

Research on Construction Engineering and project management

建筑工程与 项目管理研究

闫永庆 © 著

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著 闫永庆

本书主要介绍了建筑工程项目管理的基本理论、方法和实践。全书共分八章，第一章为绪论，第二章为项目管理的组织与计划，第三章为项目管理的组织与计划，第四章为项目管理的组织与计划，第五章为项目管理的组织与计划，第六章为项目管理的组织与计划，第七章为项目管理的组织与计划，第八章为项目管理的组织与计划。

第一章 绪论

第一节 项目管理的概念

第二节 项目管理的意义

第三节 项目管理的目标

第四节 项目管理的组织

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第十一节 项目管理的其他问题

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第十四节 项目管理的其他问题

第十五节 项目管理的其他问题

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Chapter 1 About Real Estate

Real estate has many unique characteristics that make it different from other types of products. The characteristics can be divided into physical and economic features.

Section 1 Physical Characteristics

1. Immobility

Buildings, soil, gravel, and other items considered part of real estate might be moved by the actions of nature or people; however, the piece of land itself is immobile and can never be changed from its geographical location. Because of its fixed position, land has become a primary source of taxation to support local government. The immobility allows the government to use a lien to force the sale of the land in order to collect unpaid taxes. Being immobile, the land is subject to control of the state and local governments under whose jurisdiction it exists.

2. Lack of Standardization

Another characteristic of real estate is its lack of standardization. No two properties are exactly the same. Homes of identical configuration can be different in value because of location, upkeep, paint color, exterior condition, interior decoration or furnishing, and many other factors. Even if the physical features of two homes were almost identical, zoning, deed restrictions, or title encumbrances could make their values considerably different.

3. Long Life

Most manufactured products change in style over the years, and real estate does also.



Automobiles and electric appliances have a shorter life span, however, and may be discarded after two or ten years. Real property may have a life span of 10 to 200 or more years. Consequently, the real estate may contain properties of considerably varying age at any one time.

4. Indestructibility

Indestructibility, the fourth physical characteristics of land, causes real estate to be a durable and relatively stable investment. Except for economic factors, land does not depreciate. In fact, it more often appreciates with time. This does not mean that property value cannot be destroyed; for instance, topsoil removal or strip mining might reduce the value or usability of land for agricultural purposes. The value of the property can also be reduced by lack of care or maintenance or other deterioration of improvements on the property or its surroundings.

Section 2 Economic Characteristics

In addition to the physical characteristics, land also has its particular economic characteristics: scarcity, fixed investment, location, and improvements. These economic characteristics also have an impact on the manner in which real estate business is carried out.

1. Scarcity

Although there is a large amount of land that can be purchased at a low price, land in other, more desirable locations is scarce or very valuable. There is no scarcity of land as such; however, land for specific uses in specific locations is frequently insufficient to meet demand. As population increases, a scarcity of land to produce food might develop; however. In the recent past, the increase in productivity of the land due to fertilizers, better seed, and better crop management has resulted in a decrease in the total demand for land for food production. In many cases, however, prices of the best agricultural land have increased substantially.

In urban areas, the ability to construct higher buildings, combined with expressway construction, which gives greater access to more land, has also reduced the scarcity of land. Further expected improvements in land use may reduce this scarcity in the future; concurrently, however, new uses for land drive values up. Feelings that all land was scarce

sometimes caused land booms in the past that were followed by price collapses when it became evident that there was not a real demand for the land.

2. Fixed. Investment

A second economics characteristic of land is the fixed nature of the investment, or fixity. Most modifications or improvements to the land cannot be moved, and it may take twenty or thirty years to repay the investment; thus, the investment is long lasting. Buildings and associated facilities, once installed, become part of the real estate. This characteristic makes the value of a land investment highly dependent on the economic changes in a specific location or on change in people's preferences. The property improvements are tied to the neighborhood in which the land is located. Therefore, before purchasing or improving land, an investor must consider how long the land's usefulness will last.

3. Location

Location, or situs, is the third economic characteristic of land. Similar pieces of real property may have extremely different values just because of the difference in location. This difference can be caused by people's preference for natural attributes, such as weather, good soil, scenery, or for human-made factors, such as schools, cultural attractions, or places of employment. Both affect the quality of the land, and, thus, the value. Changing conditions such as population shifts or industrial build-up or decline frequently cause some land to increase substantially in value and other land to deteriorate in value.

4. Improvements

The fourth economic characteristic of land is its ability to be modified or improved, with the associated impact upon the value. Improvements on the land include buildings, fences, or other things that then become part of the real estate. In contrast, improvements to the land include access roads, nearby schools, construction of recreational facilities and industries, and other factors that make the real estate more valuable, often without modifying the site itself. Land in its natural state is called raw land. Real estate having its value enhanced by improvements is called improved land.

Section 3 Market Characteristics

1. Local Markets

Because the product is immobile, the real estate market is made up of a large number of local markets, each isolated to some degree from other local markets. With other commodities, such as automobiles or food, a high demand or short supply in one area can be offset by moving products from other areas where there is an oversupply. This movement is not possible in real estate; therefore, home prices in one city may be considerably higher than they are for similar property in a city only fifty miles away. An oversupply of homes in one area cannot satisfy a shortage in another area. Thus, real estate prices are highly vulnerable to local events such as plant layoffs or declines in local industries.

2. Unorganized Markets

We saw that the immobility of real estate results in local markets. This, in turn, causes the real estate business to be highly decentralized and, to some extent, unorganized. A person wanting to purchase or sell stocks or bonds can immediately determine the market price. Other items such as autos or refrigerators sell through retail establishments. Real estate does not have such an organized market. Buying and selling is a matter for negotiation for each transaction. Sale prices are private in nature and seldom publicized. Sale prices are of importance to persons in the real estate business, however, and they do attempt to compile sales price data.

