

# Analysis of construction projects by means of value curves

P. Ballesteros Pérez<sup>a,1</sup>, M<sup>a</sup>.C. González-Cruz<sup>b,\*</sup>, J.P. Pastor-Ferrando<sup>b</sup>

<sup>a</sup> *Depuración de Aguas del Mediterráneo S.L. Cánovas del Castillo Square 1, 5, Postal Code 46005 Valencia, Spain*

<sup>b</sup> *Escuela Técnica Superior de Ingenieros Industriales, Polytechnic University of Valencia, Camino de Vera, s/n Postal Code 46022 Valencia, Spain*

Received 18 April 2008; received in revised form 2 November 2009; accepted 10 November 2009

## Abstract

The present work analyzes the expectations and relationships of the three key stakeholders involved in the construction project management process: the construction Promoter (the company that finances, owns and represents the interests of the client), the project designers (the company that elaborates the construction project) and the builder (the company that executes the construction project).

In this article we propose an analysis of the project stakeholders' expectations using the strategy canvas tool (a graphical model that uses value curves as a way of measuring the evaluation of the key factors involved in the design of the construction project document).

The analysis aims to provide evidence on the phases, characteristics and documents of the construction project design and management process better rated by the agents involved in the process. The analysis of the value curves will provide evidence on deficiencies in the elaboration of the construction project document and will allow us to propose some solutions for certain situations. The work presented is based on the answers supplied by 111 interviewed people belonging to the three agents mentioned above.

© 2009 Elsevier Ltd and IPMA. All rights reserved.

*Keywords:* Project; Construction; Strategy canvas; Value curve; Stakeholders

## 1. Introduction

Nowadays the business world is in constant change (Kim and Mauborgne, 1999). Continual innovation is necessary because market sectors are also highly dynamic and changeable (Fernández, 2005; Drucker, 2002). Mention is frequently made of customer focus when designing or redesigning new products or services in organizations, but it is also very true that this often does not lead to significant results or achievements (Leonard and Rayport, 1997; Huovila and Serén, 1998).

The planning of facilities can be viewed as an integrated system in which different agents interact with the purpose of materializing a new facility and obtaining some benefit. The construction process, usually begins with an interest

for the Promoter and always exist the element that will serve as link and guide among the different agents involved: the construction project.

The construction project can be considered as a tool for the design of new facilities. For years the construction project process has been evolving to reach its present configuration not only in terms of the documents layout but also the related procedural methods.

One of the aims of this paper is to define the common characteristics of present-day construction projects in Spanish practice. For this end we have studied which aspects are better valued by the different agents involved in the process. The stakeholders selected for the present study are: Public administration or Private Promoters (depending on the financial source), project designers and builders.

These stakeholders have been chosen as the most representative, but the conclusions of this article are also applicable to companies which have direct contact with the execution of the construction projects, e.g. of technical assistance and project management companies. The findings only are applicable to companies directly related to construction

\* Corresponding author. Tel.: +34 96 387 98 66x75654; fax: +34 96 387 98 69x79869.

E-mail addresses: [pabbalpe@hotmail.com](mailto:pabbalpe@hotmail.com) (P.B. Pérez), [mgonzal@d-pi.upv.es](mailto:mgonzal@d-pi.upv.es) (M<sup>a</sup>.C. González-Cruz).

<sup>1</sup> Tel.: +34 96 352 09 22, mobile: +639 230 917; fax: +34 96 353 12 25.

projects because stakeholders from sub-sectors of the construction industry, such as material and equipment suppliers, have different expectations to the stakeholders above.

The tool that we have used is the strategy canvas (Kim and Mauborgne, 2004), first developed by Chan Kim and Renée Mauborgne in 1997 (Kim and Mauborgne, 1997) and successfully applied to the design and re-design of products and services.

## 2. Background

The construction project management involves numerous participants: end users, Promoters, construction companies, project designers, government/public bodies as well as a large number of sub-contractors, suppliers and other entities.

The end product, whether civil engineering works or buildings, is a complex combination of innumerable parties, each with its own particular technology and human resources. It is described solely by the construction project through its designs, plans, technical specifications, etc.

The construction sector is complex. It is difficult to put into one of the three main economic categories (primary, secondary and tertiary). One fairly widespread opinion considers it to be in an intermediate situation, half way between industrial and service activities. But the construction activity presents further substantial doses of difficulty, configuring a set of features that define the work to be carried out, contractual relationships, and organization. Seen as a process, it has two characteristics of production: it takes place by commission or under request, and it is intermittent. The peculiarities of construction as a productive activity are that this industry is characterized by the production of heterogeneous and diverse goods, which are made in different places and under different circumstances, with processes not amenable to mechanization, and working on most occasions under request, hence not being able to extend the scope of its activity (SEOPAN, 2003; Merchán, 2000).

The market, moreover, is dominated by the demand for each specific project, and the different bidders must compete with each other to obtain the adjudication of the project. In most cases, the contract is awarded to the lowest bidder. Consequently the price of the product is formalized prior to the production process. This prior determination of the price has two consequences (Merchán, 2000):

- It forces the entrepreneur to narrow his profit margins; even at a time of depression when he must present excessively low prices in order to ensure that he remains in the market, at the expense of zero or near-zero surpluses.
- The final price of the product usually presents substantial variations from that agreed, especially at a time of inflation.

In many countries, construction is one of the most dynamic economic activities. This is the case of Spain, where construction has experienced a dramatic growth in the last years (SEOPAN, 2003). Additionally, more than

90% of the investment in civil works corresponds to public administrations and affiliate companies.

A fundamental role in the development of this activity is played by project engineers (Pellicer et al., 2004). Some characteristics inherent to the construction project have significant impact on the work to be done by these organizations. As an illustration we can mention (Austin et al., 1996):

- The needs of the client (Promoter, end users) are not usually sufficiently defined and considered.
- The technical specifications or conditions established are not documented and cannot, therefore, present clear subsequent traceability.
- Some essential specifications (cost) are excluded from the iterative process without paying attention to the implications for the end product or its exploitation.
- The design process is not planned. It is difficult to find procedural approaches that can be applicable to a wide range of cases.
- The selection of the technical solutions chosen from among the possible alternatives is not managed systematically.
- Javier Rui-Wamba assures that (Rui-Wamba, 1999).
- The traditional paths do not lead to the future.
- Working methods must change drastically.
- Current methods must not only be improved, but transformed.

It is common to propose qualitative intervening actions to improve project quality standards (Serpell and Fernando, 1998), and to carry out analyzes of the causes why projects generally end up extending their time frame and increasing their cost (Shing-Tao, 2002). Nevertheless, It is strange, to study project risks and uncertainties (de la Cruz et al., 2006). This article aims to analyze the weaknesses in the Spanish construction projects occurring as a consequence of the national economic situation, and to propose feasible improvement actions.

Some affirmations commonly shared in the world of construction projects have been well-read in the bibliography (Merchán, 2000):

- Those who participate in the construction process are not sufficiently aware that such a process is a chain of contracts between different stakeholders. At any time, the client has the power to demand the quality required. Not taking this into account generates many problems.
- The importance of the technical studies prior to project planning is undervalued. Much attention is paid to bureaucratic and administrative aspects to the detriment of technical aspects.
- Excessively tight deadlines are set for technical studies.
- All too often, the party commissioning the project considers it to be a mere administrative formality in order to obtain the construction license. This ignorance of what a project really is, implies that quality is not demanded of it, and it is not considered important.

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات