AN INVESTIGATION INTO THE MAIN INFORMATION DIMENSIONS OF CORPORATE REAL ESTATE MANAGEMENT

Main information dimensions in CREM

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Abstract

The fragmentation of the construction and real estate sectors, and the information intensive character of their activities, makes it very difficult to select, store and transfer relevant information among its members. The volume and diversity of data in these sectors have been a hindrance for developing effective, integrated and standardised information systems for construction, building and real estate management. To overcome these problems at the level of strategic management of corporate real estate, a research was set to elicit the main information dimensions, or the main concerns, within the area. This research used as paradigms models that succeeded on defining and using the main dimensions of a particular subject matter, facilitating communications, decision-support and learning processes. Examples of these paradigms are the main factors of production in the theory of capital in economics, the balanced scorecard and the critical success factors in organisational management, the three dimensions in project management and Pena's (1987) main concerns for programming in architecture. The research consisted of a content analysis of seventy corporate real estate management (CREM) models used in industry and academia eliciting the main features (concepts, tools, techniques, methods) quoted on these models. Using classification techniques and supported by a literature review and expert interviews, these features were classified according to their nature, similarities and origin. The main dimensions resulting from this classification system provided the main information dimensions in CREM. These dimensions are financial, physical and human, each one divided in three classes, respectively. The financial dimension is divided in the classes rentability, business information and intelligence. The physical dimension is divided in the classes data, management and diagnosis. Finally, the human dimension is divided in the classes organisation, occupancy and customer. Examples of uses of the CREM framework are given.

Keywords: classification systems, corporate real estate management, metamodelling, facilities management, building management and maintenance, information dimensions, decision-support, content analysis of documents

1   Introduction

The strategic management of organisational workplaces, as well as the land and buildings used for workspace, infrastructure and investment by public and private organisations, is receiving increased attention for various reasons. These reasons include: the internationalisation of the property market; the expansion of multinational organisations; new possibilities in terms of working patterns enabled by recent IT developments; the need to increase flexibility in the use of the factors of production; and finally, the need to align, clarify and synchronise strategy among organisational units to achieve a higher level of synergy.

A basic step in achieving strategy alignment, synergy and flexibility is a clear, simple and commonly known and agreed way to transmit information throughout the organisation. The research's objective was to elicit the main information dimensions in corporate real estate management (CREM) through a content analysis of CREM models and the use of classification techniques. The main result was the definition of the CREM information framework with three main information dimensions and their respective classes and content. These are the financial dimension, divided into rentability, business information and intelligence; the physical dimension, divided into management, diagnosis and data; and the human dimension, divided into organisation, occupancy and customers.

The research used widely accepted management tools such as the critical success factors, the balanced scorecard and others as paradigms of successful methods which achieved some of the objectives cited above. Common characteristics of these paradigms are simplicity, clarity, the elicitation of the main concerns or dimensions of the subject matter, and the ability to depict the whole picture and its parts concomitantly.

2   Research description

The research methods used resulted from a commitment to linking micro analyses of individual or group actions with a macro-structural analysis of the main dimensions of the subject matter in a methodological pluralist approach (Gill and Johnson 1991:125-131). The main research methods used were qualitative content analysis of documents and narrative review.

Content analysis is a qualitative or quantitative analysis of the content of written texts or other forms of communication, it aims to make inferences about individual or group values, sentiments, intentions, or ideologies as expressed in the content of communication (Sarantakos, 1993:211-17). Content analysis of documents was used to find out the CREM features (methods, tools, techniques and concepts) present in the models analysed. Some advantages of this method are: unobstrusiveness, accuracy, accessibility, low cost, spontaneity, high quality of information, possibility of re-testing, non-reactivity and retrospectivity. Some limitations of this method are: biased information, methodological problems such as coding, reliability, actuality (Weber, 1990; Krippendorff, 1980; Boulton and Hammersley, 1996).

