How to manage overconfidence in public civil construction projects, leading to unrealistic budget and time expectations?

Group number: 14

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Abstract

We decided to conduct an investigation on how to manage overconfidence in public civil construction projects. Overconfidence in public civil construction projects arise frequently, due to the engagement escalation, meaning when an individual or a group keeps doing the same thing over and over even though it creates inconvenience.

That's why our analysis will be focusing on the impact and the apprehension of overconfidence in public projects, and especially how to handle engagement escalation. We'll investigate some technical reports in order to have a well-routed approach to our subject.

We mostly found non-optimal project management, coming from some small technical problems leading to significant over budget, or miscommunication leading to strong delays. As a whole, we encounter that overconfidence comes with a secondary interest launching the project. Besides, stakeholders play a huge role in overconfidence especially when the most important stakeholders make decisions based on political decisions. Finally, both deficiencies in design and in construction endangered the completion of the project.

Table of contents:

Abstr	Abstract (200 words)			
1.	INTRODUCTION (1-2) PAGES	4		
2.	Related works (Literature review) 1-2 pages	5		
3.	Method (1-2) pages	6		
4.	Findings (2-3 pages)	7		
5.	Discussions and conclusions	8		
6.	References	9		

1. Introduction

Most of the time, overconfidence comes from what it could bring. Indeed, if you're confident in what you're selling, it will be more likely to lead to a successful project because it will grant you power and resources. Optimism that you can get from confident people will let you believe in the project way more than pessimism. In fact, as you promise cheaper, faster, and greater projects, you'll attract more support.

We will be presenting two cases about public civil constructions that have faced over budget and overtime during the project. We aim to provide some insights and recommendations about those two cases. Those cases will help us determine what has gone wrong during the construction and what could have been done better.

We decided to focus on one case in France and one in Spain, in order to also be able to compare their specificities. Regarding the former country, the found construction case is Confluence Museum, and as for the latter country, the case studied is the description of a hospital in the city of Cantabria: "Marqués de Valdecilla de Santander" This will help us value management of public civil construction from different countries.

Our analysis will impact the comprehension and apprehension of public projects, especially how to handle engagement escalation, meaning when an individual or a group keeps doing the same thing over and over even though it creates inconvenience. This bias was first described by Barry M. Staw in 1976.

2. Related works (Literature review)

First of all, (Brockner, 1992) proposes a definition of overconfidence : continuing an action with an uncertain outcome despite negative information about past achievements with the freedom to choose to stop or not.

(P.Schoemaker, 1992) is a paper which explains that overconfidence is a distortion of judgment, first, caused by mental phenomenons. The paper presents the main cognitive causes of overconfidence which are according to the author : availability (what's out of sight is often out of mind), anchoring (relying too heavily on the first piece of information we are given about a topic), confirmation bias (seeking support for our initial view rather than disconfirming evidence, unfortunately the more uncertain a decision is, the easier it is to find one-sided support), hindsight (believing that the world is more predictable than it really is). However the author underlines that biochemical causes have also to be taken into account. He uses the example of the euphoria and well-being which follow a success due to adrenaline and endorphins.

The literature allows us to understand to what extent overconfidence can lead to disastrous consequences. Indeed according to (Flybbjerg, 2009), budget overruns average 45% for mega-projects. Moreover a budget overrun reaching 100% isn't unusual, as a matter of fact we can give here some examples. The construction of the Sydney Opera House led to a 1450% budget overrun and 10 years of delay. The nuclear power plant of Shoreham was 16 years late and led to a 7300% budget overrun.

One of the unconscious processes that is often discussed is the escalation of commitment. It leads to behavior that deviates from economic rationality. Simply because one does not want to lose the previous investments made in a project by stopping it. (Ross & Staw, 1993) divides the factors behind this phenomenon into four categories and then details them: psychological, sociological, structural and project-specific.

Finally (Harvey, 2007) attempts at modeling overconfidence for corporate decision-making. It tries to take in account the bias and the parameters like the persistence of overconfidence or demographic attributes of the manager (education, experience). It's interesting to notice that it found no gender effect in overconfidence.

