

# THE PUBLIC INSTITUTIONS PERFORMANCE IS ONE OF MAIN PORTUGUESE CONSTRUCTION REASONS FOR DELAYS.

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## Abstract

The lack of competitiveness of the Portuguese construction industry has been recurrently mentioned in the press and in technical literature. The duration of construction projects right from inception to completion is assuming great importance in the construction industry. A national survey on construction delays concluded that one of the main causes for construction delays is the recurrent lack of coordination and delays from the promoting institutions. From 118 causes for delays, 3 connected with public institutions performance and relationships are within the 15 most relevant. This paper critically discusses the problem of poor institutional performance in Portugal using literature and data from a set of interviews inserted in a national survey with expert construction managers. The main factors for the poor performance of those institutions will be established statistically. A number of measures will be then identified in order to lessen the problem.

*Keywords: Competitiveness, construction delays, public institutions performance, survey, improvement measures.*

## 1. Introduction

### 1.1 The lack of competitiveness of the Portuguese construction industry

The Portuguese construction industry is currently experiencing great challenges. Along with the redefinition of its legal framework, so as to make it more efficient and bring it up to date, the sector is going through stagnation in the private market and a slump in the public construction market, mostly on account of the current state of economy's country. It is very important to find ways to correct the problems and to make the sector more competitive.

The lack of competitiveness of the Portuguese construction industry has been recurrently mentioned in the press and in technical literature. Some symptoms of this have been stressed by several parties and their causes often related to the lack of accomplishment of essential management functions of construction projects.

The symptoms have long been known: time and budget overruns lack of safety and insufficient quality. The main reasons often adduced are the recurring ambiguity of preliminary programmes, the poor quality of projects, the poor public institutions performance and the inefficiency of project management.

In view of the above, research is needed on the reasons for the lack of competitiveness of the Portuguese construction industry. Research was focused on the four areas mentioned above and gained in utility while it helped find paths for overcoming those reasons [1].

### 1.2 The consequences of construction delays

The consequences of time overruns are almost always serious and hard to resolve. Failure to meet deadlines represents financial losses to users and, more often than not, has a negative impact on the project profitability for promoters. However, understanding the causes may help curb the problem and contribute for improving productivity.

Relevant studies on the causes for time overruns of the Portuguese construction could not be found in the literature, although the impact of project delays is often discussed. Nevertheless, there are some studies on the lack of quality, poor management and construction deficiencies as a whole. But the importance of the delay problem by itself constitutes enough grounds for the development of specific research on this topic.

The project aims at making information available and at helping to deploy strategies and specific measures for predicting and controlling delay causes in construction. This may positively influence project design, public institutions performance and construction stages to achieve better compliance with scheduling therefore assuring project success [2] [3].

## **2. Previous research activities**

Lack of accomplishment of the above four management functions (cost, time, safety and quality) in the Portuguese environment has been concerning the authors over the last few years. The problem has been compared to a chronic disease (we hope it will be eradicated one day!) with well known symptoms, as stated above. Understanding the reasons for this encompasses answering the following questions:

Why construction projects are systematically delayed?

Why there are budget overruns in almost all single projects?

Why is safety still badly overlooked?

Why is quality still not satisfactory, even in recent projects?

How do promoters and contractors deal with growing environmental demands?

In order to evaluate the present situation, clarify the reasons for the problem and find possible solutions for it, the authors recently participated in a research project on the “Reasons for the Lack of Accomplishment of Time, Costs and Safety Objectives in Construction”. The project is financed by the Portuguese Science and Technology Foundation (Fundação para a Ciência e Tecnologia, FCT, Projecto SAPIENS N° 47625) [1].

The project encompasses the following work packages:

- To inquire the Portuguese construction stakeholders on the causes and background reasons for project delays, cost overruns, deficient safety and lack of quality from their experience in recent projects;
- To collect information from former studies on the subject;
- To compare previous results with international information available from other similar projects;
- To establish a common set of causes and background reasons for the problem;
- To establish possible paths to solve the problem.

Parallel to the project development, a PhD thesis on construction delays has been undertaken by the first author. In the scope of the latter, a large survey to Portuguese construction

stakeholders has been conducted [3]. The results of this are briefly reported in the following sections of this paper.