Methods used to integrate findings across studies can be quantitative or qualitative, some authors reserve the name of meta-analysis for quantitative methods and narrative review for qualitative methods (Hunter and Smith, 1990). There are many methods of integrating findings across studies (Wolf, 1986; Hunter, Smith and Jackson, 1982). This research adopted a qualitative approach due to the lack of uniformity among studies and the relatively small number of studies with a similar structure and parameters which could be used in a quantitative analysis. As CREM is a recent discipline whose body of knowledge (BOK) is not a consensus yet, the number of quantitatively comparable studies is small.
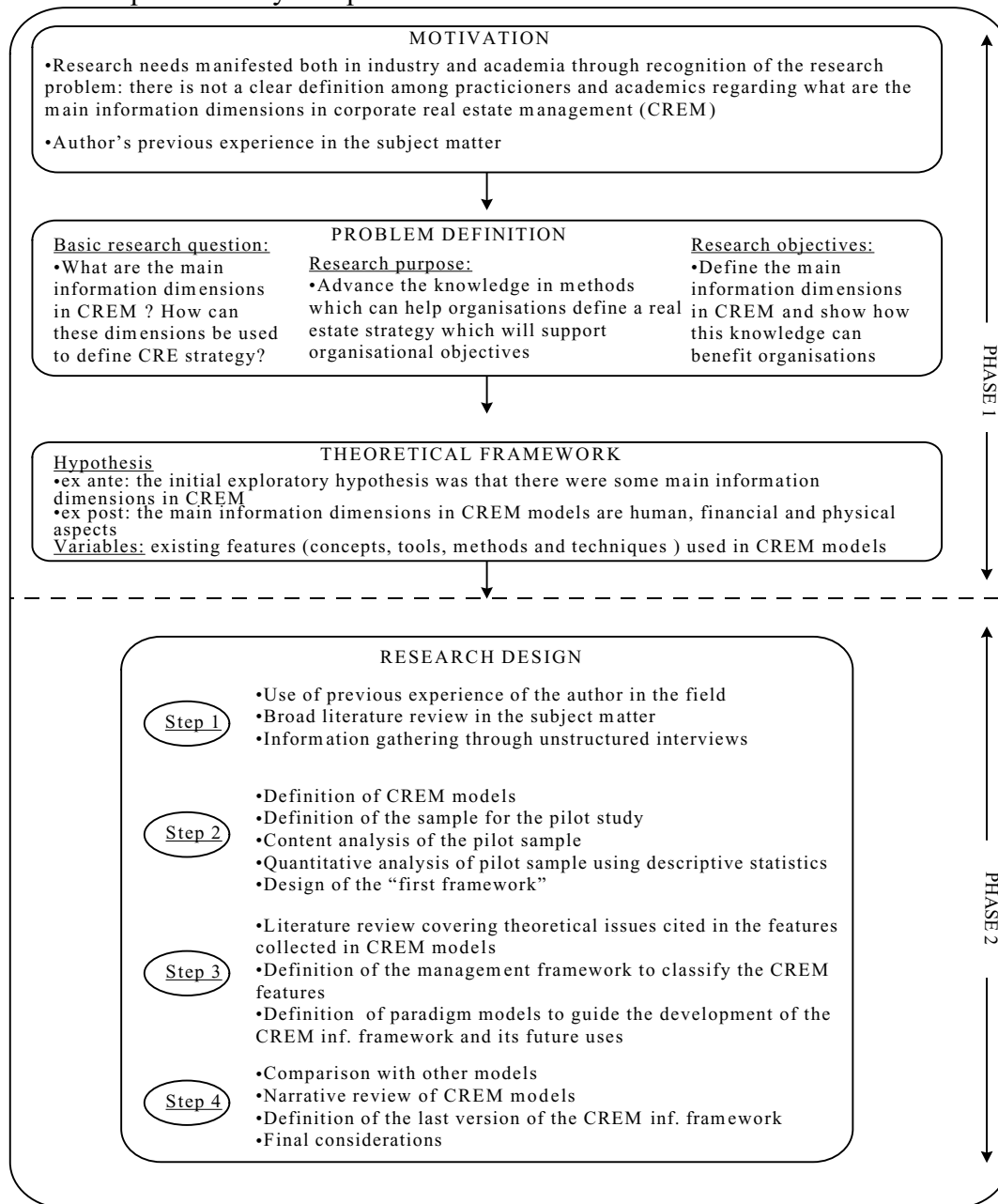
MOTIVATION
•Research needs manifested both in industry and academia through recognition of the research problem: there is not a clear definition among practicioners and academics regarding what are the main information dimensions in corporate real estate management (CREM)

•Author's previous experience in the subject matter

PROBLEM DEFINITION

Basic research question:
•What are the main information dimensions in CREM ? How can these dimensions be used to define CRE strategy?

