



The Project Excellence Model[®]: linking success criteria and critical success factors

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Received 5 March 2002; received in revised form 20 September 2002; accepted 11 December 2002

Abstract

Although there has been significant research on both project success criteria and critical success factors for projects, there has not been a concept defined that can link the two. This while the need to relate critical success factors to project success criteria is identified in both theory and practice. The Project Excellence Model, described in this paper, is adapted from the EFQM-model and is a concept developed to fill this need. The Project Excellence Model is developed using research findings from both studies on success criteria and critical success factors for projects. The model consists of six result areas covering project success criteria and six organisational areas covering critical success factors. The Project Excellence Model uses five different project types to describe the project organisation, giving guidance to the application of the model. The paper includes findings of a case study showing how the model was used to improve the performance of a project.

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Keywords: Project success; Project excellence; Project success criteria; Project types; Critical success factors

There is a growing need for a management model that helps project managers deal with large and complex projects. Currently most tools developed in the field of project management seem insufficient to fulfil this role [1]. In addition several authors state that a possible way to develop an overall framework for the management of projects is to link the research on project success criteria to the research on critical success factors [2,3].

Combining these findings from both practice and theory led to the development of the Project Excellence Model. The Project Excellence Model, which is based on the EFQM-model, is designed to link project success criteria and critical success factors into one coherent model.

This article describes the way the Project Excellence Model was developed and how it can be applied to projects. The basic thoughts behind the Project Excellence Model are introduced and the literature on project success criteria and critical success factors is reviewed. This is followed by a paragraph on the five project types of the Project Excellence Model. The article concludes

with some practical guidelines for the use of the model and a case study.

1. Projects and the EFQM-model

Project organisations differ fundamentally from traditional, functionally organised, permanent organisations [4]. Projects are unique and novel and have a clear finishing date. The control of permanent organisations is often directed more at continuity and long term growth. Projects are more specifically aimed at producing a certain project goal (effectiveness) while a permanent organisation like Toyota primarily tries to achieve efficiency in its routine processes. These differences make it difficult to use tools developed for permanent organisations, like the EFQM-model, in project situations.

The EFQM business excellence model was developed in 1989 by 14 multinationals grouped in the European Foundation of Quality Management to improve the quality of management in Western Europe. The EFQM model is used to measure and improve the overall quality of an organisation. One of the essential characteristics of the EFQM-model is that the model distinguishes

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1. **RESULT AREAS:** Results the organisation has achieved (WHAT); and
2. **ORGANISATION AREAS:** Management of the organisation (HOW).

2. Project Excellence Model; introduction of the general concept

The approach the EFQM model uses differs from most approaches found in the field of project management. In general most of the literature in this field focuses on organisational aspects (HOW). For example, the PM Body Of Knowledge [5] describes nine essential knowledge areas and management processes. The link between these knowledge areas and management processes with project results is unclear. On the other hand, it becomes clear that because of the unique characteristics of projects the EFQM-model cannot readily be transferred to project situations.

Research on constructing a management model for projects started with the assumption that for projects the same distinction between results and organisation can be made. These two topics can be found in the literature on project management as well. In this respect the project success criteria can be seen as result areas and the success factors as organisational areas. The Project Excellence Model is based on the assumption that in order to manage a project successfully the project organisation has to focus on:

| | |
|----------------------|--------------------------|
| RESULT AREAS | Project success criteria |
| ORGANISATIONAL AREAS | Critical success factors |

3. Result areas—project success criteria

Early work into the success criteria assumed that the main criteria for success were the so-called golden triangle of time, budget and required quality. However, the issue of project success turned out to be far more subtle than this. There are more, possibly competing, criteria that can be identified [6]. Not only is there a basket of potentially competing criteria, the judgement is made by a wide range of potential stakeholders, over different time horizons. Van Aken [7] even defines project success as: “The satisfaction of all stakeholders”. Perceiving project success simply as the compliance with time, cost and quality constraints can be qualified as a more ‘narrow’ view in this respect.

