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Retraction

Retracted: The Relationship between the Degree of Urban Intelligence and the Performance of Enterprises in the City Based on Artificial Intelligence and Soft Computing

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Security and Communication Networks has retracted the article titled "The Relationship between the Degree of Urban Intelligence and the Performance of Enterprises in the City Based on Artificial Intelligence and Soft Computing" [1] due to concerns that the peer review process has been compromised.

Following an investigation conducted by the Hindawi Research Integrity team [2], significant concerns were identified with the peer reviewers assigned to this article; the investigation has concluded that the peer review process was compromised. We therefore can no longer trust the peer review process and the article is being retracted with the agreement of the Chief Editor.

References

[1] X. Feng, Y. Wang, and F. Han, "The Relationship between the Degree of Urban Intelligence and the Performance of Enterprises in the City Based on Artificial Intelligence and Soft Computing," *Security and Communication Networks*, vol. 2022, Article ID 3554512, 7 pages, 2022.

[2] L. Ferguson, "Advancing Research Integrity Collaboratively and with Vigour," 2022, https://www.hindawi.com/post/advancing-research-integrity-collaboratively-and-vigour/.

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Research Article

The Relationship between the Degree of Urban Intelligence and the Performance of Enterprises in the City Based on Artificial Intelligence and Soft Computing

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With the rapid development of Internet technology, artificial intelligence and soft computing are gradually applied in various fields. Through active transformation, many companies use artificial intelligence, software computing, and other technologies to develop sales channels, improve corporate performance, and obtain greater benefits. However, some traditional enterprises have been gradually eliminated by the market because they have not rapidly transformed and improved their intelligence. Urban intelligence is the trend of urban economic development, and the degree of intelligence in a city is closely related to the number and scale of intelligent enterprises. In the context of artificial intelligence and soft computing, this paper expounds the relationship between enterprise performance and the degree of urban intelligence and analyzes the key factors affecting enterprise performance and the impact of enterprise performance on the degree of urban intelligence. The results show that Internet technologies such as artificial intelligence and soft computing can improve the performance of enterprises, thereby improving the level of intelligence in cities.

1. Introduction

Turing expounded many new concepts and some algorithms in his 1950 paper "Computing Machinery and Intelligence," including the very famous Turing test, which was the first to articulate AI [1]. In the summer of 1956, a group of young scientists who were interested in computer intelligence, led by John McCarthy, Marvin Minsky, Nathaniel Rochester, and Claude Shanno, gathered in Dartmouth to study and discuss a series of related issues in using machines to simulate intelligence [1]. On the general search mechanism, a large number of heuristic search algorithms appeared, and another important artificial intelligence language Prolog was developed. With the first successful commercial expert system, R1 succeeded in the data equipment company in 1982. It started to work, and AI began to officially become an industry [2].

In the rapid urban expansion, there are major problems in urban planning, development, management, etc., resulting in "urban diseases" that are difficult to solve in the short term, such as air pollution, traffic congestion, and pollution. In order to solve the problem of "urban cancer," the urban management department applies a new generation of information technology to the municipal government system [1]. At this time, the goal is to improve the overall efficiency of the city, build a "smart city," fully integrate the scarce resources of the city, and provide efficient services for urban management [2]. Technical improvement services are characterized by high investment, high risk, and long-term benefits. Only with the help of an effective external support system and urban management system can the influence of science and technology and the transformation of scientific and technological achievements be promoted [3]. Smart

cities originate from the development and implementation of a new generation of information technology. It can integrate public resources with the help of information technology tools and provide intelligent management and services for governments, companies, and individuals [4].

Although the theory of factors affecting innovation has been clarified, there are many factors affecting the effectiveness of technological innovation, but most of them focus on the internal factors of enterprises or the nature of company ownership and property rights [5]. However, there are very few theoretical and empirical works of literature on the impact of urban intelligence level on technological innovation and even less empirical research [6]. Although Chinese scholars have conducted extensive research on corporate performance, there is little literature on corporate performance within smart cities [7]. At the same time, few scholars regard the relationship between urban intelligence level and enterprise performance as an important reference for formulating development strategies that conform to regional characteristics [8].

