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Dynamic pricing models of ERP systems under network externality*

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Abstract

In a highly uncertain and dynamic industrial business network, Enterprise Resource Planning (ERP) systems vendors face great challenges to enhance their market position and maximize their profit. Being able to simultaneously predict the diffusion of an ERP in an industrial network and to determine the right price to charge to a customer is a complex task. In this paper, we investigate the benefit of a dynamic pricing strategy for ERP systems vendors in a business network governed by a quantitative diffusion model. Based on a real scenario in the automotive industry, those quantitative models are integrated into a simulation-based optimization approach to tackle the problem. Our findings are promising and establish the foundation of a powerful decision support tool for ERP systems vendors.

Key words: Dynamic pricing, ERP Diffusion models, Industrial networks, Simulation, Design of experiment.

1 Introduction

Enterprise Resource Planning (ERP) systems are configurable commercial software systems designed to facilitate business process integration by replacing disparate legacy systems across business organizations with synchronized suites of enterprise-wide applications. Potential benefits of an ERP system include productivity and quality improvements in key areas. As a result, ERP systems are expected to enhance market value and firm performance through efficiency and effectiveness gains [1].

ERP systems have now been adopted by most Fortune 500 firms. Consequently, it is not surprising to note that most ERP providers are now turning to the middle market to continue their growth. In order to enhance their market position, it is important for ERP providers to adapt their business strategy and solution accordingly. To reach such an objective, ERP providers need to adapt their sales cycle and obtain detailed knowledge of industry-specific requirements. In addition, they must understand the dynamics of ERP systems' diffusion.

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