6

Success Criteria for PD

This chapter concentrates on a discussion of success criteria for network based high speed product development. The chapter introduces a general discussion of success criteria – cost, performance and time – for network based high speed product development and produces more observations and analysis on the issue of success criteria. Focus is both on short-term and long-term success criteria in order to reach the optimal NB HS NPD. This chapter discusses the definitions of short-term and long-term success criteria as well as their differences. Finally, the importance of short- and long-term success criteria seen in relation to NB HS NPD are discussed.

The chapter finalises the PhD project's discussion on concepts for NB HS NPD.

6.1 Introduction

Chapter 3 discussed Rauseneau's 1983 definition of the success criteria of product development was introduced. Focus at that time and up till now has to a large extent been on time, cost, and performance. The present PhD project, however, stresses the importance of looking at such success criteria in a strategic perspective and of focusing on other success criteria than time, cost and performance have been very poor. The reason for this can be seen in the businesses' lack of knowledge about other success criteria and the lack of need so far to focus on other success criteria. However, with added pressure on speed, network and fast changing conditions on the field of product development it seems as if the time has come to focus on other success criteria.

As we saw before, the definitions of the success criteria were:

As can be seen from the above, there is quiet a difference between the theoretical definition of success criteria to the practical definition of success criteria. This discussion can be intensified by discussing what short-term success criteria are as indicated in Table 6.1.

Table 6.1 Definition of success criteria

Success Criteria	Theoretical	Practical (Secondary Cases)
Time	Relative time – according to the view set for the PD task	Physical time – an working our e.g.
Cost	Direct and alternative cost	Direct costs
Performance	Perceived value	Value
Speed	Relative time it takes to move a PD idea from idea generation to encapsulation of a product – according to the view set for the PD task.	Physical time moving a product development project from idea to market implementation

6.2 Short-Term Success Criteria

6.2.1 Theoretical Approach

Matching time, cost, and performance in a given moment for a given product development project is essential to a business. Often time, cost, and performance have already been specified and can therefore be classified as the success criteria of a product development project.

However, a business matching only short-term success criteria matches the success criteria of only one product development project at a time often for only one customer. This means that the business matches the success criteria only in a vertical perspective as shown in Figure 6.1.

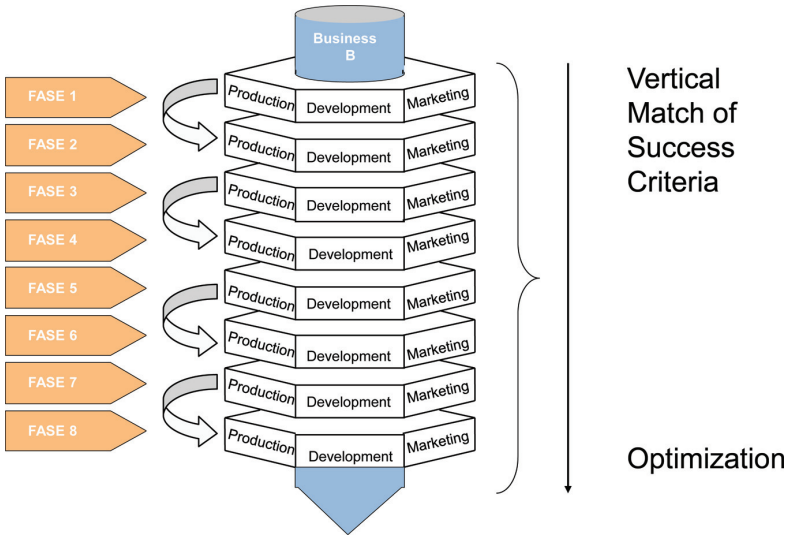

Figure 6.1 Vertical match of success criteria in NB HS NPD.

The business focuses on the challenge of getting the product from idea to market introduction as fast as possible, with a minimum of cost and with a performance to which the customer can here and now agree is basically very short-term oriented.

However, this match is a kind of sub-optimising as the business focuses only on optimising within the individual product development project. Hereby, the business focuses on a short-term optimisation without paying attention to horizontal optimisation as seen in Figure 6.2.

