

Project Management in real estate appraisal.
The Italian disciplinary approach

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Abstract

Project Management is a transverse subject whose central role embraces several disciplinary approaches. The scientific and methodological basis of its development in Italy, however, is somewhat out of line (and not just terminologically) with other contexts, especially those of English-speaking nations. One has the impression that there is still room for its further potentialisation, not only in professional spheres, where this is already in progress, but also in the academic environment. Reference to the recent literature will here be made to seek the reasons for the current resistance to change, these being primarily a consequence of the ways in which enterprises operating in building and architecture are organised.

An account will then be given of the ways in which the present theoretical and methodological picture could be integrated in order to strengthen the position devoted to Project Management in Faculty of Architecture curricula, especially in courses devoted to Appraisal and the Economic Evaluation of Projects. A necessary step is the construction of a cohesive reference pattern representative of the actual situation starting from real estate development and a project's life cycle as conceived by Appraisal, and its comparison with the "managerial" interpretation. A synopsis of the instruments and disciplines (or of the constitutive contributions) designed to place the appraisal-evaluative contribution alongside the *apparatus* offered by economic engineering within which Project Management has naturally developed.

Particular attention is devoted to the tools for verification of the economic and financial feasibility of projects, even in the presence of risk and uncertainty components, in addition to the consolidated methods supporting the definition of objectives, and the programming, handling and checking the realisation of a work in all its stages.

Keywords: Project Management, Appraisal and economic evaluation of projects, Economic engineering, Real estate development process, Project life cycle.

1 Introduction

Project Management is a transverse subject involving several disciplinary approaches, including engineering, architecture, building economics, and architectonic design. The importance of its practices is demonstrated by empirical experience enjoying firm scientific support, though the weight assigned to their roles is not everywhere the same. The Italian managerial culture, for example, is somewhat backward when compared with foreign contexts, particularly those of English-speaking nations. This, indeed, is true in the administrative, professional, entrepreneurial, and academic spheres, in the last of which - the centre of our attention - an exception is provided by the Faculty of Engineering, though its cultural approach is slanted towards manufacturing companies and production processes, whereas scant consideration is devoted to initiatives on the scale of a single building, nor even major architectural works. Faculties of Architecture present an unbalanced picture. Few Appraisal courses comprise sections devoted to the theoretical and methodological aspects of Project Management, whereas some institutions offer degree courses entirely devoted to this subject. The recent literature, however, has displayed an approach towards the professional practices of Project Management in the building sector and architectural design. No clear picture emerges of the activities and the subjects who operate according to Project Management, nor emerges a common picture of the teachings of the subject in the Faculties of Engineering and Architecture. It seems, indeed, that each disciplinary environment has reached a different degree of theoretical and practical maturity through its adoption of premises differing from the international standards. There is thus a need to set in motion a revision process involving both the professional orders already open and sensitive, as shown by their training initiatives, and academia.

Institutionalisation of the profession of Project Manager and the practices of Project Management requires their inclusion within a disciplinary context comprising Appraisal and the Economic evaluation of projects in order to found new specialist professionalisms to support the activities of builders.

With these premises in mind and with reference to the recent literature, this paper will consider some aspects of the question pertinent to Appraisal and the Economic evaluation of projects. It is felt necessary to strengthen Italian cultivation and practice of Project Management in view of the current demand placing it among the first of the emerging professional profiles in both engineering and architecture. There is also a need to fill such gaps as there may be in university training.

Part 2 is devoted to a summary account of the meaning of Project Management, the difficulties encountered by scholars and operators in its integration, and the situation in which Italian building enterprises operate. "Compasses" to steer Project management into Appraisal are identified, and a research path with two aims is proposed: one directed to construction of a scientific reference base derived from the international literature and comparison of the Italian with the supranational experience, the other directed to describing how the disciplines approach the subject of Project Management. All this starting from local experiences of economic engineering and recognition of the Appraisal in Architecture teachings that include Project Management. A search is made for training paths capable of giving strength to new cultural spaces.

Section 3 is devoted to a comparative study of two features: the stages of real estate development in Italy as viewed by Appraisal (from the private standpoint); the Italian interpretation of the approach to Project Management as expressed in the local or international literature. A proposal combining these two steps will be illustrated. This consists of a cohesive reading that stresses the tools and their sources disciplines which, with different functions, support the activities of Project Management throughout the

stages of real estate development: briefing, programming and execution of the work (with special regard to ascertaining its economic and financial feasibility even in the presence of uncertainty and risk components), checking and inspection.

