

DETERMINING THE BEST LAUNCH TIME FOR NEW PRODUCTS WITH RISK CONSIDERATIONS IN A COMPETITIVE MARKET SITUATION

Mehdi Sheikhzadeh, School of Management and Economics, Sharif University of Technology, Iran
Zahra Sharifonnasabi, School of Management and Economics, Sharif University of Technology, Iran

ABSTRACT

Despite the high failure rate of New Product Development (NPD) projects, NPD is one of the critical success factors in most leading companies. One primary reason is that proactive product development can influence the competitive success and renewal of organizations (References Available on Request). Decision on time of introducing a new product is quite challenging as it requires a careful trade-off analysis. For instance, there are conflicting objectives from marketing and operational perspectives with respect to launching time of a new product (References Available on Request). Specifically, a too late entry could likely lead to significant loss of opportunity while a too early entry could possibly not be receptive enough from customers, channel members, and other required partners (References Available on Request). Incorporating risk considerations can augment the complexity of determining the best launch time and consequently it has not been addressed well in literature despite risky nature of NPD projects.

In this research, for a firm developing a new product or service, we developed a model for optimal launch time by maximizing the expected profit with risk considerations, while firm's revenue is a concave function of product quality and market competition is growing over time. With this general model, we first derived the optimal launch time for risk neutral decision makers. We illustrated that NPD projects are feasible if firms have a minimum level of Quality of NPD Process (QNPDP). We then imposed a constraint to the model to analyze impact of risk considerations on the optimal launch time. We specifically applied Markowitz's Mean-Variance model and conducted NPD project's risk analysis based on profit variance that must be less than firm's risk averseness tolerance. It was observed that incorporating risk considerations the model can lead to totally different results in comparison with risk neutral case. We demonstrated that, high quality production leads to smaller profit variance, later optimal launch time, and greater optimal expected profit. In fact, having high production quality leads to decreasing behavior of profit variance for some development intervals. So, firms can take advantage of such an opportunity and spend more time on developing new products while profit variance staying in tolerable range. It was shown that a high QNPDP can lead to a later optimal launch time in risk averse case than the best launch time in risk neutral cases.

We further observed that even though increasing NPD project's potential revenue increases the optimal launch time for risk neutral decision makers, with risk considerations the behavior changes. Specifically, by increasing potential revenue project's failure expenses increases as well and risk averse decision makers tend to launch new products earlier due to a greater profit variance. Also, any improvement in QNPDP (increasing average quality improvement or decreasing variance of quality improvement) leads to a later optimal launch time due to smaller profit variance. In such situations, risk neutral decision makers launch new products sooner due to faster quality improvement rate.

References Available on Request.