important financial centers. Financial institutions such as the Shenzhen Stock Exchange offer companies a wide range of financing options.

In summary, with its strong economic power, excellent innovation environment, perfect political support and infrastructure, Shenzhen offers great appeal and development opportunities for domestic and foreign companies, attracting a large number of investments and companies to Shenzhen. For your innovation to be successful, it must have added value for your customers. These investment and business development conditions mean that Shenzhen's infrastructure is becoming increasingly sophisticated and the number of skilled workers and foreign talent is growing, creating a virtuous cycle that drives Shenzhen's economic growth and industrial upgrading and facilitates the realisation of urban upgrading.

#### *3.2. The success factors of Shenzhen as a location*

The rapid development of the city of Shenzhen has been significantly influenced by economic factors. This can be seen in data, companies and political measures.

#### 3.2.1. Investment and capital accumulation

In the early stages of its development, Shenzhen benefited from national policy support and extensive investment. In 1980, Shenzhen was established as a special economic zone, which attracted a large influx of domestic and foreign capital. According to statistics, cumulative investment in Shenzhen from 1980 to 2023 will exceed one trillion yuan. These investments are mainly used for the construction of transport, energy and communications infrastructure.

The construction of the Shenzhen Metro can be cited as an exemplary example of investment in urban development. Since the opening of the first metro line in 2004, Shenzhen has continuously increased its investment in metro construction. In 2023, Shenzhen's rail network covered a length of over 500 kilometers. This has led to a significant improvement in the city's transport conditions, increased operational efficiency and promoted economic development in the areas along the route.

#### 3.2.2. Optimization of the industrial structure

Shenzhen's industrial structure has undergone numerous changes and improvements in the recent past and has gradually developed into a diversified industrial structure dominated by high-tech industries, financial services and cultural and creative industries.

Shenzhen is home to a large number of well-known companies in the high-tech industry, including Huawei, Tencent and ZTE. One example is Huawei, a global leader in 5G technology, communications equipment and related fields. In 2023, Huawei's R&D investment will reach 100 billion, driving the development of the entire industry chain. Tencent's innovations in the field of the internet are also giving a strong boost to the development of the digital economy in Shenzhen. The rise of these high-tech companies has not only improved Shenzhen's industrial value creation and competitiveness, but has also attracted a large number of highly skilled talents and innovative resources.

The financial services industry is also one of the most important pillars of industry in Shenzhen. The establishment of the Shenzhen Stock Exchange (SZSE) provides a direct financing platform for companies. By the end of 2023, the number of companies listed on the SZSE will exceed 2,000, with a total market capitalization of several hundred trillion yuan. In addition, Shenzhen has attracted numerous financial institutions such as banks, insurance companies and securities firms, creating a complete financial ecosystem.

#### 3.2.3. Employment and the labor market

Shenzhen's rapid economic development has led to a significant increase in employment opportunities and attracted talent from across the country. According to statistics, Shenzhen's resident population will exceed 17 million by 2023, most of whom are migrants.

The labor market in Shenzhen is characterized by a high degree of flexibility and openness, offering a wide range of development opportunities for talent. Young people in Shenzhen's technology companies, for example, have the opportunity to participate in cutting-edge technological research, development and innovation projects. In this way, they can realize their personal values and professional development by continuously improving their skills. At the same time, Shenzhen attaches great importance to the promotion and introduction of talent. Measures introduced by the city include the promotion of housing and the settlement of talent. This has attracted a large number of highly qualified talents.

#### 3.2.4. Growing consumer demand

Consumer demand in Shenzhen is on an upward trend, in line with the increasing income levels of its residents. In 2023, total retail sales of consumer goods in Shenzhen will exceed one trillion yuan. There has been a shift in the consumption structure from traditional clothing, food and household transportation to culture, tourism and health.

In terms of residential property consumption, Shenzhen's property market remains very active. Despite rising property prices, strong demand has continued to drive the property sector and led to a boom in related industries. In terms of the consumption of cultural products and services, there has been a growing number of cultural institutions such as cinemas, theatres and bookshops in Shenzhen. Residents' demand for cultural products and services continues to grow.

#### 3.2.5. Opening up trade to the outside world

Shenzhen is an important window for China's opening up to the outside world and acts as an engine for economic development. A correlation between project size and success has been identified. According to forecasts, Shenzhen's total imports and exports will exceed one trillion yuan in 2023, making the city one of the best in the country.

Shenzhen's ports and airports are important hubs for foreign trade. Yantian Port is one of the busiest container ports in the world and handles an enormous volume of cargo. Shenzhen Bao'an International Airport has a global route network and offers favorable transport conditions for trade.

In addition, Shenzhen is actively involved in the development of the Belt and Road Initiative and promotes economic and trade cooperation with the countries and regions along this route. A large number of companies from Shenzhen have decided to go abroad to invest, build factories, set up companies and expand into the international market.

#### 3.2.6. Technological innovation and application

Shenzhen attaches great importance to technological innovation, which is reflected in the increasing share of R&D investment in GDP. In 2023, Shenzhen's total R&D investment will exceed RMB 100 billion, accounting for more than 5 per cent of GDP.

Shenzhen has a large number of national research institutions and innovation platforms, such as the Pengcheng Laboratory and the Shenzhen Bay Laboratory. At the same time, the city encourages companies to carry out independent innovation and has introduced a series of measures to support technological innovation, including tax incentives and technology incentives.

In terms of the application of technological innovation, Shenzhen has achieved remarkable success in the development of smart cities, smart manufacturing and new energy. Shenzhen's intelligent transport system, for example, implements intelligent traffic management and improves the efficiency of transport operations through big data, artificial intelligence and other technologies. Shenzhen's smart manufacturing companies are promoting the modernization of manufacturing transformation and improving production efficiency and product quality.