### 3. Survey

#### 3.1 Preliminary research process

The study of delay causes and their impact in project success is widely recognised in the literature as a key factor for project success and for construction company performance [4] [5] [6]. Accordingly, abundant international research has been undertaken, typically based on the survey to the industry, addressing the following objectives:

- To analyze the reasons and factors for project delays;
- To classify and evaluate delays, claims and related issues;
- To understand, compare and specify their causes.

The survey to the Portuguese construction stakeholders was first set up by using information collected from international sources complemented with the results of an unstructured inquiry to a number of relevant professionals from the industry. The inquiry to professionals essentially aimed at validating a preliminary set of construction delay causes but it was also used to confirm the relevance of the research being conducted. Additionally, the inquiry enabled to set links with the industry form which the research benefited. Finally a set of twelve categories for construction delays was established as depicted in Table 1.

Categories of Causes for Delay			
<b>MT</b>	<b>Material-related</b>	<b>DT</b>	<b>Design Team-related</b>
<b>EQ</b>	<b>Equipment-related</b>	<b>PM&amp;I</b>	<b>Project Manager and Inspection-related</b>
<b>LB</b>	<b>Labour-related</b>	<b>CCR</b>	<b>Contract and Contractual Relationships-related</b>
<b>CM</b>	<b>Contractor Management-related</b>	<b>IR</b>	<b>Institutional Relations-related</b>
<b>FMP</b>	<b>Financial Management of Project-related</b>	<b>PS</b>	<b>Project Specificity-related</b>
<b>OW</b>	<b>Owner-related</b>	<b>OF</b>	<b>Outside Factors-related</b>

Table 1. Categories of contemplated causes.

This cooperative effort was important for adjusting the cause map to the specific characteristics of the national construction sector.

In concerning to the Institutional Relations category (IR) the causes considered were as follows:

No.	CAT	CAUSES FOR DELAYS IN CONSTRUCTION
100	Relationships (IR)  Institutional	Difficulties in obtaining licenses and permits from authorities
101		Rules or legislation changes during construction process
102		Excessive dependency on recommendations and authorizations from several institutions and ruling bodies (city/town halls, IPPAR – Portuguese Institute for Architecture and Patrimony, Environment Institute, EP, etc.)
103		Difficulty and delay in the drafting and submitting of requests for institutional opinions and authorizations

Table 2. Causes for delays in Institutional Relations category.

### 3.2 Structure of the questionnaire

The survey was conducted using a questionnaire based on the classification of the delay causes described above and was organized into five sections. In section A, the goal was to obtain general information on the institution or company surveyed. Section B presents a list of 118 possible causes for delays built according to the previous explanation. The respondents were asked to assess degrees of frequency, impact on workflow and the types of construction project where each cause is most likely to occur. The Average Relevance positions have been obtained through the combination between frequency and impact rankings [7] [8]. Section C is for identifying the indicators that may best anticipate potential delay-causing problems. The intent of section D is to clarify the relationship between labour accidents and pressure for meeting deadlines. Finally, section E allow collect data relating to construction delays where current Portuguese law is concerned and the administrative procedures observed by the entities involved in construction sector.

### 3.3 Questionnaire implementation setps

Firstly, a hundred questionnaires were sent out to contractors, 85 to consultants and project designers and 100 to construction clients. A response time was set out for responses. On stage two, direct contacts were made to missing respondents suggesting an interview instead. This alternative was gladly accepted by most of them. As a result, 39 interviews took place during which the questionnaire was filled up.

The answers were provided by administrative personnel or technical staff in management positions working at companies, as well as public clients, consultancy and engineering firms, design firms, management directors, project directors and managers and senior engineers.

Finally, 59 answers by contractors, 26 by designers/consultants and 79 by clients were collected. These number answers include 8 interviews to contractors, 8 to designers, 18 to public clients and 5 to private clients. It is noteworthy that the percentage of answers from contractors and clients is about 70% and the percentage of interviews reached 24%, which in practice comes to 1/4 of the total answers. Comparing these figures to those obtained in similar

studies, and weighing the typical difficulties in persuading sector participants to respond to this kind of study/survey, it could be argued that the percentage of answers is quite significant.

#### 4. Survey results

Results revealed that responsibility for delays can be ascribed to all parties involved. Moreover, results were treated statistically and allowed for some important conclusions that were fully published in the thesis and will be further disseminated elsewhere. Some of these conclusions are summarised in table 3 below.

