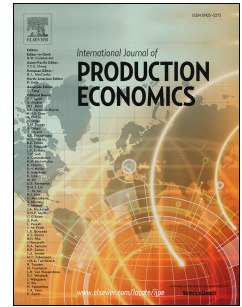


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An analysis of intellectual property licensing strategy under duopoly competition: Component or Product-based?

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Abstract: A component supplier holding patents can calculate the intellectual property licensing fees either as a percentage of sales prices of its customer manufacturers' products (i.e., product-based strategy) or as a percentage of the wholesale price of its component (i.e., component-based strategy). Selecting which strategy to license the patent plays a vital role in supply-chain players' strategic interactions, especially when the downstream manufacturers compete. This paper investigates which strategy is favored more by players of a supply chain, which consists of a component supplier and two duopoly manufacturers. The manufacturers are assumed to be heterogeneous in production cost but produce and competitively sell homogenous goods. Employing a supplier Stackelberg game model, we demonstrate that the component supplier prefers to implement the product-based strategy; nevertheless, the manufacturers' preferences are dependent on how effectively they produce products. Specifically, the product-based strategy could be favored by the manufacturer with a sufficiently high cost advantage over the rival. Furthermore, we find that the supply-chain players' preferences of licensing strategy could be dependent on factors such as the market size, the differences of the production costs, and unit royalty fees when the products are imperfect substitutes.

Keywords: supply chain management, intellectual property, patent licensing, IP pricing strategy, duopoly competition; game theory

1. Introduction

Nowadays, intellectual property (IP) assets have captured a large proportion of many high-tech companies' market value. A research report demonstrated that total patent royalties of a smartphone (selling for \$400) accounts for more than 30% of its sales

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