The aim is to elaborate a cohesive reference schema illustrating the present or potential collocation of the economic-estimative instrumental apparatus: a synopsis to support the integration, where necessary, of the current training paths and the individual disciplinary teachings.

2. Project Management: the Italian disciplinary approach

According to one of the classic definitions in the extensive (mainly international) literature, Project Management is "systemic handling of a project through the continuous planning and checking of resources that are differentiated and subject to interdependent costs-times-quality constraints"(Archibald, 2004).

Employment of Project Management techniques is now well established in industry (particularly the building industry), services, and the public sector. A corpus of methods is used to organise, manage and check a project throughout its realisation, and specifically in contexts marked by a high degree of innovation, uncertainty, or high technical and organisational complexity (Allodi, 2008). Works of architecture characterised by technical and economic-financial risk components are included (Curto, Fregonara, 1999).

According to Management in the context of architecture, a project is the entire process through which a work passes from its conception to its realisation. It thus comprises both the set of documents describing an operation to be undertaken, and all the activities required for its execution (from its original idea to its design and construction).

To what extent has Project Management been so far established in Italy?

Globalisation has certainly been a prime factor whose effects have been felt by Italy's economy and markets, including its building economy and real estate market. Opening of Italian markets to big foreign investors and the easier entry of foreign enterprises have provided large companies at least with the opportunity to adopt managerial methods. This process has perhaps been accelerated by the so-called Merloni Act (Legislative Order No. 109 of 2004), which introduced elements akin to the Project Management culture. If, however, we look at the economic organisation of enterprises, it becomes clear that adaptation of existing set-ups to the innovative logics rather than veritable restructuring is often involved. A figure corresponding to a true Project Manager cannot be discerned, though subjects similar to one can be perceived. Three "Italian" profiles (low, medium and high) are recognised in the literature (Allodi, 2008). Italian lateness would thus to seem to be due to the prevalence in the building sector of poorly specialised, generalist SMEs with a low turnover, and backward at times with respect to their operating structure and the technical training of their staff.

Several reasons for this situation can be advanced. Firstly, Italian building firms have a pyramidal, hierarchical structure conditioned by the prerogatives of the housing market: the features of the production processes, deep-rooted corporate habits, the features of buildings, conditioning on the part of the legislation, especially for public, but also for private works. Added to this is conditioning on the part of the markets, especially for private ventures: complexity, uncertainty and fragmentation of building processes in terms of costs, times and the types of goods produced. Lastly, the frequent resort to outsiders with specific skills.

All this is in sharp contrast with the horizontal Project Management organisation, in which Project Managers have different roles, though all on the same levels. Questions with regard to academic training arise spontaneously. What are the causes of this backwardness? What corrective measures can be taken to strengthen the existing disciplinary and methodological apparatus? In which stages of real estate development can new professional profiles/management instruments be inserted (or become consolidated), and with what effects?

As to the first question, managerial engineering (where Project Management develops) closely examines the critical nodes, firstly the structure of the corporate organisation. Other studies concentrate on cultural and composition differences. For example, in Italy, contrary to the United States, the term "process" is conceptually very feeble in industry, the universities, and the measures introduced to support professional training.

Likewise, in the United States, but not in Italy, a radical distinction is drawn between the notion of an "operation" (i.e. routine operations) and the concept of a "project" in the sense of an activity "projected" towards the future with a precise, non-recurrent goal, whose outcome is often a prototype with unique specifications that must be completed as quickly as possible. During its life cycle, a project is "processed", in other words it passes into action and confers centrality on the process and the ways and means of its development and management. The term "project" embraces not only its design, but also the construction and management of the work designed. Designing itself is thus thought of as a cyclic process that requires constant rescheduling and the redefinition of new paths.

These premises disclose a situation with confused profiles not completely clarified by the competent disciplines in the field of architecture. To throw light on the subject, one can start from the international and particularly the British picture, thanks to its abundant literature. At the same time, consideration must be directed to the experience accrued in economic engineering; this, understood as an integration of engineering, management science, and operative research, does in fact comprise project engineering, programming, and costs engineering. It is within this last branch that the Appraisal lies, whose tools are borrowed by costs engineering for the evaluation of projects and investments. Project Management – or project engineering - is an integral part of economic engineering, all the more so since the markets have been opened to international and particularly European contexts. Project Management, owing to its ability to deal with problems by rising above sector specificities, is a tessera within the more complex conceptual schema of economic engineering and accompanies the latter's constitutive disciplines. It assumes a conception of a project as a "system", placed in its turn within the corporate system (di Castri, 2009).