From the 118 causes analysed in the survey, the following set of 15 were most highly ranked by the four groups of construction stakeholders inquired (public clients, private clients, contractors, designers /consultants) [2] [8].

No.	CAT	CAUSES FOR DELAYS IN CONSTRUCTION	Average Relevance Ranking
77	DT	Incomplete projects, ambiguities, errors, omissions, inadequate details, details inconsistent throughout special teams, inadequate design, etc.	1
102	IR	Excessive dependency on recommendations and authorizations from several institutions and ruling bodies (city/town halls, IPPAR – Portuguese Institute for Architecture and Patrimony, Environment Institute, EP, etc.)	2
100	IR	Difficulties in obtaining licenses and permits from authorities	3
97	CCR	A tendency to use procurement systems with a bias toward the cheapest solutions	4
28	CM	Deficient planning, activity/material/labour and equipment management and control	5
18	OW	Shortage of skilled labourers	6
76	DT	Errors in design due to lack of knowledge of local conditions and the environment	7
75	DT	Delays in preparation of technical documentation by project designers while construction is in progress	8
49	CM	Neglecting of critical activities	9
51	CM	Overly optimistic planning	10
62	OW	Frequent change orders during construction	11
44	CM	Deficient coordination among participants	12
26	OW	Low productivity	13
98	CCR	Non-existence of financial incentives that would encourage meeting deadlines of completing the works before the deadline	14

Table 3. Ranking of 15 most relevant causes.

Survey results show that stakeholders consider Institutional Relationships (IR) as a one of main cause categories for delays. Table 3 presents three causes in relevant rank positions fitting that category.

About the influence of rules and administrative procedures of public institutions on construction delays were included in the inquiry two questions:

- Which extent institutional procedures have had influence in the projects conducted by your company or organization?

The results were the following:

Influence	%
<b>None</b>	<b>0</b>
<b>Sometimes but with low impact</b>	<b>61</b>
<b>Frequently and with great impact</b>	<b>39</b>

Table 4. Answers from contractors (56 answers received).

Influence	%
<b>None</b>	<b>9</b>
<b>Sometimes but with low impact</b>	<b>48</b>
<b>Frequently and with great impact</b>	<b>43</b>

Table 5. Answers from public clients (58 answers received).

Influence	%
<b>None</b>	<b>0</b>
<b>Sometimes but with low impact</b>	<b>50</b>
<b>Frequently and with great impact</b>	<b>50</b>

Table 6. Answers from private clients (16 answers received).

Influence	%
<b>None</b>	<b>0</b>
<b>Sometimes but with low impact</b>	<b>50</b>
<b>Frequently and with great impact</b>	<b>50</b>

Table 7. Answers from designers/consultants (26 answers received).

- How do you rank the importance of the institutional root reasons listed in table 8 (from 1 not important to 8 very important) on the accomplishment of project duration?

Institutional root reasons	
<b>A</b>	<b>Difficulties in process analysis, approval and coordination of the institutions involved</b> (Eg. Statements of city/town halls, government ministries, state institutes – IPPAR (Portuguese Institute for Architecture and Patrimony, Environment Institute, etc..))
<b>B</b>	<b>Waiting for tribunal decisions</b>
<b>C</b>	<b>C. Public consultation</b>
<b>D</b>	<b>Financing priorities of the government or local authorities</b>
<b>E</b>	<b>Expropriation land process slowness</b>
<b>F</b>	<b>Incompatibility among statements or authorizations</b>
<b>G</b>	<b>G. Excessive bureaucracy</b>
<b>H</b>	<b>Other reasons</b>

Table 8. Institutional root reasons.

