

Minimizing Risk in Real Estate Development: an industrial approach

Gianandrea Ciaramella ABC Department Politecnico di Milano, Milano, Italy
Alberto Celani ABC Department Politecnico di Milano, Milano, Italy

Abstract

Urban regeneration projects in many European countries involve private entrepreneurs who specialize in real estate development. Compared to the past, the demand for real estate products has assumed a level of specialization that cannot be separated from careful market analysis but above all from the observation of emerging economic and social trends and processes similar to the industrial world. It is not possible to design an urban redevelopment intervention, without considering key factors such as demographic trends, consumption behavior and orientation, well-being and health, infrastructures, urban density. The chapter charts a course that aims to minimize risks for real estate development and urban regeneration interventions, emphasizing a holistic approach and industrial processes.

Keywords: Real Estate, construction, Urban Development, Risk Management.

1. Introduction

The risk in Real Estate has been tackled according to various areas: from the point of view of the building object, of the asset subject to urban regeneration on a larger scale. Since real estate is an investment area, the methods and models of finance have always been applied, generating a strong induced and a strong current of both scientific research and the development of financial products for real estate investment. Among others, the theme of price risk linked to the economic contingency [1] as the main effect on investment is a prominent topic in literature. The idea of the economic price of the investment, understood as the total of all the large-scale effects that can impact on the value of the investment, is still a neglected theme, especially on an urban scale, when complexity grows, and uncertainty dominates risk-related models. Due to the characteristic of real estate, the impact of real estate elements on globalization and geopolitics has also been studied [2] making clear the need to pursue a comprehensive approach to evaluate the causes that govern the change in a Real Estate project, and consequently, how an urban regeneration process needs the study of various factors at a higher level to understand the drivers.

2. Method



The categorization of risks in real estate according to the scheme below can be used as a basis for subsequent studies and implementations.

RISK	SCOPE	DRIVERS
GENERAL MARKET RISK	ASSET CLASS	Interest rates, inflation or other market trends
ASSET LEVEL RISK	INVESTMENT IN AN ASSET CLASS	Asset business plan
IDIOSYNCRATIC RISK	PARTICULAR PROPERTY	Location, entitlement sub-risk (availability of permissions...), availability of workforce...
LIQUIDITY RISK	THE DEPTH OF THE MARKET	Quality of the Real Estate investment, market
CREDIT RISK	THE LENGHT OF THE PROPERTY'S INCOME STREAM	Quality of the tenant in terms of stability in the income streams
REPLACEMENT COST RISK	PARTICULAR PROPERTY	Supply of real estate comparable objects
STRUCTURAL RISK	INVESTMENT FINANCIAL STRUCTURE	Equity vs debt, type of debt (senior or mezzanine...)
LEVERAGE RISK	PROJECT LEVEL	Leverage quantification

Figure 1. Risk and Scope in Real Estate (elaborated by the authors on Origin Investments basis)

The table illustrates, from the point of view of the financial implications only, how the forces coming from the macro-economy, finance, and micro-economy can impact the generic real estate risk. Now, a standard has not been formulated that fully considers all the components as the approach of the real estate world, due to structural deficiencies or a simple functional deficiency in the approach, has never been provided. The goal is to look for a compendium that can encompass different scales of analysis and that intercepts the complexity of the contingency to be able to organize it into a list of aspects to consider. The methodological process consists in observing trends considered in other sectors, but which could be considered significant in the observation of the real estate world.

3. Results

The transformations of society and the global economy influence Changes in the built environment, the transformations are rapid, frequent and disruptive and have significant impacts on the built environment.



Below are some of the most important trends relating to the global economy, the environment, the diffusion of new technologies, consumption patterns and the growing urbanization process. Reading and interpreting these phenomena, exactly as a modern industrial sector should do, leads to the identification of new and emerging needs that must be intercepted with suitable products and services. One of the main limitations of the traditional approach is that of producing without understanding the demand, believing that it is enough to produce to influence the demand to purchase. This dogma historically founded the real estate market and closed the world to innovation, especially that of the market.

The dynamics of change are so profound and disruptive that it is increasingly bringing to light the limitations and criticalities of the traditional approach, to the point of making it no longer suitable or reliable. The current scenario rewards operators who adopt an approach based on listening to stakeholders, systematic analysis and interpretation of demand and therefore capable of creating innovative solutions, with a bottom-up "pull" logic, generated by demand, which meet the needs of target customers.

The construction/real estate sector is like other industrial sectors for which the possibility of survival is connected to the ability to innovate and give timely responses to the market with suitable products. To this context it is necessary to add a further element of complexity: the need to regenerate entire parts of our cities through interventions capable of integrating urban, technical, environmental, social and economic aspects. This requires industrial culture and vision. The real estate operator has the role and responsibility of transforming the territory by offering integrated and complete solutions for functions and services, with an approach that can only be holistic.