3. Method

The investigation was divided into two parts, the Spanish project and the French project, both of them are public buildings, thus we could obtain more information to compare faster and more efficiently.

In the Spanish group we have focused on analyzing a well documented hospital construction project located in Santander, the north of Spain.

The data has been obtained from a technical report written by a consultant's office and a technical assistant in charge of carrying out an assessment and comparison of all the phases executed in the project, this document was published by the consultant office and it is visible for everyone. Due to the document being based on defects made during the construction process, more information had to be collected in order to compare the predicted schedule time with the actual time needed to finish all the structures.

The investigation will focus on selecting the main problems encountered throughout the project that led to a budget change or time delay and also it has been searched any relevant information related to the management of the project or any kind of legal issues, these problems will be studied in more detail later on.

Our method of work consisted of. First, a general reading of the document highlighting the most important problems. Then we proceeded to study whether they have generated a budget problem (which data appear in the same document) or a delay in time and finally, we have explained why the problem arose and how they should have acted in order to not have faced it or in some cases a solution without affecting time and money

Concerning the french case, we had access to a documented report on the Confluence Museum of Lyon, one of the most important financial scandals in terms of public construction in France these years. It allowed us to get detailed data on how the project has been created, conducted and completed. Besides, it gave us access to some appendices, especially on the governance, the initial budget and the real one, and an interview of Jean-Luc Da Passano, Vice General President of Rhône.

To carry out our investigation, we first conducted a general reading of the document highlighting the most importants stakeholders and the different deadlines fixed at the origin.

Then we identified the different problems that arose and we determined their impacts on the project.

Afterward we analyzed them to see if they have generated a budget problem or a delay in time and finally.

To finish we have explained why the problem arose and how they should have acted in order to not have faced it or in some cases a solution without affecting time and money.

4. Findings

Spanish case:

Irrelevant though it may sound, there was a non-optimal quality-control system to assess every action and decision while the hospital was getting built, and it ended up generating many other smaller problems, design-wise. There is evidence of this as there were monthly quality control reports, created by the quality control company, with missing information, such as: revision of plans, checking of measurements, price analysis or budget analysis. On the other hand, additional OCT (Technical Control Body) reports required and the contractually required ten-year insurance were not contracted.

This might not seem like such an important problem but it actually affects directly to some of the important stakeholders: the technical and legal part. To put it simply, the building will be unused until the bodies approve the building.

In addition, during the execution of the project, some decisions were made and were not shared with the promoter. On top of that, after the building process, those decisions were considered not to be adequate to the proper functionality of the hospital. For instance, the number of elevators constructed was reduced, as well as their initial design, making them bigger. It seems this was carried out as there was a necessity of transporting beds, chairs and other kinds of heavy furniture to the different floors through the building process. However, it led to a higher waiting-time for the staff and users in the hospital and a less efficient functionality of the facilities.

Furthermore, due to the reduction in the number of elevators, all floors in the hospital had a confusing hallway-design, making pedestrians in the hospital get tired and disoriented, as they had to fully cross long corridors to get to certain areas. It is also worth mentioning that the mortar screed applied was significantly less than originally intended, making it uncomfortable to walk around the various wards of the hospital due to the unevenness of the floor. And, according to medical staff, the "call indicators" placed in corridors and doorways are not visible from the start of the corridors, forcing them to move around and check which room has the call activated. Also, work areas are illuminated with the help of motion sensors, forcing staff to be constantly on the move.

Among **many** other different administrative "small deficiencies", there were: windows without adequate guard rails, emergency exit signs not glowing in the dark, many problems with regard to the design and positioning of doors located throughout the hospital, bathrooms not meeting the standards of measures agreed in the CTE DB-SUA 9, leaks, dampness and water seepage on different floors, defects in the electrical installation...

One significant failure criteria of this project that was faced at the end of it, and that gives an economical summary of all problems mentioned before, was that the final product did not have the economic value it was supposed to have, as it was worth approximately one million euros less than expected.

French case:

When the project began, the signals were weak: there was only one person who did not want to do it, and the budget was signed without defining the location and architecture of the building. Then, there is already some early negative feedback: especially some conflicts between the architect and construction company, and foundations. Ultimately, Vinci takes over the project to complete it. Finally, the museum was launched in 2014.