Research on project success further shows that it is impossible to generate a universal checklist of project

success criteria suitable for all projects. Success criteria will differ from project to project depending on a number of issues, for example, size, uniqueness and complexity [8]. In order to develop a model for projects that links success criteria and success factors a more flexible approach seems appropriate. This more flexible approach lies in using clusters of possible success criteria. Assuming that while criteria defining project success can be different for each project, a universal clustering of criteria can be formulated to cover the whole issue of project success [9]. To cluster the success criteria the research on project success was studied. One of the guidelines in defining the six result areas was that all result areas together had to cover the whole issue of project success in the broadest sense. The other guideline being that each result area had to represent a clear and distinctive set of goals or interest. The results of the study on project success is summarised in Table 1. Together these groups of success criteria form the result areas of the Project Excellence Model. The following clusters were identified, Table 2.

4. Critical success factors for projects—organisational areas

Research into project success factors on projects was aimed at identifying those levers that project managers can pull to increase the likelihood of achieving a successful outcome for their project. Initial research on the critical success factors of a project focussed primarily on the control aspects of projects. Later studies concluded that the initial research on critical success factors was too narrowly directed towards developing standard tools and techniques for project management. A new approach emerged, consisting of large studies on the critical success factors for projects. These studies showed that there are other factors to be taken into account in managing a project successfully than scheduling alone [10–12].

In the 1990s comments started to appear on the methods used in the research on critical success factors. A response came from Belassi et al. [13] who stated that sound research on critical success factors has to:

- distinguish between success factors and success criteria; and
- distinguish success factors within the control of the project manager and factors outside the control of the project manager.

They constructed a framework for critical success factors for projects which takes external factors influencing project success into account [13]. Also the framework does not provide a single list of success factors but defines groups of success factors.

Table 1
Summary of the research on project success criteria

| Result areas 'Project Excellence Model' | Wateridge (1998) [8] | Kerzner (1992) [15] | Lim and Mohammed (1999) [9] | Turner (1997) [4] |
|---|---|---|--|---|
| Project results Time Costs Quality/Scope | Produced to specification | 'Immature': On time Within budget According to specifications | Micro Success (short term): On time Within budget According to specifications | The facility is produced to specification within budget and on time |
| 2. Appreciation client | The project achieves its business purpose and: meets its defined objectives meets quality thresholds is profitable for the owner | 'Mature': Minimum of agreed scope changes Without changing the corporate culture Does not disturb the workflow of the client | Macro success (long term): "does the original (business) concept tick?" | The project provides a satisfactory benefit to the owner The project achieves its stated business purpose The project meets pre-stated objectives to produce the facility |
| 3. Appreciation project personnel | The project team is happy during the project and with the outcome of the project | | Micro success (short term): appreciation of the project team | The project satisfies the needs of project team and supporters |
| 4. Appreciation users | Users are happy during the project and with the outcome of the project | | Macro success (long term): "does the original (business) concept tick?" | The project satisfies the needs of users |
| 5. Appreciation contracting partners | Profitable for contractors | | Micro success (short term): Profitability of the project for contracting partners | |
| 6. Appreciation stakeholders | Stakeholders are happy during the project and with the outcome of the project | | | The project satisfies the needs of stakeholders |

Table 2
Result areas of the Project Excellence Model

| No. | Result area | Explanation |
|-----|--|---|
| 1 | Project results Budget Schedule Quality | The original golden triangle of project goals. Almost all projects will have specific scheduling, budget and quality constraints. |
| 2 | Appreciation by the client | The client initiates the project to fulfil a specific need. What aspects and factors does the client value in judging the success of the project |
| 3 | Appreciation by project personnel | The workers of the project will be concerned with reaching their personal goals as well as a good working atmosphere |
| 4 | Appreciation by users | Users are concerned with their overall influence in the project and the functionality of the end product |
| 5 | Appreciation by contracting partners | Contracting partners try to make a profit at the project. They are also concerned with getting new orders and learning possibilities |
| 6 | Appreciation by stakeholders | Those parties that are not directly involved in the project but have a large influence. For example environmental groups, citizens and government agencies. These parties manage their specific interest. |