We have observed that the prospects for change in the built environment must be analyzed in the light of the transformations of society and the economy, at a global level. The speed of changes, the need to make systems resilient to the unpredictable is increasingly pressing. New technologies have had an impact on the study of consumption patterns and on the study of the effects of the urbanization process in cities. The analysis of society leads to the interpretation of phenomena thanks also to the discovery of new needs that are impossible to read with traditional techniques. New real estate products must respond to new needs, must reach the market with a different class speed than in the past and be ready to regenerate and change when the initial conditions change.

The life of businesses, which together with families represent a significant part of the demand for building products, tends to shorten. Developing countries, also thanks to technology, will change their propensity to purchase, in many cases filling the widespread difficulties of the middle classes of the Old Continent in maintaining their spending power, especially in the case of income from traditional industrial activities. It should be considered that for some of these workers the choice of unstructured work also responds to specific needs for flexibility in working hours. In the United States, over 80% of multinationals have launched programs for employee mobility and flexible working, intercepting the growing needs of some employees [2]

This scenario leads to the growth of new requirements for buildings that must accommodate different economic activities; among all, the ability to adapt to rapid changes and flexibility that constitutes an important competitive factor for companies. It is likely that in 2030 when the world population will have reached approximately 8.3 billion people - four demographic trends will influence the national and international political-economic situation more than others. These trends are aging, a global change that will characterize both the West and, increasingly, most developing countries; a still significant - but decreasing - number of states and societies with a very young average age population; migratory flows,



which will increasingly be a cross-border issue; growing urbanization, another global change, which will stimulate economic growth but could cause new tensions in relation to the scarcity of water and food resources. The behavior of the different generations towards work and relationships influences the movement of people and consequently impacts the need for office spaces and living spaces in the city center, as well as the sizing of physical and non-physical infrastructures.

Consumers' choices are strongly influenced by new forms of marketing that make data the real power. This data is often collected in the urban environment and in interactions with the city's smart applications, social platforms, and online shopping platforms. The transformation of society imposed by data also imprints different rhythms in the search for transparency in processes, data that is easier to find and constant tracking of human activities makes it more difficult and expensive to pursue non-transparent goals. The circular economy and the growing attention to social sustainability are two apparently distant trends but closely linked to the larger category of sustainability. The modern development competitions and tenders ask companies to attest to high levels standardized by certifying bodies in the fields of sustainability and a mechanism that has already been known in finance for years is also being implemented in the real estate world: social responsibility.

Cities are large consumers of resources and energy, returning waste, pollution in all its forms (atmospheric, light, noise...) and soil consumption to the environment. Today urban centers are responsible for the consumption of three quarters of natural resources and more than 70% of global CO2 emissions [2]

Appropriate policies and practices oriented towards environmental improvement in cities are essential. Investments in infrastructure and technologies useful for maximizing environmental benefits help achieve results quickly and improve people's quality of life. The city of the future must be smart, in the sense that it must be able to consume little, include all citizens, and propose models of sustainable growth and a circular economy.

The real estate development and urban regeneration initiatives must include the well-being of citizens who have developed a growing sensitivity, also generated by the availability of data and the results of scientific research. The scientific community is putting a lot of effort into researching the relationship between pollution, health, and the built environment, in terms of the use of cities and human behavior as an urban citizen. The conflict in Europe acted as an accelerator of the energy crisis, making the whole of society aware that saving resources and conscious consumption of energy are a theme that involves everyone [2].

Many material resources will become increasingly difficult and more expensive to use and, above all, a large amount of these could be lost for future use [2]. In the UK, it is estimated that 37% of the materials used, equal to 158 million tons, are lost [3]. The European Commission, together with its members, is implementing solutions that encourage the circular economy. The built environment is an economically important sector, with the construction industry contributing, in Europe, on average, 5-13% of total gross value added (Eurostat, 2015) and which generates 812 million tons of waste at European level, a third of the total waste produced (Eurostat, 2012). In architecture competitions and international development tenders, attention to circularity is a fundamental requirement, this pushes the construction sector to move towards virtuous behaviors with less impact on the environment, both from the design and construction phases.

The workplace is undergoing a radical transformation. Technological innovation, since the telephone, the fax and the first Internet has gone in the direction of avoiding physical movements and their evolution has been totally mobile work. Technologies have currently contributed to making physical presence in offices less and less necessary and making working on the move easier, but they weaken the



boundary between free time and time dedicated to work, companies are organizing themselves to meet the needs of workers to work on the move and often away from their offices.