We are in a situation based on the escalation of commitment model theory described above in the text. First of all, the contract signed did not take into account the price of the land. On this basis, the estimated operating envelope will be reviewed to increase nearly by 50% compared to the initial envelope. Precisely, the project manager has some design problems. Fortunately, it is planned to consult companies by tender on performance. The process is almost identical: the project manager is unable to present a viable project because of the technical nature of the structure and the location. At the same time, contract management is de-burdening and relations between the contractor and the supervisor are still poor, and the site is lagging behind. This is how the cost of the operation, to the point that the construction cost will be quintupled, it will well exceed 300 million euros.

In this situation, they try to rationalize their previous decision by proposing more costly solutions. In project organization, the escalation of commitment is favored by various factors (psychological, sociological, structural, etc.) that push the individual to make the choice to continue the project or not. For example, one of the structural factors that led to the continuation of the project was its institutionalization, because an institution could not be called into question.

Other various explanatory factors played a major role. First of all, in terms of sociological factors, it promises a strong tourist influx on the model of the Guggenheim Museum in Bilbao. Indeed, with the Guggenheim Museum in Bilbao, Frank Gehry paved the way for an architectural trend called deconstructivism. Also, on a social and cultural dimension, it promises a neighborhood renewal. Concerning structural factors, it embodied a political support and a symbol during political elections. Besides, the psychological factors were wide, going to confirmation bias(by ignoring the challenges they were facing), anchor bias(by relying on the first idea of the project they had), or cognitive bias(by believing in an impressive architecture without knowing the viability and technical realization necessary for its proper functioning). At an organizational level, it was a promise of an ambitious and costly project. Finally, at an institutional level, it needed to succeed so as not to disappoint: Michel Mercier among others.

In 2006 during a meeting of the council department, a member of the opposition raised some doubts about the feasibility of the project that he considers too "gigantic". He thinks it is interesting to discuss this project again because he thought that the judgments of the different

members were biased because the first vote took place in the middle of an electoral period. He says in particular that "no one wanted to appear to lack ambition or to have less than his rival or his potential competitor". A new vote took place but the outcome will be the same and the project will be voted again.

All of those factors make them believe that the project needed to be completed.

In order to better predict the potential additional costs, it would have been interesting to ask an external expert (disinterested) who could have identified the potential risks.

It would also have been relevant to question the initial budget planned for this museum. Indeed many public works reduce the initial costs in order to facilitate the acceptance of the project, there are many examples in France (see diagram below) as well as internationally with the Sydney opera.



5. Discussions and conclusions

The objective of our investigation was to find patterns or reasons in "badly managed projects and pre-projects", and why these might appear.

The investigation was focused just on 2 cases in different countries, but both of them were public.

With the detailed analysis that we have carried out for this investigation, the X most important things that we have found out are:

- <u>Secondary intereses for launching a project</u>

We have found that many times with public infrastructure or projects, there might be secondary interest in the promoters of the project. To be more specific, in the French case that we studied, the politicians at the time wanted to start a "mothership" project in big part to positively affect the opinion of the society due to the proximity of the elections.

- Bias in some of the most important stakeholders

Many times, the people that "orders" the project do not have any technical understanding of the situation, so they just select what projects to launch just by political decisions.

Again, power exercised by politicians directly or indirectly on this type of project is very high, in the French example, even though there was not a single constructor that was willing to carry out the project for the initial cost.

- Deficiencies in design by lack of knowledge of the normative

At the time of carrying out public infrastructure, there are highly complex and strict regulations that cover every single physical aspect of the building itself.

In the Spanish hospital project, we found that there were many different "small deficiencies" in the building. These small deficiencies range from the thickness of the installed railings to the height of the ceiling. Many of them can be changed with a small difference in the final price, but it is mostly a time consuming thing to do given that for every checking you depend on an external Technical Control Body.

These deficiencies must be found before construction begins, so an important part of the project should be an expert or group of experts that analyzes the building plans in order to see if they follow the normative or not.

- Deficiencies in construction

Lastly, in the Spanish case, there were few changes in the construction that were not shared with the promoters of the project.

