Title:

**Motivating Customer Learning When the Learning Curve is Uncertain: The Impact of Software Pricing Strategies**

Abstract:

To benefit from innovative Information Technologies (ITs), customers have to learn to use them after the initial purchase. This learning process is plagued by ambiguous returns, which discourage customers' learning effort and may even cause premature abandonment. This paper investigates whether a software vendor can influence customers' learning incentives through pricing mechanisms. Furthermore, it examines the profitability of pricing mechanisms given customers' learning process. We capture two aspects of learning: 1) customers learn to use the software according to a learning curve; 2) the shape of the learning curve is unknown to customers upon initial adoption, but can be learned through experience. Two licensing schemes are compared: perpetual licensing, which allows unlimited usage at a fixed upfront cost, and pay-per-use licensing, which charges a constant price for each usage.

In a dynamic Bayesian theoretic model, customers decide whether to use the new software or the existing technology in each period. We show that without customers' uncertainty about the learning curve, perpetual licensing and pay-per-use licensing create the same learning incentives for customers and are equally profitable to the vendor. Under both licensing schemes, customers learn to use the software in every period if the software is more efficient than the old technology in spite of the learning costs. In contrast, with uncertainty about the learning curve, customers may give up learning to use the software even if they have adopted it, and the software is indeed more efficient than the old technology. In this case, customers learn to use the software for a longer period if time under perpetual licensing than under pay-per-use licensing. Thus, with uncertainty, perpetual licensing creates better learning incentives. However, it may or may not be optimal from the vendor's perspective. Customers' uncertainty about the learning curve and their learning process change the relative profitability of perpetual and pay-per-use licensing through different mechanisms, which drive the optimal licensing result in opposite directions. We discuss the trade-off between them and conditions under which each licensing scheme is optimal.

Keywords: Learning curve, Stochastic learning, Bayesian analysis, Software licensing

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