The amount of data and information processed every day is growing exponentially [1]; the data constitutes a resource for companies capable of collecting data effectively and consistently with their processes and growth objectives. The data can give a competitive advantage and the best subjects being able to process information intelligently, making it the basis for goods and services. The availability of online information, despite problems related to ethics and the responsible use of personal information, influences marketing in order to provide increasingly personalized offers for the customer. Consumer behavior is accurately mapped, neuro-targeting defines the possibility of precisely identifying what guides consumer choices. [1]. Human intelligence (properly designed processes) and artificial intelligence are combined in the most advanced realities, the processing capacity of mobile devices grows dramatically; in parallel, costs decrease [2]. Robotics, once the prerogative of the industrial world, is spreading to the final consumer market; automation, as well as the Internet of Things (IOT - Internet of Things) becomes common heritage.

INNOVATION, TREND OR CHANGE INTO SOCIETY	MEANS THAT DRIVE INNOVATION IN REAL ESTATE	EFFECTS ON REAL ESTATE ENVIRONMENT
Business life of companies is shortened	Need for buildings to adapt to support business change needs [4]	Flexible buildings
60% of world GDP will be generated by developing countries	Wealth, therefore, also real estate investments, can shift one's attention on different opportunities	Attractiveness of real estate investments in emerging countries
Employment contracts must be flexible and not tied to the physical workspace	Birth of flexible work environments and technological platforms for managing peaks and space reservations	The offices are reduced in space and are observed changes the internal conformation
Population aging in developed countries	The accommodation structures change in the typology and in the division of services	Birth of new forms of living by age group
States and societies with very low average age populations vs aging societies in Europe	Multi-disciplinary studies to understand the changing needs of various age groups and for populations on the move	Migratory phenomena that change the types of homes and their distribution, as well as workspaces
Migration flows	Accurate and multidisciplinary studies, predictive technology tools and complex analysis systems to understand volumes and displacements	The need for new spaces, new work organization systems, new housing typologies and urbanization



Growing urbanization	Accurate multidisciplinary studies, which meet the challenges of technology developed in other industrial fields and integrate the technologies in use with those of the future	A predictive study of the effects on the city can provide the market with a building product in more adequate quantity and quality
Behavioral differences in contiguous age groups (e.g. Gen Y and Gen Z)	Studies that combine multiple disciplines (sociology, psychology, ergonomics...) to understand the various needs of age groups	The different attitude to work generates different uses of the physical space, both at the city level and in an undefined space with the new agile working methods
Urban centers are big consumers of resources and big producers of waste	Innovation in processes and product that can organize fleets and peaks for resources consume	The district is equipped with smart systems to manage waste collection and energy absorption peaks on the network, as well as the production and distribution of energy
The construction supply chain is increasingly integrated with the world of finance, technologies, production and waste management	Innovation in the ability to understand how to recover construction waste to regenerate it and use it in a sustainable way in projects. Finance systems that can recognize the value of sustainability by valuing it in a tangible way for investors	The world of Real Estate is relying on ESG criteria in the world of real estate development, with difficulties in understanding the role of the use of buildings in the sustainability strategy and in the social implications

Fig. 3 Innovation, Trends and Solutions in Real Estate (elaborated by the authors)

In order to make the relationship between trends, innovations, and solutions in Real Estate clear, let's consider 8 characteristics that make the real estate world particular and complex, as if they were 8 distinctive characteristics of an industrial environment to be taken into consideration if you want to undertake a project, which is also an analysis of the market. The study of the 8 characteristics exemplifies what was observed in the previous table and introduces the themes that will be the object of the conclusions of this contribution. It can be understood that each of the 8 characteristics reflects the evolution of a world that interacts with other areas of society and is influenced by them in terms of skills and technical innovations. The study of trends is intertwined with the need to analyze in advance what other technological and scientific fields propose and apply them in the real estate sector, investing in the training of those who must read the phenomena active in other fields and re-adapt them in real estate.



<p>FLEXIBILITY</p>	<p>Flexibility, agility and speed are the prerogatives of modern companies; these attributes put large corporations and small-medium enterprises into real competition for the first time. The number of people employed in an unstructured way is growing almost everywhere: collaborators, freelancers, part-time workers and consultants often work full-time but with lower guarantees than those they would have as employees. It should be considered that for some of these workers the choice of unstructured work also responds to specific needs for flexibility in working hours.</p>
<p>REDUCTION OF THE SPACE IN USE</p>	<p>The growth of work detached from a physical location frees up space in traditional tertiary buildings and forces operators to think of buildings that are increasingly rich in functions. It is also use in manufacturing as new ways for manufacturing goods in urban areas in a sustainable way [5]</p>
<p>ATTRACTIVENESS OF THE EMERGING COUNTRIES</p>	<p>The spending power of consumers in developed countries is destined to grow, but in a different way from the relative growth rates. Developing countries, on the other hand, will tend to generate 60% of world's gross domestic product, drawing ever closer to industrialized countries, also thanks to technologies: emerging demand is oriented towards using technological devices for market access, this eliminates barriers and constraints, making it accessible without geographical distinctions and increasing the growth of trade between industrialized and developing countries. Real Estate becomes a driver for Intelligence studies and source of power [6]</p>
<p>MIGRATORY FLOWS</p>	<p>The migratory flows towards rich areas expand the local market, stimulate new investment decisions, attract new capital, in a virtuous circle of development. This translates into a very dynamic demand for residence.</p>
<p>NEW WAYS OF LIVING</p>	<p>The industrialized world ages significantly; the old baby boomers have reached retirement age but</p>