This is a real problem given that these changes cannot be taken unilaterally by the construction group.

At all times, you have to take into account all of the stakeholders of the project.

These are just a few of the most important things that we have found on our project.

Most of the problems with the spanish project comes from the time stand point, while in the french project the biggest problem was the over budget.

The sources of this over budget really depends on the country in which the project is carried out, but many times most of the most important sources are technical problems, opacity and corruption.

The IMF reports that in Spain, in many big infrastructure projects, there is a lack of transparency, and in several projects there could be diverting up to 15% of the initial budget.

These problems can be cut out by having several layers of control over the pre-project and the actual managers of the project.

6. References

J.E. Russo & P.Schoemaker (1992). "Managing Overconfidence." Sloan Management Review

I. Ben-David, R. Graham & R. Harvey (2007). "Managerial Overconfidence and Corporate Policies." <u>http://www.nber.org/papers/w13711</u>

Brockner, J. (1992). The escalation of commitment to a failing course of action: Toward theoretical progress. *The Academy of Management Review*, 17(1), 39–61.

Bent Flyvbjerg (2009). "Survival of the Unfittest : Why the Worst Infrastructure Gets Built - And what we can do about it." <u>Oxford Review of Economic Policy</u> 25(3):344-367.

Ross & Staw (1993). "Organizational escalation and exit: Lessons from the Shoreham nuclear power plant." <u>Academy of Management Journal</u>, 36(4), 701-732.

Aaltonen, K., K. Jaakko and O. Tuomas (2008). "Stakeholder salience in global projects." International Journal of Project Management **26**(5): 509-516.

Hussein, B. (2021). "Addressing Collaboration Challenges in Project-Based Learning: The Student's Perspective." <u>Education Sciences</u> **11**(8).

G. Schwartz, M. Fouad, T. Hansen, G. Verdier.(2020) "Well Spent. How infraestructure governance can end waste in public Investment" Chapeter 12, pg 188 https://www.elibrary.imf.org/view/book/9781513511818/9781513511818.xml?redirect=true ²Reflection ¹Report for Investigation or Literature Review based project Assignment.

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¹ Reflection is "the practice of periodically stepping back to ponder the meaning to self and to others in one's immediate environment about what has recently transpired" Raelin, J. A. (2001). "Public Reflection as the Basis of Learning." <u>Management Learning</u> **32**(1): 11–30. A reflective practitioner is a person capable of learning, acting and adapting to environments, someone who is constantly seeking to widen their experience and knowledge by adapting their manner of work in the profession. Someone who always learns through what they do, and who continually combines action with reflection on what has been done.

1. Introduction

The project that we have worked on is an investigation about the difference between the project and pre-projects in public infrastructure.

We have centered the investigation in 2 real world cases from Spain and France.

The main purpose of the investigation is to find the most common problems while doing an overconfident pre-project, and how you could avoid making these mistakes.

There are many papers and investigations that tell us what are the most common mistakes while preparing a project, but we wanted to understand why and how those mistakes are made.

The investigation is addressed to people getting started in the management world (just as we are), and what we want to give them is a real world view of some concepts and problems that we have all studied in different courses of the "Management" world.

1. Evaluation of Project management effort

The group should make an overall evaluation of their own efforts during the project. The evaluation should include:

a) Evaluation of the organization of the project group, distribution of the tasks, roles and responsibilities? What went well and what did not went so well.

We struggled on the distribution of the roles and the responsibilities. Apart from defining which people were responsible for the French case or the Spanish case, there was not a strict definition of roles. Indeed, there was no manager, we all worked as equals. It firstly made it hard to make choices sometimes and we were not focused enough as we didn't know which way we were headed and no one was to take the lead. However, we managed not to get into conflicts and were able to get along really well in this project.

As we met up once a week, it allowed us to have a great division of the tasks, so that everyone knows which way we're heading. However the fact that we often achieve goals and set new ones allows us to make rapid progress in our work. For the final report, we reflect together as a team to get everyone's feelings about our work and write it together.

Most members of the group are familiar with our subject, which helped us with the organization of the project. It was highly helpful and made our research efficient when it came to finding data on specific cases.

b) Evaluate the effectiveness of the risk management plan of your project? What went well and what did not went so well.