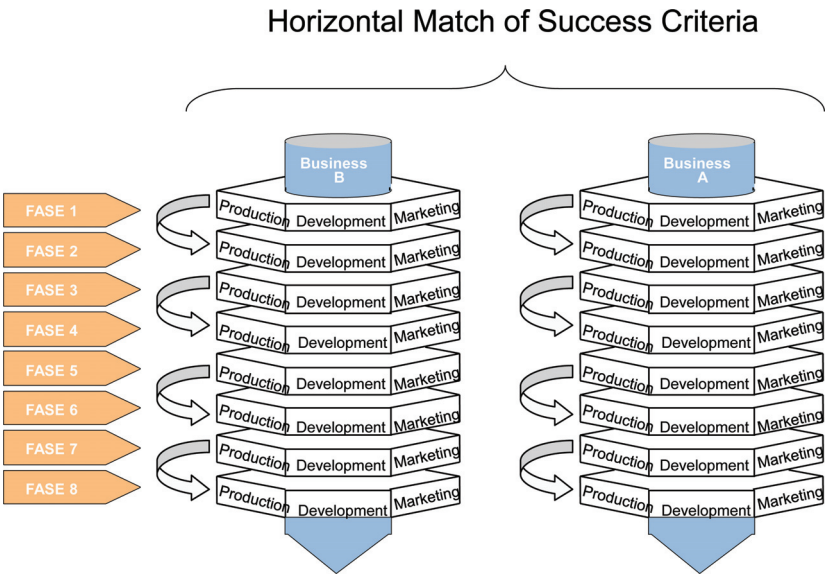

Figure 6.2 Horizontal match of success criteria in NB HS NPD.

The business does not optimize the business overall product development activities seen in a horizontal perspective. This prevents the business from gaining an overall optimum of time, cost and performance across the business product development projects. Consequently, an optimization on a horizontal perspective has to be connected to an optimization seen in a long-term perspective because the different product development projects do not have the same beginning and end or the same match of time, cost and performance success criteria. A horizontal focus and perspective on long-term success criteria will teach the business how to gain a better match of time, cost and performance. However, learning demands knowledge transfer and learning across product development projects (Corso, 2001) (Gieskes, 2001).

The vertical and horizontal dimensions are still very much related to an internal view of the business product development activities. When seen in a NB HS NPD perspective, the optimisation of the success criteria becomes even more complex. Suddenly, success criteria cannot be defined solely to the individual product development project or to the individual business. It must instead be to optimize the success criteria for an entire network or more advanced for more networks as seen in Figure 6.3.

In this way, success criteria for NB HS NPD turn into a more complex perspective of optimisation of success criteria because network partners focus on different success criteria.

This new success criterion perspective forces the business product development managers to consider and reflect on strategic alliance, joint venture or even acquisition to match the success criteria across networks. It also forces the managers of product development to consider and reflect on the transfer of knowledge across networks. Both considerations demand a high degree of focus on long-term success criteria and long-term perspectives in the planning of product development. The management must continuously improve their product development management competence and must be able to visualise the business product development into a long-term perspective.

The hypothesis of the PhD project is that SMEs in 2002 mainly focus on short-term success criteria indicated in Table 6.1 and that they mainly carried out product development within a single or very few networks. The hypothesis of the PhD project is that hardly any SMEs focus on long-term network based success criteria.

6.3 Long-Term Success Criteria in NB HS PD

As can be seen from the above, long term success criteria have to deal with knowledge of product development and in our case particularly on NB HS NPD. Knowledge of best practice of NB HS NPD and of the performance of NB HS NPD in different situations has to be transformed between network partners.

A business which wants to develop knowledge about NB HS NPD has to develop a product development learning culture and to facilitate learning (Gieske, 2001) or a product development learning model (Leifers, 2002). If a business is not able to develop such conditions, it was my hypothesis that the business will remain in the same position and will not be able to make further developments on shortening time, cost or performance.