Technological advancements in multiple fields have facilitated the development of smart city applications, which can improve the way of life in modern cities. Gavrilovi and Mishra analyze the types of software architectures currently available for IoT systems in smart cities, healthcare, and agriculture. It provides a recommendation for solutions and improvements to different software architecture types and interactions between identified software architecture elements that will provide better performance and simplicity. The software architecture types of IoT systems in related application areas (smart cities, healthcare, and agriculture) are proposed [9]. Daniel et al. proposed a fuzzy-based approach to dynamically configure how vision sensors operate in terms of perception, encoding, and transmission modes, leveraging different types of reference parameters. This innovative approach can be considered as the foundation for multisystem smart city applications based on visual surveillance and may lead to significant results in this research field [10]. It is of practical significance to study the relationship between the degree of urban intelligence and the performance of enterprises in cities based on artificial intelligence and soft computing.

This research is based on the following research ideas: The significant performance of urban intelligence based on artificial intelligence and soft computers has a significant impact on the business performance process of enterprises in cities, and artificial intelligence and soft computers play an important role in this process. Mitigation is helpful for enterprises to adopt behaviors that improve performance more effectively. At the same time, AI and soft technologies do not translate directly or automatically into the new business performance but require specific intermediate paths, such as innovation identification processes, to have an impact.

The research process of this paper is as follows: first, this paper expounds the research on the relationship between the degree of urban intelligence and the performance of enterprises in the city based on artificial intelligence and soft computing from the aspects of soft computing, enterprise performance evaluation, and smart city and enterprise activities; second, through data collection and validation, this paper investigates the relationship between the degree of urban intelligence and the performance of enterprises in the city based on artificial intelligence and soft computing. Third, this paper analyzes it through the results of data collection, proposes the impact of artificial intelligence and soft computing on enterprises in specific aspects, and finally draws conclusions.

This study combines artificial intelligence, soft computing, and urban enterprise performance to provide an in-depth analysis of how artificial intelligence and soft computing affect enterprise performance. Therefore, increasing the proportion of artificial intelligence and soft computing and the number of Internet companies/total number of industry companies is conducive to improving the degree of urban intelligence and improving corporate performance. Enterprise performance provides a theoretical basis.

2. Research on the Relationship between the Degree of Urban Intelligence and the Performance of Enterprises in the City Based on Artificial Intelligence and Soft Computing

2.1. Soft Computing. Elastic arithmetic is indeed a collection of techniques resulting from the development of mathematical understanding. Unlike traditional "hard computing," soft computers allow uncertainty, and the guiding principle is to exploit and use uncertainty. The cost of the scheme is small, and it is best to combine the actual situation.

Flexibility has different advantages compared to some traditional methods [11]. For example, inference-based methods combine the knowledge of model experts to guide system behavior, and model-based methods create mathematical models from informative data. Incomplete information can cause the established models to deviate from reality and sometimes even make mistakes [12]. By using comprehensive concepts and methods for the problem domain, some of the weaknesses of these methods can be overcome and applied in real-world settings [12].

2.2. Enterprise Performance Evaluation. Nowadays, the evaluation of enterprise performance generally consists of four parts: subject evaluation, object evaluation, evaluation indicators, and evaluation standards [13]. Details are as follows.

First of all, the subject of the assessment is the job examiner. The subject of the assessment must understand the work content of the evaluation object and be familiar with the principles of performance evaluation. At the same time, it must be the truth and purpose [14]. The second is that an object is first called the corresponding object, which is always determined by the subject, the location of the object, and the potential of the company. Third, the scale index refers specifically to the content that can be identified by the charging target. For example, the value-added of a company can be calculated by calculating the profit and loss ratio of

the company, while the operating condition of assets can be calculated by dividing the market share to calculate the cash flow forecast [15, 16]. Debt repayment can be expressed by liquidity indicators and quick dividends. Potential growth can be assessed through metrics such as net worth growth. To sum up, the evaluation criteria are the rules and standards of the evaluation process preselected by the evaluation subject according to the evaluation criteria and evaluation indicators. In order to calculate the overall performance of the business, company averages, company leadership levels, or company historical data references are often used as criteria for the business model. The evaluation results obtained by selecting different scores may be different, and the choice of scores may also affect the indifference and accuracy of the evaluation results [17].

2.3. Smart City and Corporate Activities. The construction of smart cities is mainly supported by information technology and is also an important part of information investment and utilization. Through the extensive application of cutting-edge technologies and the development of intelligent software in business operations, the deep integration of different technologies and enterprises will be realized, and the impact of technological innovation will continue to advance. Finally, starting from the construction of smart city informatization, we will promote the integration of enterprise manufacturing and informatization, promote the transformation and upgrading of traditional enterprises, increase the proportion of informatization products, and further empower policies [18, 19].