3. Processes

Strengthening managerial culture within and by means of the Appraisal discipline primarily requires a clear presentation of the state of the art as well as the practices.

“Contamination” with an international matrix has produced effects that are often viewed as terminological questions rather restructuring of organisations and roles: it appears that from foreign, particularly British, experiences suggestions have drawn for "renaming" the subjects who take part in building processes, though without changing their roles, and confirming the conventional setting of the production structures in which they operate. A great step forward, however, can be discerned in the more recent literature insofar as there has undoubtedly been primed a process of consciousness arousing that was foreign to architecture until a few years ago.

A reconstruction of the Italian reference picture (confined to the private sector) will now be proposed in the form of three steps: step 1) references to the real estate development process in Italy; step 2) Project Management according to the Italian interpretation; step 3) proposal for an integrated reading of the first two steps. Reference will be made to Table to facilitate the illustration of the reasoning.

3.1 The real estate development process in Italy: estimative interpretation

In the Italian estimative literature (Bravi, Fregonara, 2004) the process of real estate development is divided into stages starting from the life cycle of the project (or project process) and from the feasibility cycle (see Table 1, left columns). Details of these stages can be found in the literature. Here it is merely recalled that each stage is referred to practical activities backed by estimative-evaluative

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instruments related to specific subjects and roles. The process is divided into three macro-phases: Phase 1 – Pre-project; Phase 2, Project; Phase 3, Execution and management

3.2 Project Management: the Italian interpretation

The international Project Management literature can be used to form a summary picture of Management activities in the Italian construction sector. This complex passage has been addressed in recent studies (Rolando, 2009). The reference schema is the project life cycle according to Project Management (see Table 1, right columns). In simple terms, the project cycle is conceived in four stages: 1) Objectives, 2) Programming, 3) Execution 4) Checking. The first stage is sometimes called "ideation". Its subject is the meta-project, namely the set of operations needed to complete the project or the individual specific projects comprised therein. This stage very often lacks a concrete development by contrast with what takes place in foreign contexts. In the British case, for example, where the stage called "briefing" is the subject of an extensive, dedicated literature (Rolando, 2011).

The ante-project stage is followed by the project activities. These take up the four phases of the life cycle and lead to the following division: definition of the objectives, which includes the feasibility analysis; programming and designing, which includes breaking down of the project into hierarchically ordered parts, production of project worksheets, analysis of execution times, costs estimates, techniques for checking the quality of the work, evaluation of the project budget, execution of the works, which includes the use of methods for assessing their progress and the handling of on-the-job variants; checking, which comprises in-progress checking and analysis of deviations, quality checks, final inspection and testing.

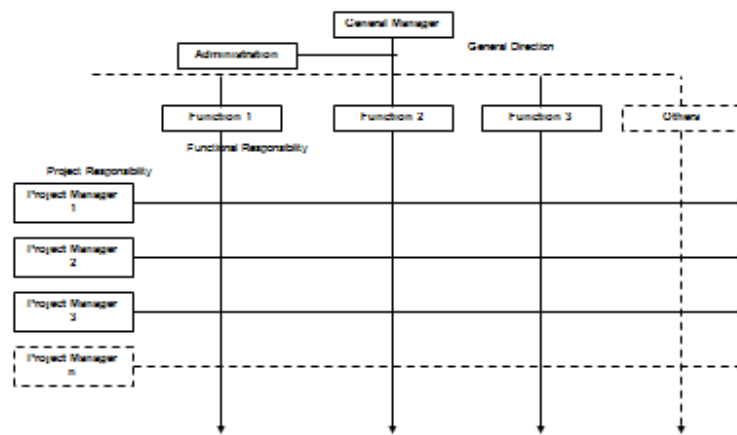
The four life cycle stages correspond to four groupings of managerial activities. Including the meta-project phase, they are: handling of the pre-project (or macro-project) phase; handling of the project phase; handling of the executive phase; handling of the in-progress and final checking phase. Briefly:

1. handling of the pre-project (macro-project) phase. The employer is responsible for handling the entire project process. His presence, however, is particularly strong in this stage which, as has been said, envisages the identification of some needs to be met, the feasibility analysis, and definition of the objectives;
2. handling of the project phase, as stated in the preparation of the preliminary, definitive and working project, and of the safety and coordination plan. This phase is handed by the planner (or team of planners) who, in the form of a professional appointment, or with a contract for services according to the private or public nature of the order, will be concerned with drawing up the architectonic, plant, structural and safety project, as well as all the specialised reports required;
3. handling of the executive phase, which means the execution (and possible contracting out) of the works. This phase is handled by the executing enterprise, whether within the real estate promotion company in the case of a promoter-builder, or commissioned by the employer through a call for tenders in the case of a plain promoter or a public contract;
4. handling of the checking phase, which is directly connected with execution of the works. Three persons are involved: the Clerk of Works (instructed by the employer to act as the interface with the executing enterprise and verify the execution of the works), the person Responsible for safety in the execution stage (entrusted by the employer with securing compliance with the safety regulations); the Inspector (whose role is that of the final tester).

As stated earlier, Italian firms have traditionally adopted a hierarchical form of organisation founded on the vertical distribution of tasks and responsibilities. Project Management introduces a

transverse level that crosses functions, subjects and roles horizontally. This level (normally repeated in several levels) acquires concrete form in the role of the Project Manager. Introduction of this figure has brought about the switch from the hierarchical notion to a “matrix” organisation in which the functional reference lines run vertically, whereas those for projects run horizontally (Schema 1). In the case of a public project, the Project Manager is called the person Responsible for the process in Italy. He interfaces both vertically with the functions and horizontally with the projects. He is directly and horizontally responsible for deciding which of a projects activities are to be undertaken, the results to be achieved, and their times and costs. The heads of the functions divided by areas of responsibility decide how their functions operate.

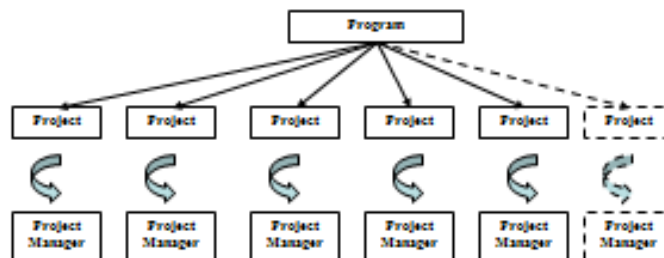
Schema 1: “Matrix” organisation of a corporate structure



Source. Elaborated by the author from Allodi, D., (2008). *Project Management per l'architettura*. Milano. Franco Angeli. pp.42-43.

A programme can be defined in greater detail from a set of several projects handled by their own Project Managers. If these projects display more and more multidisciplinary features, their managers will involve several stakeholders with various interests. In schematic form:

Schema 2: Programme, projects and Project Managers in charge



Source: elaboration by the author

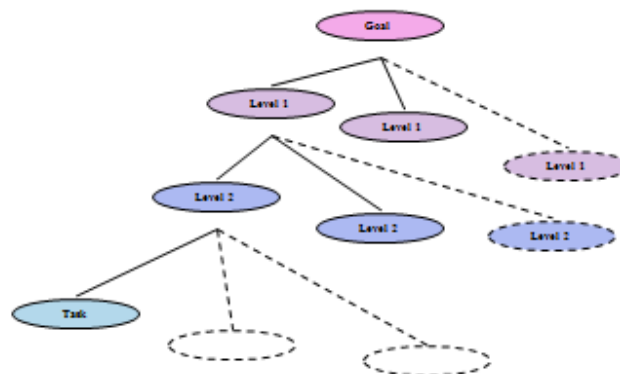
With reference to a project for the realisation of a real estate development operation, the Project Manager coordinates the set of subjects involved and ensures the transmission of information between them.

From an economic viewpoint, he directs his attention to the profitabilities that may be generated: a project, in fact, is called a profit centre. The spheres in which the Project Manager is competent thus extend from the specific technical environment of the sector in which the project will be implemented to the relational and economic management environments.

WBS, OBS, WP

Subdivision of a project is characteristic of the managerial approach. This technique is employed in the programming phase in order to break down complicated problems through the creation of simplified logical paths. Based on a subdivision operation called the Work Breakdown Structure (WBS). It consists of a series of passages that secure the structured, hierarchical breakdown of a project into successive levels correlated to its individual handling systems. The project as a whole is thus represented by these separate levels that proceed from its general aim to each of its tasks via the structural links between each level and the next. In schematic form (the connections represent those between the tasks and the logical links between the levels):

Schema 3: Hierarchical breakdown of a project: objective, levels, tasks



Source: elaboration by the author

The WBS is usually accompanied by application of the organisational subdivision technique called the Object Breakdown Structure (OBS). Described as the “hierarchical tree of the executive functions” (Grigoriadis, 2009, p. 90), its aim is to identify the person responsible for each Work Package (WP) composed of a number of tasks.

