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## MULTIPLE CASE STUDY TO DEFINE WHAT INFORMATION MANAGERS REALLY NEED TO IMPROVE A SPECIFIC DECISION-MAKING PROCESS<sup>1</sup>

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### ABSTRACT

Nowadays, information has become a key point for the competition in the organizational world. Because of this, the organizations need to identify the purpose of the information in the competitive strategy, especially if the process is dependent on different types of participants.

Considering the involvement (in a certain atmosphere) of professionals with interests, knowledge and different abilities in the productive process as a whole, communication problems appear in the interfaces among those that participate in a same stage and also among different stages of the process. For example, among the particular characteristics of the Industry of Civil Construction, one is a big number of participants (architects, engineers, customers, etc.) with different cultures, who need to work together to obtain the final product, in this case the construction. The objective of this article is to relate the theory on the usefulness of data and information with the available information about the productive process. We take as a specific example, the conception stage of the constructive process and evaluate the presence of information, in companies of the Industry of the Civil Construction in two Brazilian cities, Porto Alegre and São Paulo. We do this through a multiple case study (Yin, 1994).

### 1. INTRODUCTION: need of information

The management of the project process is fundamental for the success of the construction

process (conception, execution and use), it is necessary, according to Austin et al. (1994), attend to two difficulties: the presence of different types of participants, and the way as the communication and the information transfer happen among the participants. According to Kähkönen & Koskela (1990), during the next few years, the administration of the conception stage in the civil construction will have a great focus, with countless possibilities of application of the technology of the information, with the goal of improving the quality and productivity.

Initially, we made a revision of the literature on data and information relating to the administration of the conception stage, where it was identified that the value of the information is associated with its cost and its usefulness. In Davis and Olson (1987), the usefulness is explained through the format, time, locality, and availability. Alter (1986) considers these same items for the evaluation of the usefulness of the information, even though he separates them in the following items: quality, accessibility, and presentation.

After this, we performed cases studies in 10 companies – 6 in Porto Alegre/RS/Brazil (locality of the research) and 4 in São Paulo/SP/Brazil (the largest center of the country) – chosen for convenience, and to identify the characteristics of the used information, among other factors.

### 2. INFORMATION IN FACT FOR THE PROJECT STAGE

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The project group can be considered a temporary multi-organization, with specific objectives and time of existence, which will cease to exist at the end of the conception stage. Its members have different professional and cultural origins, further they participate of more than one multi-organization and they need to obtain an appropriate understanding and cooperation of each other and the work in question in a short space of time.

Each one of the participants carries out a group of activities, and everybody's work produces the project documents, which should describe the construction in a complete and unequivocal way. The achievement of this objective depends intensely on the efficiency of the communication of the group, mainly because a great part of the work of each member suffers restrictions imposed by the others.

Examples of the used and supplied information by the conception stage in the companies of the sample, will be analyzed in the appendix, according to the factors considered by Alter (1996). These factors (quality, accessibility, and presentation) allow to identify the aspects (related with the information) that the companies should improve. The companies are identified with the letters A till J, to preserve theirs identity.

### 3. FINAL CONSIDERATIONS

The customer - user of the building - is one of the essential considerations for any construction project. However, they are still not very integrated into the process as sources of information. Customer integration can be achieved in two ways: by identifying their needs and expectations of the construction (proactive), and with an evaluation of satisfaction with the construction (reactive).

Another important point is the use of the execution stage as a source of a great amount of data and information. However, the habit of the making note of what happens (whether positive or negative) during the construction does not yet exist. Further,

one could not notice integration of engineers in the conception stage.

In the essential documents, a concern is verified with the improvement of the quality of the information, as much in content terms as in presentation and accessibility. This can represent the first step in the direction of the valuing actual information for decision making as opposed (or in reinforcement or comfort) to intuition.

These final considerations (of the involved actors' valuation, of formalization of the information generated in the accomplishment of the works, and of a new conscience in search of better information) still constitute the focus of our present research and they continue will be the object of future publications.

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**APPENDIX** – Analysis of some information for the project stage.

ASPECT/COMPANY	QUALITY	ACCESSIBILITY	PRESENTATION
Only in company B the engineer participates in the conception stage and execution; in companies B and G the architect visits the work when requested		The integration between the conception stage and execution would allow access to important information, as for example, difficulties of execution of solutions adopted in the project	
<p>Only companies D and I record project modifications, and company I possesses a system of control of the various project versions.</p> <p>All the companies were told to be important pay attention identifying the satisfaction of building users, even so, none of them accomplish this activity</p>	<p>This says with respect to the temporality of the information, that the failure to record modifications can lead to professionals working with wrong information</p> <p>This information could increase the reliability that the product represents what the market needs</p>	<p>There is not record of alterations and therefore the professionals don't have access to the right information</p> <p>Without the access to this type of information it is not possible to have feedback the product</p>	
The company B has a specific concern with relationship at the level of project detail, that all the measures should be in the project, nothing should be calculated in work place	Decisions are made at work regarding of the lack of information (completeness) in the project, which a lot of times generates unsatisfactory solutions	Care should be taken allowing participants access to all the necessary information for the execution of the project	
None of the companies uses the customers' complaints and technical attendance as information for new projects		When summarized appropriately, complains allow the access to the feedback of the product	These data if summarized appropriately can supply information at tactical or strategic level for the company
The sale documents used by the companies are traditional ones, except for company B, which shows the plan of the garages for the customers' solicitation	The documents presented during the sale period do not always possess all the information requested by the customers	In some situations, the information exists, but is just not shown to the customers	The organization and the appearance of the information in this case are important, besides the summarized data level
All the companies make use of the technology of information (TI), in varied stages	The use of the TI facilitates the necessary alterations and it activates the transfer of information among the designers (age of the information)	With regard to the TI access to the information for the participants of the process becomes easier. For example, the designer of facilities can make use of the architectural file	The use of the TI facilitates the organization and appearance of information in the project