3. Investigation and Research on the Relationship between the Degree of Urban Intelligence and the Performance of Enterprises in the City Based on Artificial Intelligence and Soft Computing

3.1. Research Design. The overall idea of the research and design of this paper is to use the business description texts in the annual reports of listed companies, extract the new generation of information technology keywords represented by soft computing and artificial intelligence through the word2vec word vector model, and build a new generation of information technology for enterprises based on the keywords. Finally, combined with financial indicators, an econometric model is constructed to test the relationship between the degree of urban intelligence and enterprise performance of artificial intelligence and soft computing.

3.2. Data Collection. In terms of data collection, firstly, according to the enterprise codes of 1582 manufacturing enterprises determined in the sample selection part, use python to write crawler code, use the securities code and year as an index, crawl the information in a specific web page, and obtain the network address where the annual report pdf file is located. The website downloads the pdf text of the annual report to the local and uniformly names it in the form of enterprise securities code + securities abbreviation + year when saving, and a total of 3524 annual report pdf files have been obtained.

3.3. Model Checking. Aiming at the relationship between the absorption of urban intelligence and the performance of enterprises in the current year, based on the basic assumptions H1 to H3, models 1 to 3 are, respectively, constructed to test the influence of the absorption breadth, depth, and intensity of urban intelligent technology on the enterprise performance.

Based on the basic hypothesis H1, there is an inverted U-shaped relationship between the absorption breadth of urban intelligent technology and enterprise performance, and model 1 is constructed.

$$F = \xi_0 + \xi_1 Kd_{i,t}^2 + \xi_2 Kd_{i,t} + \xi_n X_n, \quad (1)$$

where F is the enterprise performance of the enterprise, $Kd_{i,t}$ is the enterprise's urban intelligent technology absorption breadth, and t is the year. Based on the basic assumption H2, there is an inverted U-shaped relationship between the urban intelligent technology absorption depth and enterprise performance. Model 2 is constructed.

$$F = \xi_0 + \xi_1 Gp_{i,t}^2 + \xi_2 Gp_{i,t} + \xi_n X_n. \quad (2)$$

$Gp_{i,t}^2$ is given for the absorption depth of urban intelligent technology of enterprises, and based on the basic hypothesis H3, there is a positive relationship between the absorption depth of urban intelligent technology and enterprise performance, and model 3 is constructed.

$$F = \xi_0 + \xi_1 Sg_{i,t}^2 + \xi_n X_n. \quad (3)$$

The three models were tested separately, and the plm package used for panel data regression in R language was used to complete the panel data test. First, the mixed regression Chow test is used to judge whether the mixed panel can be used for the test, and then, the Hausman test is used to judge whether the fixed effect model or the random effect model should be used. All models in this paper can be tested by using a mixed panel, and the values of the Hausman test are all significant; that is to say, the random effect model should be used to test the sample panel data.

4. Analysis and Research on the Relationship between the Degree of Urban Intelligence and the Performance of Enterprises in the City Based on Artificial Intelligence and Soft Computing

4.1. Enterprise and Intelligent Technology. With the development of e-commerce, enterprises open up the market through online sales and expand their market share. For small and medium-sized garment enterprises, online sales are an important sales channel. These enterprises are actively using Internet technology to improve performance and obtain greater benefits.

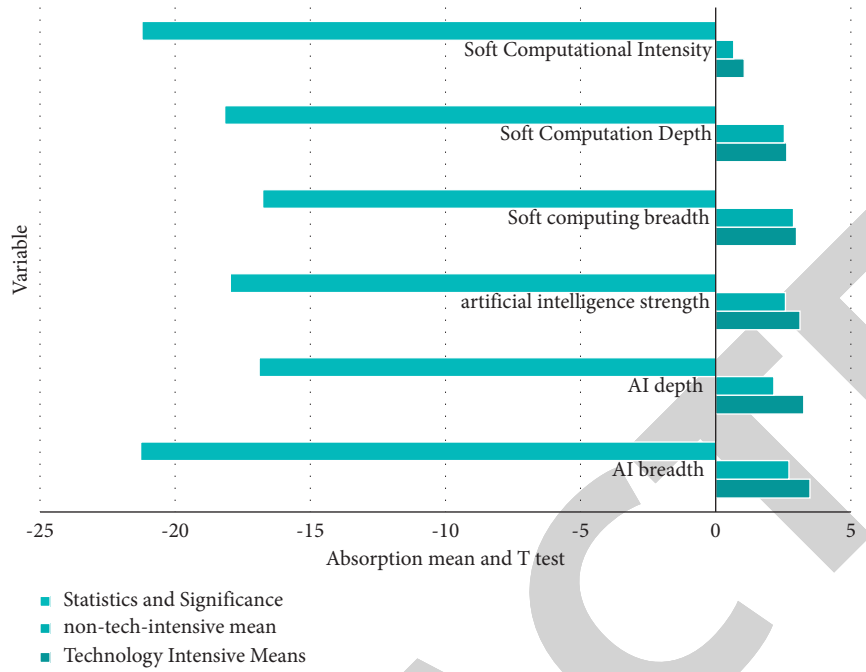

Figure 1: Mean absorption and *t*-test of technology-intensive and nontechnology-intensive industries.