Table 3
Summary of the research on critical success factors for projects

| Result areas 'Project Excellence Model' | Morris and Hough (1987) [11] | Munns and Bjeirmi (1996) [13] | Belassi and Tukul (1996) [14] | Pinto and Slevin (1988) [12] |
|--|---------------------------------------|--------------------------------------|---|---|
| Leadership and Team | Human factors | Human Parties | Use of managerial skills | Personnel recruitment Trouble shooting |
| Policy and Strategy | Project definition | | Control and monitoring | |
| Stakeholder management | Politics and social factors | Relations with client Politics | | Client consultation Communication Power and Politics |
| Resources | Finance | | Use of technology Preliminary estimates | |
| Contracting | Legal agreements | Legal agreements Contracting | | |
| Project management | Scheduling, design | Project Administration Efficiency | Scheduling and scheduling | Technical tasks Monitoring and feedback |
| Success criteria | | Profit | | Client acceptance |
| External factors | Schedule urgency Schedule duration | Objectives | Factors related to project manager Project team members Factors related tot the project Factors related to the organisation Availability of resources External environment | Top management support Characteristics of project manager Environment events Urgency |

In defining the organisational areas of the Project Excellence Model the literature on critical success factors for projects was studied, (Table 3). This led to the definition of six organisational areas (Table 4).

The original work into success factors suffered from the weakness that it did not really deal with the question of how success is judged; what are the criteria which will be used to determine if the project is successful. In the Project Excellence Model this question is solved by

linking the concepts of success criteria and critical success factors into one coherent model (Fig. 1).

5. Project types

The Project Excellence Model consists of 12 areas that play a key role in managing a project. In order to be successful the choices made on the organisational areas

Table 4
Organisational areas of the Project Excellence Model

| No. | Result area | Explanation |
|-----|---|---|
| 7 | Leadership and Team | Represents the way the project manager runs the project and how tasks and responsibilities are divided. Leadership style of and co-operation in the projectteam greatly influence the working habits within the project organisation. |
| 8 | Policy and Strategy | What are the project goals and how are they accomplished. Combining the interest of stakeholders into an end-product. |
| 9 | Stakeholder management | How does the project interact with various stakeholders. The co-operation of the project organisation with external parties determines the place of the project in its environment. |
| 10 | Resources | Resources have to be utilised in an effective and efficient manner in order to achieve maximum benefit to the stakeholders involved. |
| 11 | Contracting | Each project organisation establishes contractual relationships. The choices of contracts and partners evolves around the tasks at hand and the competencies of contracting parties. |
| 12 | Project management Scheduling Budget Organisation Quality Information Risks | How does operational control of the project take place? The traditional aspects of sound project control play a key role in this process. |

PROJECT EXCELLENCE MODEL

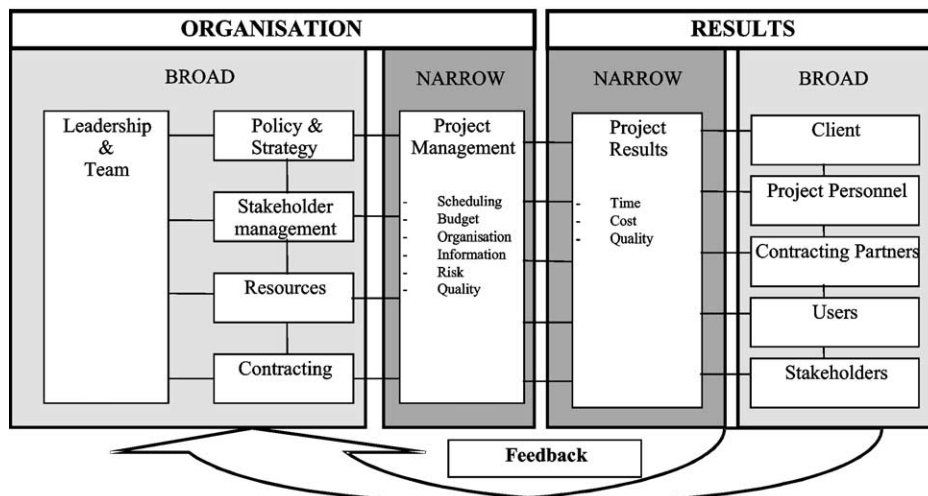
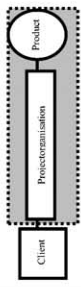
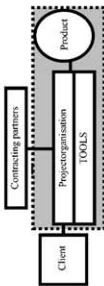
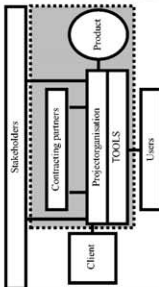
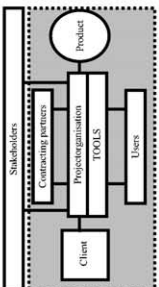
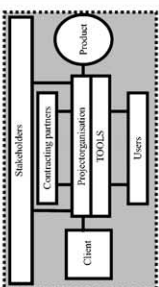