	constitute, by culture, propensity to consume, lifestyle and activity, what the Americans call unretirement; in fact, it is a population that often associates the retirement phase with the start of a new part-time job or new entrepreneurial initiatives.
URBANIZATION	Progressive urbanization is transforming global demography but above all creating proximity needs for digital services concentrated in all metropolitan areas worldwide. More than two billion people are predicted to migrate to major cities by 2035, creating as many as 50 major urban metropolitan hubs that require a dense fabric of interconnections
SMART WASTE COLLECTION SOLUTIONS	The objectives of containing consumption require an integrated approach that goes from energy supply to waste management, public infrastructure and mobility. On this point, the push from the legislator and/or funding for specific projects can make the difference, but even more effective is the awareness on the part of the private market that the circular economy helps to give added value to virtuous real estate products
ESG criteria growth	The balance of an urban system cannot disregard a multiplicity of functions, which in some cases make it difficult to balance environmental quality and the conditions for growth (think of light productive activities, some of which find their rightful place in the inside urban centers). In some cities the principle has been affirmed that "those who consume pay", therefore "those who pollute, plant trees"; thus, combining the need to expand green spaces in order to improve the quality of city life and the growing interest of companies in undertaking a voluntary path towards environmental sustainability. The diffusion of indicators capable of measuring performance that can no longer be deferred is growing.

Fig. 4 eight characteristics of the complexity of the Real Estate world (elaborated by the authors)



4. Conclusion(s)

Starting in the 1950s, in the Western world, the construction sector was the one that responded to primary needs: the house to live in and the factory to work. In terms of market absorption, building production has always found a demand capable of absorbing the product. Today the scenario has changed, the construction sector and its real estate evolution are to be considered like other industrial sectors, the ability to innovate and the speed with which to respond to the market are the most suitable drivers of success.

A new element in the world of Real Estate has a proximity to the industrial world: urban regeneration, the re-functionalization of areas that de-industrialization has made abandoned or under-used. The integration of urban, technical, environmental, social, and economic aspects are the engine of urban regeneration and industrial vision is necessary to complete large-scale projects according to time, cost and quality. In this scenario, the real estate operator has the role and responsibility of transforming the territory, the solutions must be integrated, and the services offered to citizens must include various disciplines such as robotics, information technology, finance, the study of processes in that innovation is not only of the product but of service and of the market, as is done for industrial realities.

The strategic dimension is an important feature for the industrial world, strategic consulting companies are the heart of business consulting nowadays in terms of turnover and importance, the strategic vision of those who intervene in the area is even more impactful and the environment is complex. In this article the interactions between the aspects of the complexity of the industrial world with the real estate one has been demonstrated, the risk classes have been considered, the logical steps, the strategies and the actions that must be implemented to minimize the risks and maximize the value of development processes. It highlighted in this paper how the need to think in the long term and the awareness that construction is a product and as such has a life cycle that begins with its conception and ends with disposal, in a circular economy perspective.

In particular, the contribution of the authors is oriented towards framing these processes with an industrial logic which, like others, requires work phases and actions that can prove to be decisive: the observation of global trends that can determine impacts on the markets; the careful study of the economic-social and environmental context of reference; the definition of unique and personalized value propositions; a correct communication strategy and the ability to manage the entire process by integrating very different skills and actors. Attention to the soft aspects, which combine the hard ones, known to the construction world in its finest definition, is crucial for real estate development of value, as well as for the success of complex regeneration operations. Technological progress is only useful if it is guided by an overall vision and if the need to understand people's needs in depth is considered a priority. The study of the stakeholders in an urban regeneration process is a complex work, which involves several specialists and requires lengthy negotiations, this adds themes of indeterminacy to the investment and causes the real estate environment to deviate from the manufacturing one in its product development. Real Estate processes can be a source of power in every type of country and the de-regulation can be often an enhancer for risks related to Resilience, Transparency, and Sustainability. A full assessment of risks in an industrial way and a full understanding of processes can be the way to improve the market and the societal implications.

Conflict of Interest



“The authors declare no conflict of interest.”

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