Table 1: Test results of urban intelligent absorption.

Value	Model 1	Model 2
Coefficient of quadratic term	−0.029	−0.018
Coefficient of the first-order term	0.243	0.249
Quadratic curve symmetry axis	9.92	7.88
Overall mean	9.26	7.73

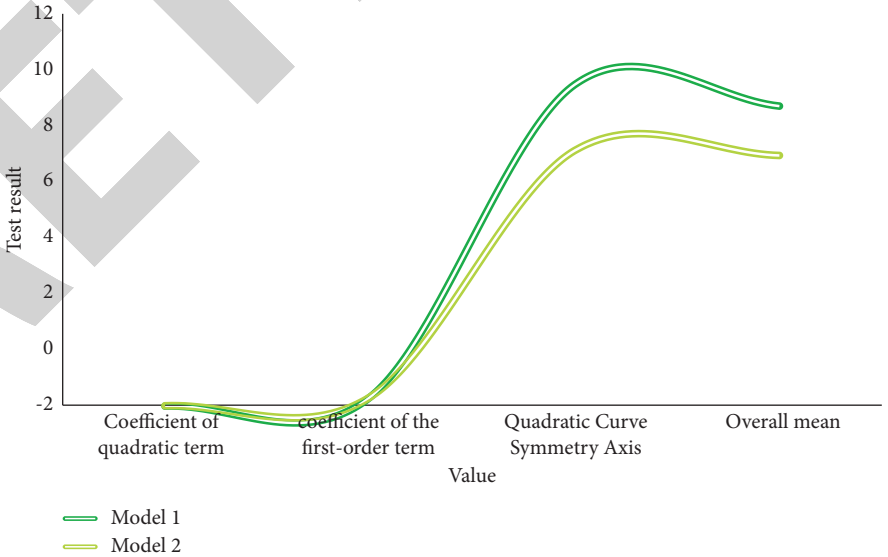

Figure 2: The results of the urban intelligent absorption test.

Table 2: R&D investment test results.

Variable	Model 1	Model 2	Model 3
ROA	0.013	0.016	−0.013
Share	0.005	0.006	−0.003
Turn	−0.113	−0.111	−0.027

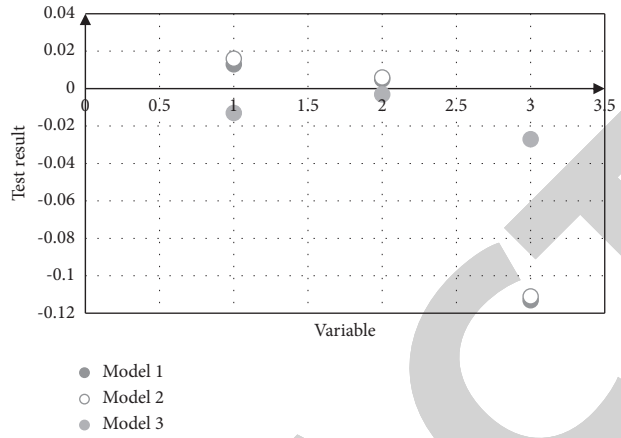

Figure 3: R&D investment test results.

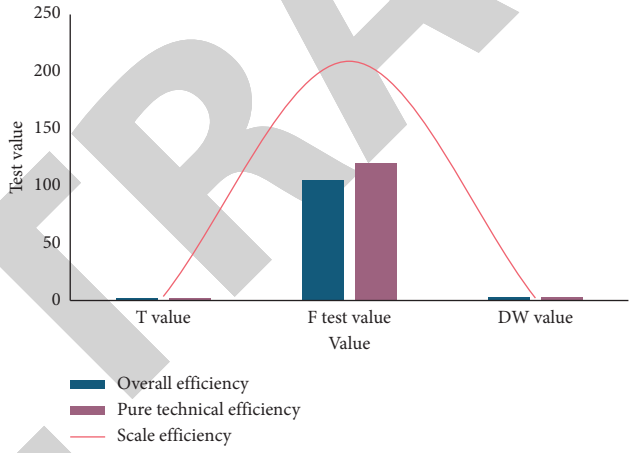

Figure 4: *T*-value, *F*-test value, and DW value test.