Tools

The tools used in Project Management are both borrowed from other disciplines and devised *ad hoc*. In the 1950s, in fact, *ad hoc* techniques for the handling of times and tasks were worked out in the United States: mention may be made of the Gantt technique, which bears the name of its developer, PERT (Project Evaluation and Review Technique), and CPM (Critical Path Method).

Some of the many techniques used in Project Management have an economic matrix and fall within Appraisal. They range from the classic tools employed in Appraisal for the analytical and preventive estimation of costs (fully dealt with in the sectoral literature) to advanced approaches founded on an integrated concept of times-costs analysis.

The techniques used in Project Management can be initially classified in general terms with reference to its phases:

1) tools supporting the definition of objectives and development of initial decisions phase: feasibility studies, estimation of costs and yields;

2) tools for programming times and costs: Gantt, PERT, CPA, CME (*Computo Metrico Estimativo*);

3) economic programming tools: budget, cash flows analysis, risk analysis.

To these there must be added the advanced tools for the Earned Value or Absorbed Value procedure; currently, this is the most advanced for the checking of costs, and the most widely employed in the United States. It assesses the state of progress of a project via an integrated times and costs analysis. The relationship between times and costs, in fact, is used, on the assumption that these two variables are intercorrelated, to estimate the value absorbed by the tasks of a project over the course of time. This technique is usually accompanied by the production of an “S curve” for immediate visualisation of effects of any delay on the executive budget of the project. The deviations analysis mentioned earlier is thus a crucial feature of this application. Some preliminary information is thus necessary for the development of this approach: estimated cost of work for a certain period drawn from the times programme previously elaborated with Gantt e PERT), estimated costs for a period as taken from the budget, outturn costs for a period. The literature describes three tools for the formal execution of the steps of this analysis: Budgeted Cost of Work Scheduled (BCWS), Budgeted Cost of Work Performed (BCWP), Actual Cost of Work Performed (ACWP). The estimates are thus used to compare the work performed and the budgeted costs absorbed until the selected point of time, and then with the costs incurred up to that moment in relation to the work performed.

Insertion of the time and the “amount of work performed” parameters into the comparison between the budgeted and the actual costs obviously results in a higher degree of information than the simple, conventional comparison of budgeted and actual costs.

3.3 The real estate development process and Project Management: an integrated presentation

The two previous steps display points of convergence and integration. A summary of their features will now be presented. Table 1 provides a comparative synopsis of the two scenarios, and illustrates the supranationally derived methodological and operative innovations now included in the local process contexts.

The phases of the development process and the project life cycle are reproduced according to the readings discussed in the preceding sections. Attention is directed to operating tools and relevant disciplines involved in each phase. The aim, as stated in the Introduction, is to establish a reference schema for organising the synopsis of economic-estimative tools.

The managerial component clearly pervades the project life cycle as this is perceived in the Project Management environment: by assuming a “systemic” conception of the project (*melius*, the process), it touches the four activity phases (then translated into specific roles and subjects). In their turn, they are referable to Project Direction, Project Management and Plant Management. The tools supporting each phase are borrowed from disciplines that lie within the compass of economic engineering or its specific constitutive components or those of other disciplinary fronts. Among these, Appraisal is confirming and strengthening its central role, as has been said in recalling the tools that support Project Management.

Project Management in real estate appraisal.
The Italian disciplinary approach

Table 1: The real estate development process and Project Management: an integrated presentation
with indications of the tools and disciplines

Project Management in real estate appraisal.
The Italian disciplinary approach

Phase 1 – Pre-project phase: structuring the project/plan/programme	Phases of the real estate development process and the project cycle process: private scenario	Tools	Disciplines and/or specific constitutive competencies	Phases of the project life cycle and Project Management environment phases	Tools	Disciplines and/or specific constitutive competencies	<i>Project Direction, Project Management, Plant Management</i>
	1. Identification of alternatives and evaluation criteria	Highest and Best Use Analysis	Appraisal and Economic evaluation of projects Company economics Market economics in estimative and economic contexts	Phase 1: Objectives	<i>Project Direction</i> <i>Project Management</i> methods of: Analysis Checking Budgeting Planning Programming Checking and	Economic engineering Cost engineering Appraisal Planning and programming Operative research Management science Economics Finance Law (handling of contracts)	