Fig. 1. The Project Excellence Model.

Table 5
The five project types of the Project Excellence Model

| Figure | I; Product orientation | II; Tool orientation | III; System orientation | IV; Strategy orientation | V; Total Project management |
|--|---|--|---|--|--|
| Perception of the project |  |  |  |  |  |
| Example | "A project is an organisation consisting of different disciplines to achieve an end product defined by the client" | "A project is a process that leads to an end product by using a methodology with several tools and techniques" | "A project is a system consisting of contracting partners and project organisation set up to achieve a set end product whereby demands from users and stakeholders are taken into account" | "A project is an organisation from directly involved parties to fulfil the need of a client and users within the boundaries set by external stakeholders" | "A project is a complex network of closely related stakeholders trying to fulfil the need of a client and users" |
| Keywords project-organisation | The sunscreen of a hospital has to be removed after ten years of service. The head of the finances determines which technician who takes care of the substitution by himself. | A process industry factory has to carry out the maintenance of its machines. A detailed schedule is set up. The users are planning the type of out of production cost the firm large sums of money. | A new school is built. In this project the demands of locals, children and teachers are heard by the project organisation. The project organisation weighs the different stakeholders' takes care of the design and building of the school. | A new information system is implemented within a permanent organisation. After the selection of the supplier a project organisation is set up in which users and the client play a key role. | The renovation of a city centre involves a lot of different parties. Local citizens, shopkeepers, government agencies, engineers and construction firms closely co-operate to execute the project. |
| Key result areas | <ol style="list-style-type: none"> Simple hierarchic control Clear work descriptions Progress reports Effectiveness Executing tasks <ul style="list-style-type: none"> Projectresults | <ol style="list-style-type: none"> Strong division of tasks Supporting tools Phased execution Efficiency Reacting to conflicts <ul style="list-style-type: none"> Projectresults Appreciation Project Personnel | <ol style="list-style-type: none"> Control stakeholders Inform stakeholders Co-operate with contractors Quality of the work processes Estimate and control risks <ul style="list-style-type: none"> Projectresults Appreciation Project personnel Appreciation Contracting Partners | <ol style="list-style-type: none"> Customer based interaction Consult users and client Serve needs of client and users Flexibility Pro-actively manage risks <ul style="list-style-type: none"> Projectresults Appreciation Project personnel Appreciation Contracting partners Appreciation Client Appreciation Users | <ol style="list-style-type: none"> Sharing responsibility Co-operative decisions and execution Long term solutions Innovative methods Manage risks together <ul style="list-style-type: none"> Projectresults Appreciation Project Personnel Appreciation Contracting Partners Appreciation Client Appreciation Users Appreciation Stakeholders |
| Key organisational area | Project management | Resources | Contracting | Policy and Strategy | Stakeholder management |
| Metaphor | Turner: The external parties are not participating in the project. The project organisation only takes care of the end product. | Machine: The project is organised in a controlled clear manner. External parties are regarded as potential threats to the project. | Merchant: The project organisation tries to execute it's own approach as well as possible while monitoring the interests of users and stakeholders | Organism: The project organisation continually adapts it's behaviour based on the behaviour of client and users | Spider web: The project organisation forms a complex network of closely related parties. |
| Coping with external parties | Protect Denial | Influence | Inform Control | Adapt | Co-operate Participate |
| Characteristics of project situations | <ul style="list-style-type: none"> Small Simple Stable environment Set end product Clear working method Projects out of necessity | <ul style="list-style-type: none"> Small / Medium sized Simple, can be technically complex Stable environment Set and specified end product Clear working method Projects out of necessity Efficient use of resources | <ul style="list-style-type: none"> Medium sized Technically complex Slowly changing environment Clear end product Working methods mostly clear Projects out of necessity and to fulfil need Read the environment | <ul style="list-style-type: none"> Medium sizes/ Large Very complex Dynamic environment No clearly specified end product No clear working methods Projects to fulfil a need Flexibility | <ul style="list-style-type: none"> Large Very complex Turbulent environment No clear end product No boundaries are known Projects to fulfil a need Establish consensus |
| Key to success | Opportunism | Efficient use of resources | Read the environment | Flexibility | Establish consensus |
| Critical control aspect | Time or money | Time and money | Time, money, quality, risks | Time, money, quality, risks, organisation | Time, money, quality, risks, organisation, information |