Research purpose:
•Advance the knowledge in methods which can help organisations define a real estate strategy which will support organisational objectives

Research objectives:
•Define the main information dimensions in CREM and show how this knowledge can benefit organisations

THEORETICAL FRAMEWORK
Hypothesis
•ex ante: the initial exploratory hypothesis was that there were some main information dimensions in CREM
•ex post: the main information dimensions in CREM models are human, financial and physical aspects
Variables: existing features (concepts, tools, methods and techniques) used in CREM models

PHASE 1

RESEARCH DESIGN

Step 1
•Use of previous experience of the author in the field
•Broad literature review in the subject matter
•Information gathering through unstructured interviews

Step 2
•Definition of CREM models
•Definition of the sample for the pilot study
•Content analysis of the pilot sample
•Quantitative analysis of pilot sample using descriptive statistics
•Design of the "first framework"

Step 3
•Literature review covering theoretical issues cited in the features collected in CREM models
•Definition of the management framework to classify the CREM features
•Definition of paradigm models to guide the development of the CREM inf. framework and its future uses

Step 4
•Comparison with other models
•Narrative review of CREM models
•Definition of the last version of the CREM inf. framework
•Final considerations

PHASE 2

Fig. 1: Main phases of the research process

Figure 1 gives a summary of the two main phases and other intermediary stages followed during the research process.

These two methods were given priority because of the nature of the research. There are many case studies carried out on the subject matter and many surveys conducted among members of the industry, but not many studies integrating these findings. Therefore, there was a need to integrate existing studies in a framework using a common language, which was one of the objectives of this research.

The main data used in this research are the seventy CREM models analysed, due to the limited space available to quote all models and relevant CREM literature consulted in this research, this information can be found in Lopes (1995, 1996, 1997 and 1998).

3   Corporate real estate management (CREM) framework

The CREM framework aims to organise the main dimensions of the information used in CREM providing a perspective of the subject matter to students and managers and a suggestion towards the definition of a BOK for CREM. It also defines the main concerns of the discipline which can be used in conjunction with a decision-support procedure to align CREM and organisational strategy.

The strategy necessary to co-ordinate the activity of various agents working towards a common objective in different disciplines must consider the fundamental aspects within each one of these disciplines. The difficulty of the task can be assessed by listing the main disciplines involved in CREM: building management, concerned with building services and fabric; real estate management, concerned with property finance; facilities management, planning and programming, concerned with physical, psychological and behavioural needs of building users. To help in this task an information framework should consider the most important topics of all these disciplines. Some models used in other disciplines that follow this principle were chosen as paradigms for the construction of the information framework.

This kind of framework assumes special importance when considering recent workplace strategies. A popular workplace strategy nowadays consists of having an individual or a group focusing on a particular task, with the support of information networks, while being aware of their part in the organisation through a clear definition of organisational objectives (Brochner, 1990, 1993; Becker and Joroff, 1995). In this kind of environment, clear conceptual and institutional frameworks are necessary to locate individuals and their tasks within the final output of the organisation, i.e. within the final objectives, mission and vision of their own work group. Otherwise, in a very specialised and complex environment a skilled worker who knows only his specific task, and does not know its relationships to other organisational objectives, could hinder basic organisational objectives. In other words, this person could be destroying the very environment that provides for his or her survival.

