

摘要

本研究應用共同邊界、二階段資料包絡分析法 (DEA) 及 Malmquist 生產力指數 (MPI)，比較電子商務、物流及包材 2016 年至 2020 年的獲利效率、市場效率、經營效率與經營效率技術缺口比率 (Technology Gap Ratio, TGR)。本研究以股東權益總額、營業費用為第一階段獲利效率的投入項、營業收入淨額為第一階段獲利效率的產出項、營業利益為跨階段連結項、每股淨值為第二階段市場效率的投入項，每股盈餘、市場價值為第二階段市場效率的產出項進行二階段經營效率分析，實證結果顯示：

- (1) 電子商務、物流、包材在共同邊界獲利效率、市場效率與經營效率上，表現最好的產業為電子商務。獲利效率表現最差的為物流，市場效率與經營效率上電子商務業顯著優於物流與包材，其中包材為表現最差的行業。
- (2) 電子商務、物流、包材在群組邊界獲利效率上表現最好的產業為電子商務、最差的為物流，而在市場效率與經營效率上表現最好的產業為包材、最差的為物流，其中包材群組邊界市場效率顯著優於物流。
- (3) 電子商務業為三個產業的經營效率技術領導者，包材則為經營效率技術落後者。
- (4) 電子商務、物流、包材在整體累積生產力上表現最好的公司為台達化。

關鍵詞：宅經濟、共同邊界、資料包絡分析法、Malmquist 生產力指數

Abstract

This study applies meta-frontier two-stage data envelopment analysis (DEA) and Malmquist productivity index (MPI) to compare the operating efficiency, market efficiency, overall operational efficiency and technology gap ratio (TGR) of efficiencies between E-commerce, logistics and packaging materials industry from 2016 to 2020. To conduct the analysis, this study uses shareholders' equity and operating expenses as the input variables and net operating income as the output variable of the first-stage operating efficiency, the book value per share as the input variable and earnings per share and market value as the output variables of the second-stage market efficiency, and operating profit as cross-stage linkage variable.

The empirical results show:

- (1) In terms of meta-frontier measurement, E-commerce has the best operating efficiency, market efficiency and overall operational efficiency. The logistics is the worst performer in operating efficiency. The market efficiency and overall operational efficiency of E-commerce are significantly higher than the logistics and packaging materials industry, among which the packaging materials is the worst performer.
- (2) In terms of group-frontier measurement, E-commerce has the best operating efficiency. The logistics is the worst performer in operating efficiency. The packaging materials industry is the best performer in The market efficiency and overall operational efficiency, and its market efficiency is significantly higher than the logistics.
- (3) The E-commerce industry is the leader in the technology of operational efficiency among the three industries, while the paper industry is the laggard.
- (4) The best performing company in terms of overall cumulative productivity among the companies evaluated is Daita chemical company.

Keywords: Stay-at-home economy, Meta-frontier, Data envelopment analysis, Malmquist productivity index