Project Management in real estate appraisal.
The Italian disciplinary approach

	2. Selection from alternatives	Specific opportunity studies Site analysis Analysis of area-market potential	Economic appraisal and evaluation of projects Town planning Marketing Design Operative research Statistics Economic engineering Management Science Land use planning		measurement of progress Productivity analysis Operative research (quantitative methods) Accountancy and bookkeeping Organisation Trading and markets Project management and handling Process management and handling Integrated project/process technology Feasibility studies Costs studies Yields studies	Technology	
Phase 2 – project phase : formal definition of the project	3.1 Pre-Feasibility <i>1. Preliminary project</i>	Supply and demand analysis (marketing and segmentation) Transformation value assessment (summary economic verification)	Marketing Appraisal and economic evaluation of projects Design Economic engineering	Phase 2: Planning <i>Preliminary project</i> (Phase 1, Phase 2, Phase 3, Phase 4) <i>Definitive project</i>	Project Management WBS, OBS, WP Time planning: Gantt, PERT, CPA		

Project Management in real estate appraisal.
The Italian disciplinary approach

	3.2 Feasibility <i>2. Definitive project</i> <i>3. Executive project</i>	Costs-Yields analysis Risk analysis	Appraisal and Economic evaluation of projects Statistics and probability theory Corporate economics Finance Design Economic engineering	(Phase 1, Phase 2, Phase 3, Phase 4) <i>Executive project</i> (Phase 1, Phase 2, Phase 3, Phase 4) <i>Safety and coordination plan</i> (Phase 1, Phase 2, Phase 3, Phase 4)	Cost planning: CME Integrated times-costs analysis: Earned value method Economic programming: Budget, Cash flows analysis, Risk analysis
	4. Negotiation		Land use planning Town planning Analysis of public policies		
	5. Funding	Project financing Costs-Yields analysis Risk analysis	Finance Appraisal and Economic evaluation of projects Statistics and probability theory Corporate economics		
Phase 3 – Implementation/handling phase: realisation and handling of the project	6. Construction (Establishment of a worksite)	Computo Metrico Estimativo Checking of executive stage costs Checking and monitoring of times and resources	Appraisal Corporate economics Economic engineering	Phase 3: Execution (Phase 1, Phase 2, Phase 3, Phase 4)	Construction Management techniques: Project management for checking the progress of work, particularly on-the-job variations
	7. Commercialisation	Sales plan Operative marketing (handling of sales plan)	Appraisal and economic evaluation of projects Marketing		

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Project Management in real estate appraisal.
The Italian disciplinary approach

	8. Handling and Maintenance	Income flow assessment Operating expenses assessment Assessment of capitalisation value of management project	Appraisal Economic engineering Management science	Phase 4: Control	<i>Control Management</i> methods: In-progress checking State of progress checking (SAL) Checking application of safety regulations Checking on completion of work Final inspection and testing	
	9. Portfolio management	Portfolio theory	Corporate economics Management science Finance	Portfolio management	<i>Portfolio Management</i>	

Source: elaboration by the author

4. Conclusions

Despite the difficulties, the building production sector (and with it the real estate market) cannot display indifference towards outside experiences in which the Project Management culture has long been rooted. The organisation of firms operating in the constructions sector must open even further to adjust to the international setting, even if points of resistance to change persist. As has been said on several occasions, these knots are tied, even more so in the building sector, to the shape of these firms, their internal organisation, their figures, and the weight of tradition. In this sense, the Italian experience of economic engineering may constitute a fruitful approach to be followed in architecture and civil engineering alone, namely the disciplines concerned with forming the professional profiles that can operate therein.

At the same time, a point-by-point analysis can usefully be made of the original Project Management culture to highlight its affinities and differences: the transfer of tools and theories, in fact, has left room for local interpretations that can be rethought, strengthened, corrected.

This paper has considered the specific knot of the transfer of knowledge about the subject, and has discerned the ways and means whereby the presence of Project Management in Appraisal and Economic project evaluation courses can be strengthened.

Future in-depth examination of this reflection could be directed to the public sector if one assumes a certain discrepancy between the private and the public environment in the matter of building operations. Discrepancy perceivable, for example, in the fact that public operators are guided by the reference regulations, whereas the private promoter, whose conduct is assuredly conditioned by the regulations governing the execution of public works, must none the less come to terms with the market. Evidence of the importance of consolidating the relationship between Project Management and Appraisal.

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