In order to test the significance of the differences in soft computing and artificial intelligence between the technology-intensive enterprise sample and the nontechnology-intensive enterprise sample, an independent sample *T*-test was performed on the mean of these six indicators. The *t*-test was performed using the t-test function in the stats package in the R language.

The results show that the breadth, depth, and intensity of soft computing and artificial intelligence in technology-intensive industries are higher than those in nontechnology-intensive industries. The results of the Welch two-sample test also show that the difference between technology-intensive and nontechnology-intensive industries is significant. Specifically, the difference in the level of AI absorption between the two types of industries is the largest, and the difference in soft computing is slightly smaller as shown in Figure 1.

4.2. The Degree of Urban Intelligence of Artificial Intelligence and Soft Computing and the Performance of Enterprises in the City. The results of model 1 show that the influence of the urban intelligence absorption breadth on the performance of enterprises in the same year presents an inverted U shape with the quadratic term coefficient being negative and the primary term coefficient being positive, and the quadratic term coefficient of the urban intelligence absorption breadth is −0.03, the opening of the curve is downward, the coefficient of the linear term is 0.245, and the symmetry axis of the quadratic curve is 9.95, which is greater than the overall mean of the breadth (9.24). It will increase accordingly. After exceeding this limit, enterprise performance will decrease with the increase of breadth, as shown in Table 1. The results of model 2 show that the impact of urban intelligence absorption depth on enterprise performance in the same year

presents an inverted U shape, in which the coefficient of the quadratic term is −0.016, the curve opening is downward, the coefficient of the linear term is 0.247, and the symmetry axis of the curve is 7.91 which is greater than the mean (7.76). The results of model 3 show that the impact of urban intelligence absorption intensity on the current year's corporate performance is significantly negative, with a coefficient of −0.081, as shown in Figure 2.

Enterprise performance has a significant positive impact on the absorption breadth and depth of urban intelligent technology in the following year, and the influence coefficients are 0.012 and 0.014, respectively, while enterprise performance has no significant impact on the absorption intensity of urban intelligent technology in the following year, as shown in Table 2. It is worth noting that the impact of R&D investment on the absorption breadth, depth, and intensity of urban intelligent technology is significantly positive in the current year and the next year, as shown in Figure 3.

The number and scale of enterprises related to artificial intelligence and soft computing are the reflections of the degree of intelligence of a city, and the comprehensive efficiency, technology research, and development strength and scale of enterprises are important indicators to measure an enterprise. The results in Figure 4 show that the higher the proportion of artificial intelligence and soft computing companies in the total number of companies, the better the performance of the company, and the more intelligent a city can be improved.

5. Conclusions

At present, the rapid development of new technologies leads to rapid changes in the living environment of enterprises, and the environment of fierce competition continues to emerge and strengthen. Only by constantly updating capabilities can companies create new strategic transformation options and actively cultivate enterprise artificial intelligence and soft computing capabilities. The selection and accurate measurement of enterprise performance indicators determine the scientificity and adaptability of this research. Business performance is a very complex concept. It is necessary to study and compare various evaluation methods and select reasonable evaluation indicators to fully reflect the real business status of the enterprise and improve the reliability of the research conclusions. This paper first studies the concept of soft computing, describes enterprise performance evaluation in four aspects, subject evaluation, object evaluation, evaluation indicators, and evaluation standards, and briefly analyzes the relationship between smart cities and enterprise activities. Through the method of hierarchical regression, this study confirms the influence of artificial intelligence and soft computer on the relationship between the degree of urban intelligence and enterprise performance. With the improvement of enterprise performance, the intelligent level of artificial intelligence and soft computing in cities is also improving, which to a certain extent solves the problem of inconsistency between the degree of urban intelligence and business performance in previous studies. Only when executives manage AI and soft computers effectively according to the business environment can they fully exploit the positive effects of AI and soft computers on business performance.

This study is based on the impact of the significant performance of artificial intelligence and soft computers on the city's corporate business performance process and conducts an income study on the behavior of artificial intelligence and soft computers in improving corporate performance. At the same time, the use of artificial intelligence and soft technology in new business performance has an impact on the enterprise. Therefore, this study is conducive to improving corporate performance, and at the same time, it can play the role of intelligent supervision and provide a theoretical basis for companies to use artificial intelligence and soft technology to improve corporate performance.

Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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