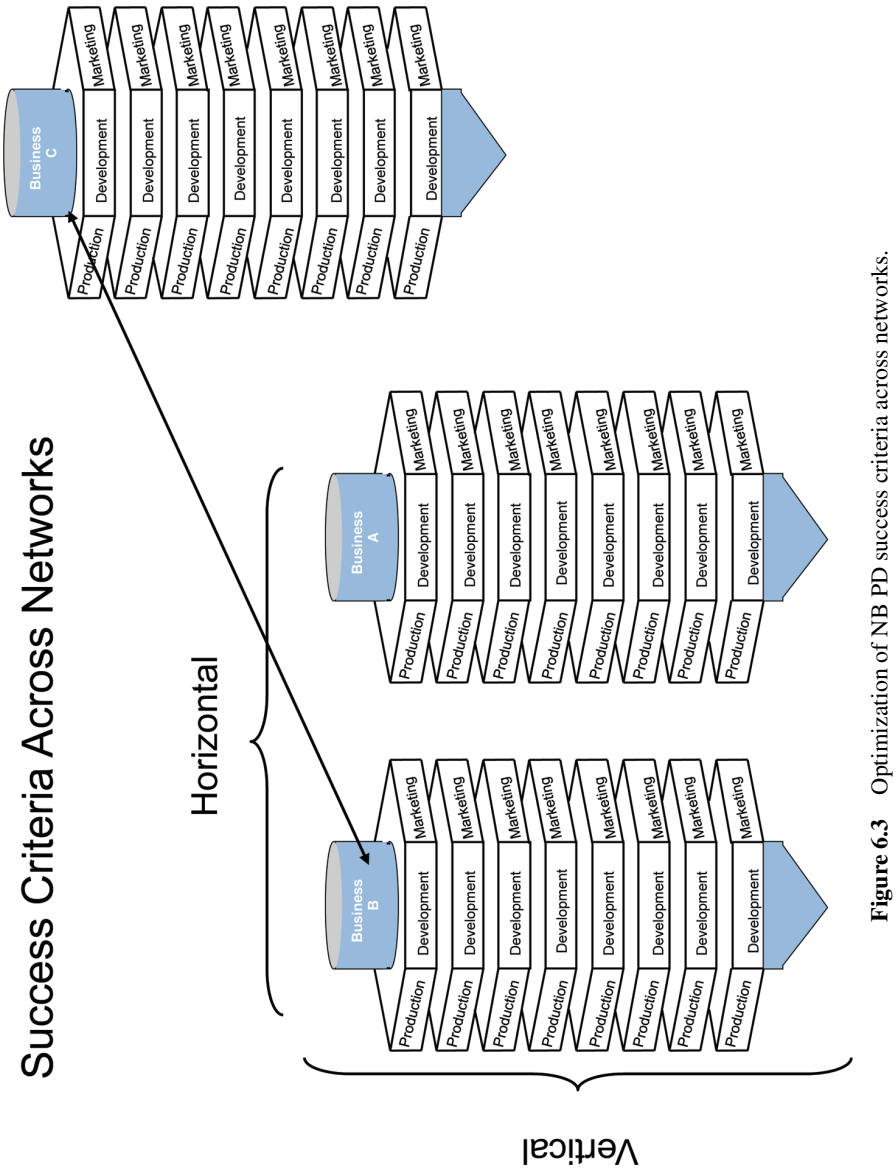

Figure 6.3 Optimization of NB PD success criteria across networks.

Learning in NB HS NPD means a business ability to transfer knowledge both vertically, horizontally, and between networks. This is a somewhat complicated task for product development managers but a task of major importance to gain competitive advantage in an increasing NB HS NPD global market.

SMEs focusing on PD learning will have the opportunity to make continuous improvement (CIM) of the product development process (Boer, H., 2000). Many of the cases (Case No. 11 Rossflex) showed how continuous improvement could be brought into the product development process. Continuous improvement in the product development process was strongly related to learning and knowledge transfer from one product development process to another.

CIM is important because the product development process has to be improved continuously in future both initially within the product development process, across product development projects, and on the market place (Corso, 2001).

SMEs focusing on PD learning between network product development projects will also have the possibility to establish a basis for continuous innovation (CI) (Boer, H., 2001). Such focus will be an important strategic competence in the future of businesses competing on the global market. For a long time, an ability to continuously innovate new products has been stressed as important (Cinet, 2002) and have been verified to be strongly related to knowledge and knowledge transfer – and thereby to learning.

CI is important because businesses have to innovate new products faster in the future and to seek faster innovation possibilities both at the attraction phase of new product development projects and ideas, along the product development process, and when the product has been introduced to the market.

Additionally, a focus on CIM, CI and PD learning creates a foundation for long-term competitive advantage such as right cost, right performance, and right time.

6.4 Right Time, Right Costs, and Right Performance in NB HS PD

6.4.1 Theoretical Approach

Speed or high speed in network based product development has been in focus for some time (Cooper, 1986) (Sanchez, 1996) (Bessant, 1999) (Verganti, 2001) but how can we define high speed in product development? Taking our point of departure in an analytical framework for product development (Bohn & Lindgren, 2000), a model for knowledge management in Product

Innovation (Corso, 2001), and a model for flexible design of product development models (MacCormark, Verganti and Iansiti, 2001) we are able to gain a deeper understanding of speed in product development.

Initially, I claim that high speed enablers (Chapter 5), management tools, technological tools, product development models, and product development processes have to be understood in a wider perspective to comprehend the ability to perform network based high speed product development. The hypothesis is that there are more types of speed in NB HS NPD. The research intends to find these and verify such types.

