

Public Abstract

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DESIGN OF DISTRIBUTION CHANNEL: DIRECT SALE vs. MIXED SALE

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Graduation Term: Summer 2005

When a manufacturer distributes products, a channel strategy should be determined in the early stage of the production. This research proposes the most profitable distribution channel based on several conditions through comparing direct and mixed sale strategies. The mathematical models which are the manufacturer's expected profit functions are developed for the case that the manufacturer controls wholesale quantity. Based on this assumption, we show that if the product has the high retail price and the high salvage price then the direct sale is proper, and if the product has the high wholesale price and the low salvage price then the mixed sale strategy is more profitable than the direct sale strategy. In addition, we identify the optimal wholesale quantity that maximizes the expected profit of a manufacturer. These results are defined to be adapted for the case of uniformly distributed customer demand. The analysis and experiments show that the character for channel decision is reasonable. Then, we bound the mathematical model with two linear functions for searching the optimal retail price. The numerical experiment supports the previous results and determines the optimal wholesale quantity and the optimal retail price. Simultaneously, we find that if the product is luxuries and there are many substitutes then the direct sale is proper, and if the product is necessities and there are few substitutes then the mixed sale strategy is more profitable. In conclusion, this research suggests the best channel, the optimal wholesale quantity, and the optimal retail price for maximizing the manufacturer's profit.