The features elicited in the content analysis of CREM models were classified in groups according to their similarities, based mostly on the kind of information they used. These groups provided the basis for the main dimensions and classes of the information framework. The three main dimensions (financial, physical and human),

considering stable traditional organisational functions, were subdivided into three classes each. Three other dimensions (technology, institutional issues and other information), considering unstable modern issues, were classified as a separate group of dimensions. The traditional academic and professional disciplines, which contain information used in CREM processes, were classified in another group. The objective of the framework is to define the main concerns within the information used in CREM.
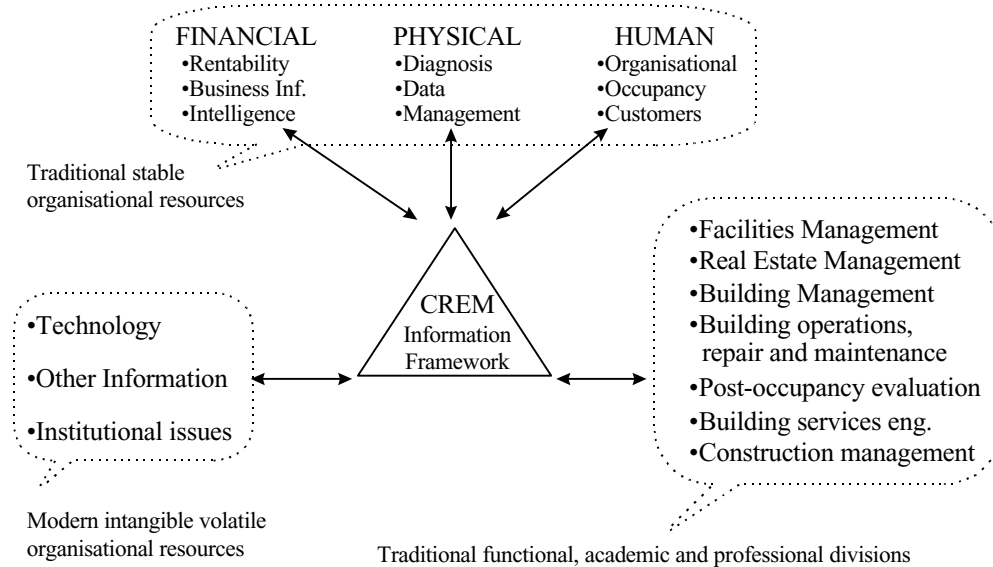

FINANCIAL
•Rentability
•Business Inf.
•Intelligence

PHYSICAL
•Diagnosis
•Data
•Management

HUMAN
•Organisational
•Occupancy
•Customers

Traditional stable
organisational resources

CREM
Information
Framework

•Technology

•Other Information

•Institutional issues

Modern intangible volatile
organisational resources

•Facilities Management
•Real Estate Management
•Building Management
•Building operations,
 repair and maintenance
•Post-occupancy evaluation
•Building services eng.
•Construction management

Traditional functional, academic and professional divisions

Fig. 2: CREM information framework

The content and features included in each dimension and its respective classes are described below.

- **Financial:** information on policies, costs, rentability, business strategy and market intelligence concerning CREM unit services (e.g. return on investment, market value, market research). Comparing to traditional organisational functions this dimension contains the information used by finance and other departments, such as, operations, marketing, research and development, and top management. It is divided into three classes: rentability, intelligence and business information.

  - **Rentability:** financial values and rates regarding costs, incomes, capital, depreciation and cost-benefit related to CREM.

  - **Business information:** information specific to the business system (or sector) on which the organisation operates (e.g. banking, retail, alimentation, manufacturing, hospitals, schools, hotels, airports, etc.) used to define organisational strategies and policies in real estate. Real estate industry-wide critical success factors are good examples of this kind of information.

  - **Intelligence:** information used in decision-support or strategy planning processes in CREM. As opposed to business information, this information can come from any sector rather than from the specific business sector in which the organisation operates. It usually comes from

traditional R&D or marketing departments or top management. It handles information regarding new tendencies, products, technologies or any other aspect which can provide competitive advantage to the organisation through new or improved CREM services.