Until now there are only fragmented knowledge and research on the types of speed and tools of speed. We do not know which high speed enablers are available and appropriate in different situations of product development. Learning has to be established in all areas of high speed product development to find models of speed in NB NPD. The PhD project will try to increase this learning on HS enablers.

Nevertheless, our claim is that high speed in product development is not the issue and is not always advantageous. Our secondary case research has shown that it can even be advantageous to "hurry slowly". When characteristics in market, technology, network, and the competences of the businesses are in a certain position, a slow speed can be advantageous as learning of market, technology, network, and competences develop, proceed, and get ready for the new product. The opposite can of course also be the case (Case No. 1 Zara).

Even so, the question of speed is more complicated than outlined above. During the product development process it seems as if the speed sometimes has to be increased and sometimes has to be slowed down. Some of the main components in the field of product development can turn out to influence and make radical changes to "the game of product development". Therefore, businesses often have to change speed during the product development process (Verganti, 2001).

However, this is not always possible because of the businesses different choices of product development models.

6.5 Right Speed in NB PD

6.5.1 Theoretical Approach

Right speed in product development has to be learned and can be seen from different viewpoint as shown in Figure 6.4. The critical issue before talking about speed in product development is the ability of the management to analyse "the game of product development" and learn from one product

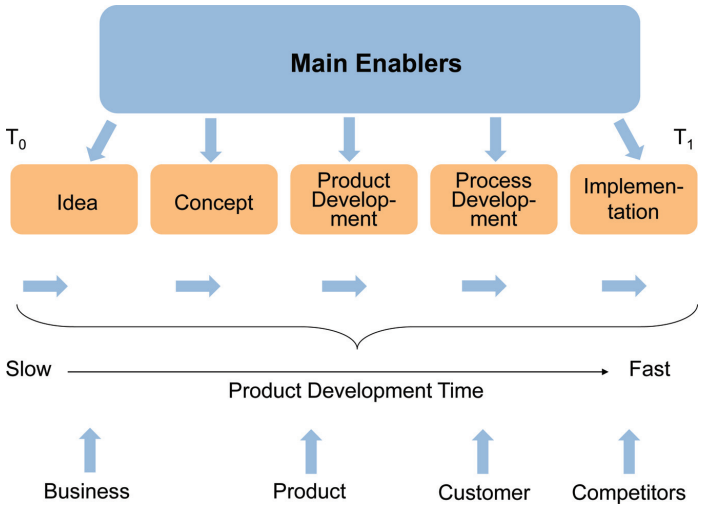

Figure 6.4 Speed in NB HS PD.

development project to another which speed is advantageous to this specific product development situation. Even more critical is the ability of the product development managers to learn throughout the product development process. The last learning area concerns the development process from idea to market introduction as well as the span of time after market introduction. Finally, the question of how to establish learning of speed tools and speed in product development across networks in the product development process is becoming important to our research project.

Several researchers have put forward models for speeding up NPD (Cooper, 1986) (MacCormark, Verganti, and Iansiti, 2001) but few of them have suggested which models to chose in different product development situations. Two main stream NPD models have been proposed. "The Stage-Gate" model and "The Waterfall" model have proved to be extremely efficient when market, technology, network, and the competences of the businesses are stable or to some extent evolving (Cooper, 1986) (Eppinger, 1996). The flexible models have proved to be efficient when the market is dynamic (Verganti and Iansiti 2001).

6.5.2 Practical Approach

Especially the car industry (Case No. FI, Case No. 36 VW), the furniture industry (Case No. 58 Tvilum), the pump industry (Case No. 54 Grundfos), the windmill industry (Case No. 59 NEG Micon), and several industries producing

mainly hardware (Case No. 69 DAN and Case No. 70 BM) have shown until now to have profited from using stage-gate product development models.

As for the "flexible" product development models, especially the software industry and industries facing dynamic markets, technologies, networks, and competences as e.g. Telecase, Lycase, Metzacase (Microsoft Internetcase Macormarc, Verganti, Iansiti, 2001) have turned out to profit from using more "flexible" product development models.

The question is how and when is it appropriate to change product development model and process to gain right speed? Summing up on the case research shows some hypothetical proposals and mainstreams to the answer of which NPD models to chose and the appropriateness to high speed. This is indicated in Table 6.2.