The results were the following:

Institutional root reasons	Importance degree							
	1	2	3	4	5	6	7	8
<b>A</b>	1	3		5	5	7	12	18
<b>B</b>	9	10	7	4	5	7	1	2
<b>C</b>	7	13	10	4	2	2	4	1
<b>D</b>	2	2	3	15	6	10	4	2
<b>E</b>	1	5	7	4	10	8	8	7
<b>F</b>	2	4	3	12	9	11	2	1
<b>G</b>	3	2	6	2	5	10	15	5
<b>H</b>	9		1		5	6		

Table 9. Answers from contractors (48 answers received)

Institutional root reasons	Importance degree							
	1	2	3	4	5	6	7	8
<b>A</b>	2	3	3	5	4	7	8	24
<b>B</b>	9	4	4	9	6	9	9	8
<b>C</b>	6	4	6	11	14	6	2	5
<b>D</b>	3	4	4	7	6	2	5	4
<b>E</b>	1	5	5	6	9	11	2	15
<b>F</b>	5	6	13	14	6	7	1	2
<b>G</b>	1	5	6	9	6	8	8	13
<b>H</b>	6	1	1		1		2	1

Table 10. Answers from public clients (57 answers received)

Institutional root reasons	Importance degree							
	1	2	3	4	5	6	7	8
<b>A</b>						5	2	7
<b>B</b>	1	2	2	5	2		1	
<b>C</b>	5	2	1	3	1		1	
<b>D</b>	2	3	4	1	1		1	
<b>E</b>	2	3	2	2		2	1	
<b>F</b>	1	1	2	2	4	2	1	
<b>G</b>			1	1	2	2	4	3
<b>H</b>	2			2				

Table 11. Answers from private clients (14 answers received)

Institutional root reasons	Importance degree							
	1	2	3	4	5	6	7	8
<b>A</b>	0	3	1	1	1	2	10	7
<b>B</b>	10	2	3	0	3	2	1	2
<b>C</b>	1	5	3	5	3	3	1	2
<b>D</b>	1	4	5	3	2	6	2	1
<b>E</b>	1	1	2	1	6	7	3	3
<b>F</b>	3	5	1	7	3	3	2	0
<b>G</b>	2	0	0	1	2	6	6	7
<b>H</b>	7	0	2	0	3	0	0	2

Table 12. Answers from designers/consultants (26 answers received)

## 5. Preventive measures and corrective solutions to be implemented

The results of the survey undertaken blended with the outcomes prior studies conducted elsewhere, allowed for setting up a number of preventative measures that may help lessen the problems under scrutiny [3]. Among those measures, the following set is highlighted:

- To implement appropriate and efficient organizational systems within public institutions;
- Clients to prepare appropriate schedules, preliminary programmes and necessary studies;
- Establishing a set of measures to increase the communication process among public institutions;
- Greater precision and coordination for preliminary studies;
- To raise awareness on risks inherent to construction;
- To optimize management on the basis of qualification and the use of more adequate techniques;
- To update some inadequate regulations, to clearly define and segregate responsibility and liability;

- Greater demands to be placed on the professional qualifications of technical personnel in charge of designing, licensing, managing, supervising and inspecting construction works;
- To define the professional qualifications required to public administration officers responsible for dealing with construction projects (setting project preliminary programmes, issuing technical elements to be included in bids, verifying and approving designs, inspecting and managing construction works, etc.) [9];
- To increase technical staff requirements for issuing construction permits;
- To review the role of the State both as contracting and policy-making entity;
- To reinforce the rules of transparency in public awarding of contracts and its inspection by the Fiscal Court.

## 6. Conclusions

Survey results show that the design team (DT), institutional relationships (IR) and construction management (CM) are the most mentioned delay cause categories. Table 3 includes three causes of each of these categories ranked in the first 15 places. Therefore, to seem evident that the public institutions performance is one of the main Portuguese construction reasons for delays. The analysis to four groups of construction stakeholder's inquiry responses allows support this conclusion.

The *difficulties in process analysis, approval and coordination of the institutions* have been considered the main root reason related to public institutions poor performance on the accomplishment of project duration. However, other reasons such as *expropriation land process slowness* and the *excessive bureaucracy* were also mentioned as relevant.

Each preventive measure mentioned in the previous section must not be looked at by itself or having one single aim but rather as part of an integrated approach.

Another noteworthy aspect of those measures is that they can help solve other problems beyond delays because they have not actually been geared exclusively towards delays by many respondents to the inquiry. This was quite evident to the authors during the interviews conducted to some participants. However, the utilization of such measures for controlling delays has been validated through respondents' opinions and specialized literature.

Therefore, the data obtained and the preventive measures suggested may positively influence public institutions performance and construction stages to achieve better compliance with scheduling therefore assuring project success [2] [3].

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