- **Human:** information related to humans and their interactions with workspace, buildings and their surroundings (e.g. occupancy, customer satisfaction, productivity, present and future uses). Corresponds to information traditionally dealt with by human resources and marketing departments. It is divided into three classes: organisational, occupancy and customer information.
    - **Organisational:** information related to personnel policies, management and regulations within the organisation, such as, health and safety, recruitment, legal issues, contract, incentives, etc.
    - **Occupancy:** information related to the use of organisational premises such as churn, workplace strategies and management, workspace, personnel location and workplace's present and future uses and needs.
    - **Customer:** information related to client satisfaction considering both internal and external clients. Includes post-occupancy evaluation studies (POE) and market research.
- **Physical:** information related to managing and operating physical assets. It includes information about the materials that are used within the buildings and their surroundings (e.g. obsolescence, durability and sustainability of buildings and their component systems). Information usually dealt with by real estate, property, facilities, engineering and operations departments. It is divided into data, diagnosis and management.
    - **Data:** information from the asset register plus other data used for operations. The features used to store and manage this information are also considered in this class. This information includes local data for operational tasks and information on obsolescence, durability, sustainability and costs in use of physical assets.
    - **Diagnosis:** information and features used for assessment or decision-support concerning physical assets.
    - **Management:** information and features used in the procurement and management processes of physical assets.

As a consequence of the characteristics of physical assets the class "management" of the physical dimension had by far the greater number of features among the models analysed. To organise these features this class was subdivided in three subclasses. One subclass consists of the objects which are managed, this is in turn subdivided into premises, building services, and support services (can be considered in a Building Product Model). Another subclass groups policies used in the management of these objects which is subdivided in portfolio, cluster and premise. The third subclass groups features used to manage physical assets, which is subdivided into administrative tasks, building services and IT in building.

The generic dimensions 'technology', 'other information' and 'institutional issues' are considered separately because they have features which belong to any of the traditional dimensions as a consequence of their nature and high level of abstraction. Technology includes any new development which can be used anywhere in the organisation, in any of the traditional dimensions. Institutional issues include

local legislation, regulations, contracts, conventions, norms of behaviour or any cultural aspect dependent on place or time. Other information includes any kind of information that would not fit into the three traditional dimensions, i.e. could not be easily classified into the CREM information framework in its current format—it is a buffer that accumulates unclassified data for future alterations of the framework.

4   Conclusions

The overall aim of this research was to find out what are the main information dimensions and their principal variables in the emerging discipline of corporate real estate management (CREM). Such a framework would facilitate strategic thinking at the top management level of corporate real estate. Being an emerging discipline in a new and broad subject area, within fragmented business sectors such as construction and real estate, CREM suffers from difficulties in the definition of its boundaries, priorities and integration of its diverse professional viewpoints.

The main conclusion of this research is that the information dimensions in CREM are financial, physical and human issues. These are represented in the CREM information framework together with their classes and other important organisational resources (see Figure 2).

Other important result of this research was the identification of paradigms for the framework, based on the qualities that caused their success (simplicity, clarity, robustness and the ability to allow the user to perceive the whole picture and its parts concomitantly). These paradigms can be divided into three groups. The first group is made up of decision-support procedures, the critical success factors (CSF) is the best example of this kind of paradigm. The second group is made of frameworks which describe the main concerns of a given subject matter. Examples of this kind are the main concerns in project management, the factors of production in the theory of capital and the main organisational levels in management theory. The third group of paradigms has both components, a decision-support procedure and the main concerns of the subject matter. Examples of this kind are the balanced scorecard and Pena's (1987) problem seeking technique for architecture planning.

These three groups of paradigms are not completely independent. The third group is made of frameworks which have the components of the other two groups. Therefore, a framework from one group can have an extra component added and become part of the third group. This would be the case when adding the CSF method with industry-wide CSFs for a particular business sector. Industry-wide CSFs which are based on the structure of a particular industry, although supporting particular organisational goals, are common to all organisations in that sector (Rockart, 1987).

The research process uncovered topics which could be developed by further research, some of these are: Definition of a resource library of CREM features implemented through object-oriented software—the framework and features elicited in this research can be used as a basis to develop a resource library of CREM features which can be implemented as software objects, in a similar way as the project developed by Scacchi and Mi (1994) to support the engineering of organisational processes throughout their life cycle; Utilisation of the framework in practical organisational settings for decision-support and strategy definition; Repetition of this

research using digital data and appropriate software; Development of Behavioural Models for CREM based on principles of economics of information and uncertainty; Definition of what is the best decision support procedure to be used with the CREM information framework; Definition of industry wide CSFs for CREM, Definition of a CREM BOK based on the main concerns of CREM.

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