

Quantity Discounted Transportation Rates, Advertising and Industrial Location*

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Abstract

Assuming that a firm uses a single input available from one input source to produce a single output to be sold in the output market, and transportation rates are a function of distance only, Hwang and Mai (1988) recently pointed out that the equilibrium location of the firm is independent of advertising if and only if the production function is homogeneous of degree one. This result is consistent with Sakashita's finding that "demand functions play no role on the location decision of the firm as long as we assume a linear homogeneous production function" (1967:120). However, as is well-known in transportation economics, discounted for quantity, as well as discounted for distance traveled are quite prevalent among the various modes of transportation. This paper incorporates quantity discounts as a key variable into the transportation rate function. By using the unconstrained optimization and the comparative static analysis, this paper shows that the linearly homogeneous production function is not sufficient to insure the independence between advertising and optimum location. This indicates that in general Hwang and Mai's proposition, the optimum location of the firm is independent of advertising if and only if the production function is homogeneous of degree one, can not be applied to the case in which the transportation rate is a function of quantity and distance. It also shows that Hwang and Mai's proposition holds if the elasticities of transportation rate with respect to quantity are constant and identical.

1. Introduction
2. The Model
3. The Impact of Advertising on Location Decision
4. Concluding Remarks

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運輸費率對廣告費用和廠商選擇 廠址關係的影響

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摘要

最近，黃鴻和麥朝成教授很精彩地分析廣告支出對於廠商選擇廠址的影響。假定一個廠商在線型空間上尋找廠址，而運輸費率只和運送路程密切相關。他們發現，如果生產函數是一階齊次式，廠商選擇廠址的決定就不受廣告費用的影響。這一結果和 Sakashita 有名的結論不謀而合。Sakashita 認為，如果生產函數是一階齊次式，則需求方面的變動對於廠商選擇廠址的決定沒有任何影響。本文的目的是考慮如果運輸費率也受到運送數量的左右時，黃麥教授的定理在何種情況可以適用。爲了比較上的方便，我們只有在黃、麥兩教授的運輸費率函數中加上另外一個變數：運送數量。利用經濟學上通用的最佳選擇法和比較靜態分析，我們發現，即使生產函數是一階齊次式，廠商選擇廠址的決定仍然會受到廣告支出費用影響。這一結果和黃麥定理不同。因爲若是運輸費率不受運送數量左右時，廣告支出的起伏，不影響商品引力和原料引力在線型空間的和諧相處。若運輸費率受到運送數量左右時。要使這兩種背道而馳的力量和諧相處，就得費盡九牛二虎之力。結果風吹草動，廣告支出的起伏將影響廠商選擇廠址的決定。不過我們也發現。運輸費率對商品運送數量的彈性和對原料運送數量的彈性若是相對時，這兩種力量將會相安無事，而黃麥兩教授的定理就暢行無阻了。