We planned and analyzed every risk that could happen during the project in order to prevent our project from failing. Our risk assessment was great because we in fact struggled to find information on a Norwegian case. Data was hard to find because we don't speak norwegian and most information was in norwegian. Even though we found some project cases in Norwegian, we weren't sure enough of the liability of the data collected. Thus, we ended up choosing not to work on the Norwegian case, especially because we had enough data to work on with both the Spanish and French case.

However, it was easier to find specific cases from our home countries, due to our academic background which gave us access to more academic records. Thus, it enabled us to choose between different well documented cases and be specific on our group project.

c) Evaluate the effectiveness of the communication plan? What went well and what did not went so well.

Between the 'head' of the management of the project, we had few different tools to communicate. One of the tools is a Whatsapp group, in which we will report any new information that we gather, where and how we should meet up once a week, any progress on the comparison between projects... But as we all have confidence in each other, we were able to work relatively independently, as we trust each other's work. We shared our works with Google drive, allowing us to see in real time what everyone was or have been working on.

Nevertheless, we could have been better with more communication in person, but online communication was constant. We planned on meeting once a week, but couldn't manage every week. We in fact tried to meet more frequently, but given the fact that we have different schedules, organization was hard.

d) Did the group manage to deliver the project results according to the originally stated success criteria (according to your original plan)? If no why? Is there any deviations between the stated success criteria and your final evaluation of the project? Reflect on the causes or reasons of this deviation.

We struggle to find information with a Norwegian case. In fact, it was too much time consuming contacting teachers that have a really dense schedule. However, we still managed to deliver a French and a Spanish case, and were able to emphasize similarities and differences between these cases.

As we were busy handing over assignments and other group projects, we agree that it was too late for researching Norwegian information, but we still believe that with both of the projects that we have analyzed it's quite enough data to have a first answer to our subject problem. Please evaluate the degree of your support to the following statement (group-based evaluation):

Scale	Strongly	Disagree	Neither agree nor	Agree	Strongly
	Disagree		disagree		Agree
Your				V	
response				Λ	

We evaluate our project management effort as successful

2. Evaluation of the impact (Project success)

- A) Who is the target audience of your project results (target audience could be individuals, groups or organizations that could benefit from the results of your work)
- County council : They are responsible for voting on the selected project, the allocated budget and the organization.
- Mayor : He is in charge of making decisions and proposing to the county council some ideas. He is a representative of his community and he has to make some decisions so it's necessary for him to be aware of the different points of our investigation.
 - B) How do you evaluate the quality of your final results? What evidence do you have to support your evaluation?

We highlights some important point concerning public building and which are often overlooked like

- Working with external people who are disinterested helps to identify potential risk.
- Be more relevant when establishing the budget, because it's it is known that budgets are often underestimated in order to get the project voted
- maintain a dialogue between the various stakeholders. For this type of project many stakeholders are involved and it is necessary that they are in agreement throughout the project.

Those points could really help the county council and also the mayor in their decision and could help to manage their projects more efficiently. These points are not exhaustive but are common to many projects when it comes to public construction. Please evaluate the degree of your support to the following statement (group-based evaluation):

Scale	Strongly	Disagree	Neither agree nor	Agree	Strongly
	Disagree		disagree		Agree
Your					
response			\checkmark		

We evaluate the quality of our final results as outstanding

3. Factors that have contributed to failure / success.

FAILURE FACTORS:

Organization: we have not created a closed organizational structure.

Everyone in the team was at the same level, but working within different tasks inside the same project.

We could say that the actual structure most similar to the one we have carried out is the project structure.

In those, you have different departments, (in our case the 2 different projects to analyze) and people are transferred in between the projects.

We do not consider this as a failure, but we believe not having a head manager might have brought a non optimal form of working and organizing.

Scope Slightly different final than initial scope

The selected topic and scope might have been too optimistic.

Also, the selection of the topic itself might be non optimal, due to the complexity and the non-precise nature of it.

We believe that the topic should be more precise in order to reduce the focus of the investigation.