Table 6.2 Product development models and HS PD appropriateness

	Stage Gate Model	Flexible Model
Characteristics		
Markets	Familiar markets	Unfamiliar markets
Technology	Familiar Technology	Unfamiliar Technology
Network	Physical networks and stabilised ICT networks	Dynamic networks, ICT – networks, Virtual and dynamic networks
Competences	Stable and physical competences	Dynamic and virtual competences
Product	Products are mainly hardware	Products are mainly processes Software, services,
Strength	When main components can be characterised as stable and in some case evolving on the product development field.	Flexible to sudden change in the main components on the product development field.
Weakness	Un flexible to sudden change on the product development field	When product development turns out to be stable for a long period.
Opportunities	When market, technology, network and competence turn to stabilise	When market, technology, network and competence turn to be dynamic and virtual
Threats	"Trapped in a dynamic process" either in market, technology, network or competence – performance does not match demand of market.	"Trapped in a stable process" either in market, technology, network or competence – too much cost.
Time for change of NPD – model and speed	Going from stabilised to dynamic PD – characteristics When products turn to processes	Going from dynamic to stabilised PD – characteristics When processes turn into products – standard modules

The tools proposed in the two types of models can only be considered as hypothetical guidelines as a result of the case research and the literature study. The empirical research will perform profound insight and verification into such questions.

6.6 Hypothetical Framework for Short- and Long-Term Success Criteria in NB HS NPD

When analysing the success criteria of NB HS NPD as shown in Table 6.3

Table 6.3 Short- and long-term success criteria

NB HS NPD Success Criteria Short-Term Perspective	NB HS NPD Success Criteria Long-Term Perspective
High Speed – Time	Right Time – Right Speed
Costs	Right Costs
Performance	Right Performance
	Continuous Improvement
	Learning
	Continuous Innovation

it seems as if the following framework of success criteria as shown in Figure 6.5 can be advanced:

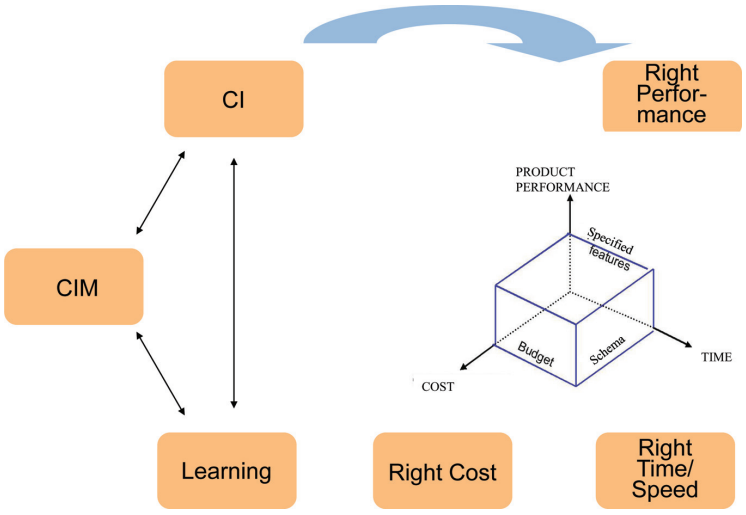

Figure 6.5 Relationship between long-term success criteria in network based product development.

Source: Lindgren & Bohn.

The hypothesis of this PhD project is that SMEs focus on the short-term success criteria and barely on the long term success criteria. My hypothesis was that this would prevent them from reaching sustainable competitive advantage via their product development activities on the global market.

NB HS PD knowledge has to be made available in an open form and transferred before it can be used to reach right speed in the businesses product development. When implemented in businesses and when learning interacts with CIM and CI, my hypothesis is that long-term success criteria such as right performance, right cost and right speed as shown in Figure 6.5 can be gained in product development.

The aim of this research project was to clarify how much focus the long-term product development success criteria have in SMEs today.

The framework finally recommends that businesses focus more on long-term success criteria to gain right performance, right cost, and – essentially – right speed because it seems as if this will be a major focus for the future as listed in Table 6.4.

Table 6.4 Hypotheses of network based success criteria

Hypotheses of Network Based Success Criteria	Today	In Future
Success criteria in the business	Short term primarily on cost	Long term Right cost
	Time	Right time
	Performance	Right performance (Perceived value)
		CIM
		CI
		Learning
Success criteria in the network	Vertical success criteria	Vertical, horizontal and network based success criteria
The match	Matching success criteria to the business or narrow network partners	Matching success criteria across businesses and a broader set of network partners

The discussion of concepts of network based high speed product development is now finished. Reflection on the concepts of NB HS NPD and the perspectives of NB HS NPD will be given in Chapter 7.