The interaction of economic factors such as investment, industrial structure optimization, employment, consumption, trade, scientific and technological innovation, etc. has driven Shenzhen's rapid development.

## 4. Summary

### 4.1. *Summary of the success factors behind Shenzhen's development*

After analysing this work, we have a clear understanding of the factors behind Shenzhen's success. Shenzhen's success is also attracting more investors, and in conjunction with political, economic, social, scientific and technological factors, Shenzhen's success has become inevitable.

### 4.2. *Limitations of this work*

Since the data, literature and specific examples analyzed in this paper date from 2024 and earlier, the data used for the analysis in this paper and the conclusions drawn in connection with the data are somewhat limited in terms of time.

### 4.3. *Open questions for future research*

The future development of Shenzhen presents both opportunities and challenges.

The prospects for Shenzhen's future development are promising. By clarifying objectives, planning projects and then implementing them, Shenzhen is expected to achieve further breakthroughs in the following areas:

Economically, the city will expand its innovation lead, spearhead industrial modernization, and develop into a major global financial centre for scientific and technological innovation and finance. The city will become smarter and greener, with improved infrastructure, balanced quality of public services, growing attractiveness to talent, convergence of cutting-edge knowledge, and promotion of innovation in all areas. The city is deeply integrated into the Guangdong-Hong Kong-Macao Greater Bay Area, strengthening regional integration and promoting the joint development of neighboring regions. Its international influence continues to grow, providing a better and more appropriate reference model for cities that are also driven by economic factors.

At the same time, Shenzhen will face many challenges in its future development. No one is immune to mistakes, setbacks or crises; it just depends on how you deal with them.

Property prices remain high. Property prices in Shenzhen remain high, which increases pressure on residents and hinders the introduction and retention of talent. Lack of land resources. Shenzhen has a limited area, and the lack of land resources may restrict the city's further development. The ageing population is increasing. The ageing population could pose problems for Shenzhen, such as a smaller workforce and greater pressure on social security. International competition is fierce. Against the backdrop of globalization, Shenzhen must compete with other international cities and continue to improve its competitiveness and influence.

Overall, Shenzhen still has good development prospects, but it also faces a number of challenges. To achieve sustainable development, Shenzhen must continue to strengthen scientific and technological innovation, promote economic transformation, optimize the urban environment, and improve the introduction and training of talent. At the same time, Shenzhen must actively respond to international competition and uncertainty and strengthen cooperation with neighboring cities to jointly promote regional economic development.

## References

1. J. Cui, Z. Shen, C. Mai, C. Lin, and S. Wang, "Spatial distribution and location determinants of high-tech firms in Shenzhen, a Chinese national innovative city," *Land*, vol. 13, no. 9, p. 1355, 2024. doi: 10.3390/land13091355
2. Huang and S. Rohayah Sheikh Dawood, "Geography of knowledge interactions and innovation in Shenzhen," *Cogent Business & Management*, vol. 11, no. 1, p. 2327469, 2024. doi: 10.1080/23311975.2024.2327469
3. F. Amjady, "Short-term hourly load forecasting using time-series modeling with peak load estimation capability," *IEEE Transactions on Power Systems*, vol. 16, no. 3, pp. 498-505, 2002. doi: 10.1109/59.932287
4. C. Liu, T. Li, T. Zhuang, Y. Zheng, H. Wu, and J. Tang, "Determining the spatial distribution characteristics of urban regeneration projects in China on the city scale: The case of Shenzhen," *Land*, vol. 11, no. 8, p. 1210, 2022. doi: 10.3390/land11081210
5. Y. Chen, L. Lai, L. Tao, and Y. Lin, "Spatial variation of industrial land conversion and its influential factors in urban redevelopment in China: case study of Shenzhen, China," *Journal of Urban Planning and Development*, vol. 150, no. 2, p. 05024005, 2024. doi: 10.1061/jupddm.upeng-4636
6. W. Taylor and R. Buizza, "Neural network load forecasting with weather ensemble predictions," *IEEE Transactions on Power Systems*, vol. 17, no. 3, pp. 626-632, 2002.
7. S. Hippert, C. E. Pedreira, and R. C. Souza, "Neural networks for short-term load forecasting: A review and evaluation," *IEEE Transactions on Power Systems*, vol. 16, no. 1, pp. 44-55, 2002.
8. H. Hahn, S. Meyer-Nieberg, and S. Pickl, "Electric load forecasting methods: Tools for decision making," *European Journal of Operational Research*, vol. 199, no. 3, pp. 902-907, 2009. doi: 10.1016/j.ejor.2009.01.062
9. W. Hong, "Short term electric load forecasting," *North Carolina State University*, 2010.
10. S. Fan and R. J. Hyndman, "Short-term load forecasting based on a semi-parametric additive model," *IEEE Transactions on Power Systems*, vol. 27, no. 1, pp. 134-141, 2011. doi: 10.1109/tpwrs.2011.2162082
11. J. Chen and M. W. Chang, "Load forecasting using support vector machines: A study on EUNITE competition 2001," *IEEE Transactions on Power Systems*, vol. 19, no. 4, pp. 1821-1830, 2004.
12. M. Al-Hamadi and S. A. Soliman, "Short-term electric load forecasting based on Kalman filtering algorithm with moving window weather and load model," *Electric Power Systems Research*, vol. 68, no. 1, pp. 47-59, 2004.

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of Publisher and/or the editor(s). Publisher and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.