SUCCESS FACTORS:

<u>Final deadline management</u>: we had an adequate project planning that had to be strictly followed in order to meet the deadline. In one month, we had to produce 2 reports and 1 video. We thus meet once a week in order to share work and follow-up the project and our findings.

<u>Work Distribution</u>: We distributed ourselves correctly for the different tasks given our background and nationalities.

Given by the fact that the information of the projects was written in the language of the originally country

Every member is used to working on group projects, given that for most of us this is the last year of higher degree students.

<u>Involvement and effective communication</u>: although we were not able to meet as frequently as expected, online communication was constant and all the progress in the investigation, composing of the reports and decisions were communicated to all the people involved.

4. Most important lessons from your project

- You should first identify the learning objectives of your final project before deciding on the type of project. For our project, spending more time comparing the information of the pre-projects with the final projects that have been studied and organize well all the steps required to work with different projects as we have done comparing data from different projects in two different countries.
- 2) Our advice is when information about the projects is being searched and collected, people should look for scientific sources of information or, in our case, documents that belong to the construction company or even to the own building in order to obtain accurate information and also contacting people who were involved in the project is a trustworthy source of information although it is difficult and time-consuming.
- 3) We learned that the compilation of information is a difficult task due to the fact that all data obtained in the bibliography must be continuously contrasted and verified. Also, when selecting information a critical read must be done considering that most of the documents used are very extensive. This has taught us that, when doing a project there is

a lot of information involved from different parts, so the most important one should be highlighted and revised from time to time to check if it has been done or not.

4) Our experience suggests that projects that want to be studied should be public thus information will be obtained quicklier and also when doing an investigation of these characteristics the knowledge or the visit of the building or the project studied is recommended in order to compare information in both phases the pre-project and the final project. That has helped us to recognize the most important information

5. Reflection on learning and unlearning

Look back on the entire process of your project assignment and answer the following questions:

 What did you need to learn (acquire or gain knowledge, insights or ideas) so that you can handle the emergent needs and challenges of your project? Compose a short list of knowledge, practices or attitudes that you have gained during working on your project.

Among some important insights we had to gain and ideas we devised while on the process of our project, we can find:

- Relevant contemporary construction cases from different countries that could be adequate to our purpose.
- Modern building standards regarding human comfort and safety.
- Signposting inside public buildings. We did not know how strict the signposting protocol was. After our research, we now clearly see how important it is to give a building proper safety signs, not only for emergency cases such as fire, but also for daily use when people need to get oriented where they need to go.
- Vocabulary and terminology in terms of architecture and different techniques for refining unfavorable results, leading with mid-process problems or planning from the beginning.
- The optimal time of the year for construction projects may be spring on a first thought, however, it was in autumn that both of the projects studied began, as during this season of the year building materials and other costs are usually less in demand, making it easier and less time-consuming to obtain.
- How long construction projects usually take until they are finished.
- Can you describe or reflect on situations where learning was critical to the success of your project? As there was a main division in our group in regard to the project's structure, the division of some of us working on the French case and others on the Spanish case, both groups of us decided that we had to gain a minimum of knowledge on how to measure the quality of an architectural project. All of us met a few times to study and make ourselves as clear as possible to be on the same level of knowledge and have the less biased information, or at least the same biased information.

2) What did you need to unlearn (discard beliefs, practices or knowledge that no longer was helpful or outdated or wrong) in order to handle the emergent issues/problems/challenges during the project? Compose a short list of attitudes, practices or knowledge that you have discarded or found obsolete during working on your project.

Can you describe or reflect on situations were unlearning was critical for the success of your project?

• We expected that main reason for a construction project to fail would consist of big mistakes, such as architectural facilite. However, we discovered that small problems can end up taking a significant toll on a project's process and results. This fact was also critica for our success.

6. Acknowledgments

7. References

Please use (Author-date) style when you writing your references as follows:

Hussein, B. (2018). <u>The Road to Success: Narratives and Insights from Real-Life Projects</u>, Fagbokforlaget.

Raelin, J. A. (2001). "Public Reflection as the Basis of Learning." <u>Management Learning</u> **32**(1): 11–30.

8. Appendix

Appendix.1: Your pre-report Appendix. 2 the investigation or the literature review report Appendix 3. Link to your video presentation.