Analysis on Determining Factors for companies to Adopt IoT and AI Technologies

Wei SHE and Ke LI

Graduate School of Economics, College of Economics, Nihon University
1-3-2 Misaki Cho, Chiyoda Ku, Tokyo 101-8360, Japan
E-mail. ecis24001@g.nihon-u.ac.jp, li.ke@nihon-u.ac.jp

Abstract

IoT and AI technologies are gradually being adopted by more and more companies due to its advantages of intelligence and automation, and is a must in the process of Industry 4.0. However, any technological investment is accompanied by risks and challenges. When increasing investment in IoT or AI technology, it is also necessary to increase investment in manpower to jointly improve the results of technological innovation. Considering the factors of production efficiency, production safety, and enterprise scale, this paper introduces a method for general enterprises to maximize the benefits of their investment in both IoT technology and manpower. It also suggests the implementation steps for general enterprises when investing in IoT or AI technologies.

Key Words: IoT technology, Human resource, CES utility function, Enterprise utility, Optimization selection

1. Introduction

The global population will reach 8.1 billion in 2024. With the popularization of the Internet and the accelerated pace of life, people have higher requirements for personalized products, and traditional manufacturing methods are difficult to meet the needs. The complexity of products on the production side has increased, the delivery cycle has shortened, and the demand for flexible customization has increased. At the same time, the labor shortage in major industrial countries has made digital manufacturing and networked production the key to improving efficiency and promoting industry transformation and upgrading [1].

The advantages of intelligence and automation have made IoT and AI technologies the rising "new favorites" in numerous industries. However, any technological revolution is accompanied by uncertain risks and challenges. The flexibility of human, experience and judgment, and the ability to solve complex problems cannot be ignored. Hozan A et al. used statistical methods to analyze the economic and environmental impact of corporate sustainable development systems by integrating cloud, Web technology, attacks, AI, IoT and security [2].