# Chapter 11
# Effects of Product Development Phases on Innovation Network Relationships

**Christina Öberg**
*Lund University, Sweden*

## ABSTRACT

*In research literature, product development has frequently been associated with four distinct phases: introduction, growth, maturity, and decline. While these phases have been related to and used for the study of product life cycle, market strategies and competition, less or no attention has been given to the subject of Innovation Network Relationships (INRs), and more specifically, to whether and how INRs are affected by these Product Development Phases (PDPs). Based on a literature review of Resource Dependence Theory (RDT) and four case studies, this chapter contributes by discussing how various INRs are affected by PDPs of an innovative firm. Findings include: (1) the specific needs and resource dependence by the innovative firm during different PDPs affect the status of the firm's INRs, whereas new relationships are built and old ones are finished; (2) during product development, the INRs become increasingly complex where network parties become negative resources of the innovative firm through increased uncertainty being introduced into previous relationships; and (3) the development of INRs cannot be captured on a dyadic level, but various parties' relationships with one another need to be considered.*

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## INTRODUCTION

Studies on products and markets often describe their development as consisting of four phases: introduction, growth, maturity, and decline (Christiansen, Varnes, Gasparin, Storm-Nielsen & Vinther, 2010; Levitt, 1965). These PDPs would expectedly follow one another, and companies would act differently in the various phases (Moon, 2005). The phases have been described in terms of how a company should act in marketing, and what the competition looks like during the different phases (Lehmann & Winer, 2008). The PDPs could, however, also be considered in terms of INRs. INRs here describe the ties to external parties that an innovative firm is connected to by means of contracts, collaboration, ownership, or business deals. Thus, they include relationships with both equity and non-equity partners, as well as pure business partners. An innovative firm describes a new venture that was created to market a new product or service idea.

External parties have proven to be important for the development and prosperity of a company (Baldwin, Hienerth & von Hippel, 2006; Heide & John, 1990; Johnsen, Phillips, Caldwell & Lewis, 2006; Magnusson, 2003; Thomke & von Hippel, 2002; Öberg & Grundström, 2009), yet less seems to be known about how the relationships with these parties are affected by the development of an innovative firm. The purpose of the chapter is to discuss various INRs and how they are affected by the PDPs of an innovative firm. Various network parties are discussed based on their roles as suppliers, customers, finance bodies, and so on, and how they are affected by the phases of development (introduction, growth, maturity, and decline). The chapter shows that: (1) the specific needs and resource dependence by the innovative firm during different PDPs affect the status of the firm's INRs, whereas new relationships are built and old ones are finished; (2) during product development, the INRs become increasingly complex where network parties become negative resources of the innovative firm through increased uncertainty being introduced into previous relationships; and (3) the development of INRs cannot be captured on a dyadic (between two parties) level, but various network parties' relationships with one another need to be considered. The concept of *negative resources* is developed in the chapter to express how relationships of a company may be negative in that company's relationship with other firms. Negative resources thus describe assets or relationships of a company, and mean that other companies become less inclined to establish or maintain a relationship with the firm. This chapter contributes to the field of RDT through discussions on negative resources in terms of connected relationships and how such relationships need to be incorporated to fully understand the development of dependence, resource provision and balance/imbalance between them. This chapter further contributes to research into business networks by showing that business relationships may develop and expire as a consequence of an innovative firm's PDPs. In addition, this research contributes to the field of innovation by demonstrating how these PDPs involve different needs and dependencies on network parties.

The chapter is structured as follows. The next section describes the theoretical point of departure, RDT, and also refers to the PDPs and INRs. Thereafter, the method is described. The empirical part of the chapter is based on four case studies of innovative firms. These are summarized after the method section and then analyzed in terms of the development phases, the network parties, and whether and how RDT explains the effects on network relationships in the various phases. The chapter ends with conclusions and ideas for further research.

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