have to match with the project goals (set on the result areas) and the external factors of the project. External factors of the project that have to be taken into account can be factors related to the [13]:

- Project manager and team members (i.e. skills, background).
- Project (i.e. size, uniqueness, urgency).
- Parent organisation (i.e. management support, structure).
- External environment (i.e. political, technological).

Project goals and external factors can vary widely for projects. The building of a house is completely different than organising the winter Olympics so organisations set up to manage these projects will differ greatly as well. In order to visualise the necessary choices of the project organisation, five project types were developed (Table 5). A more elaborate description of the five projects can be found in Westerveld et al. [14]

It is important to note the five project types do not represent a 'good' to 'excellent' scale. The choice of the most adequate project type for a specific project is based on the desired project goals set on the result areas and the external factors influencing the project as mentioned earlier. In this regard excellence is achieved in choosing the right project type.

6. How to apply the Project Excellence Model—case study

The Project Excellence Model can be applied in various project stages and situations. The model can be used for setting up managing and evaluating a project.

At the project start up (PSU) the project organisation and its stakeholders decide on the project goals. These goals can be categorised using the six result areas of the Project Excellence Model. Then the basic choices in the project organisation have to be made using the five project types on each of the six organisational areas. After the project start-up, the Project Excellence Model can be used to monitor the results and the project organisation. Based on this analysis the functioning of the project organisation can be improved if needed. Eventually the model can be used to analyse and transfer learning experiences to future projects.

The management team of a middle sized organisation asked themselves whether the project organisation for implementing a new ERP-system ('Enterprise Resource Planning') was performing adequately. To answer this question an analysis with the Project Excellence Model was carried out in co-operation with management, users, project personnel, the project manager and contracting partner.

The analysis showed that the functioning of the project organisation could be improved on the areas Policy and Strategy and Stakeholder management. Overall the project organisation could be described as being mainly type 2 ('Tool orientation'). On the area Policy and Strategy, the project could be characterised as inflexible with respect to adapting the project goals. The analysis further showed that this approach carried the risk the opportunities the new ERP system offered, were not fully utilised. Also it was concluded that the project goals did not sufficiently match the overall strategy of the company ('Appreciation Client'). Using the project types of the Project Excellence Model it was agreed that a type 3 ('System orientation') or type 4 ('Strategy orientation') approach could be fruitful on the area Policy and Strategy. This meant more flexibility in reviewing and adapting set project goals. It also meant a broader range of parties would participate in goal review sessions.

On the area Stakeholder management the conclusion was that future users of the ERP system did not have a large say within the project. This caused users to get frustrated ('Appreciation users') and also delayed the progress of the project ('Project Results'). Again this approach can be characterised as type 2 ('Tool orientation'). The project manager decided to give key users a new role within the project organisation. Key users specifically were asked to look for efficiency improvements that the new ERP system would make possible. Again this is an approach more fitting to a type 3 or type 4 project type. The analysis showed that by linking the result areas of the project to the organisational areas and the five project types could provide good insights for improving the functioning of the project organisation.

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