3. Unbalanced Supply and Demand

The local nature of the market results in an uneven supply and demand in different cities. There may be a strong demand in some cities where economic conditions are good and, at the same time, a weak market in other cities where employment is low or industries are deteriorating. The lack of flexibility to adjust to this shifting demand results in a wide variance in prices, even between towns as close as fifty miles apart. This rigidity makes it difficult to adjust to sudden changes in demand caused by changing economic factors.

4. Private Transactions

A large percentage of real estate transactions are between individual buyers and sellers where neither party is in the real estate business. As an example, a person moving away may

sell his home to another person moving into the area. This is unlike other products, such as automobiles, furniture, and so forth, where the purchase is made from a dealer. This difference concerning real estate results in difference in the marketing of the product.

Section 4 Residential

The United States has become a nation of homeowners. The availability of financing has enabled a substantial percentage of families to own their own homes. Concurrently, many find it necessary to change their place of residence, either to improve their standard of living or to accept a job opportunity that requires a move to a different locality. These pressures create the need for more residential construction and for a system of marketing new and existing properties.

A recent census shows that approximately 68 percent of housing units were single family homes, 28 percent were multiunit structures, and the remaining 4 percent were mobile units. About two-thirds of the units were owner occupied, leaving about one-third in rental status. In a typical community, about 3 to 10 percent of the units were vacant or for sale at any one time.

1. Single and Multifamily Units

Residential property includes not only the single-family dwelling, but almost any type of structure designed for personal living. In addition to the single-family dwelling, other types of residence include the duplex, triplex, and four-family homes. Sometimes owners live in one of the units while renting out the others. Additional forms of residential dwellings are the town house, row house, and garden apartments.

2. Apartments

Apartments comprise a category of residential real estate defined officially as having five or more living units. Often they have several hundred units. They have become very popular with both older and younger persons. Many in these age groups do not want to be tied to one place, or do not have the substantial investment required to own a home, or prefer not to have the considerable responsibilities associated with home care.

Life insurance companies and investment trusts frequently invest in apartments because

these investments often produce a relatively high rate of return. Although most apartments in the past have been located in urban centers, there is an increasing trend to construct new apartments in suburban areas. Apartments may be either high, medium, or low-rise or of the garden type. In any case, the success of an apartment as an investment depends to a large extent upon the skill of the property manager, who is responsible for maintaining adequate occupancy rates and for efficiently handling property maintenance. Although some hotels and motels have also been converted into residential housing, they are more suitably classified as commercial properties that cater to transient persons.

3. Condominiums and Cooperatives

Condominiums and cooperatives have become an increasingly important element in the real estate business, and their construction has increased considerably in the past twenty years. Both the condominium and the cooperative allow people who prefer an apartment-like environment to enjoy some of the financial advantages of home ownership. Although condominiums and cooperatives both provide a means for a person to invest in his own place of residence, there are important differences between the two.

In a cooperative, the title to the building and property is held by a corporation. The person who resides in a unit of the cooperative owns stock in the corporation and also has a proprietary lease on his apartment. Property taxes are levied against the corporation, and if there is any mortgage, the corporation is the mortgagor.

The condominium, in contrast, provides a means whereby each person residing in the building owns his own apartment, just as a home owner owns his own home. The owner of an individual unit in the condominium can sell his unit to someone else, he receives his own individual tax bill, and he can obtain a mortgage on his single unit. The number of condominiums in the United States has increased substantially since 1970, with couples over age forty-five whose children have left home representing the dominant buyers. In urban areas, many apartments as well as other building are being converted to condominiums.

4. Mobile Homes

From a legal viewpoint, mobile homes are usually considered personal property and not real property. They are mentioned here, however, because of their impact on the real estate business and because some states have special laws that consider mobile homes that are fixed in position much the same as real property.

Mobile homes consist of movable or portable year-round dwellings constructed without a permanent foundation. They can be towed on their own chassis and connected to utilities.

Sometimes a mobile home consists of two or more sections that are towed separately and later combined. A mobile home may be comprised of units that can be telescoped for towing. Mobile homes make up a substantial portion of the housing that can be purchased for under \$ 50 000. Frequently, the units contain many of the conveniences of regular homes. Most mobile homes are situated in mobile home parks where suitable utility connections are available.

Since, legally, mobile homes are considered personal property, they are not normally subject to real property taxes. In California, mobile homes without wheels are taxed as home, however, and similar taxation is under consideration in other states. Mobile homes are subject to annual license fees. By paying rent for the space they occupy, their owners contribute indirectly to the taxing communities. It is often argued, however, that the mobile home owners' share of taxes is not in proportion to their use of schools and other services financed by real estate taxes.

Prior to the 1970s the term mobile home referred to movable year-round dwellings constructed with or without permanent foundations. Most states considered them to be personal property, so that normal homeowner privileges and taxes did not apply.

5. Manufactured Housing

The term manufactured housing now includes all housing constructed off the building site. Homes of the type are more widespread in the Sun Belt states. Previous restrictions prohibiting manufactured housing are being gradually abolished by state and municipal laws.

Chapter 2 Real Estate Investment

Section 1 Investors in Real Property

Investment in real property is carried out by private persons, private trusts and the institutions--insurance companies, pension funds, charities, property companies, property bond funds and property unit trusts. To some extent each has different objectives, and so their preferences differ.

1. Private Persons

Anybody who purchases a property rather than renting is an investor. The satisfaction or return received should at least equal what could be obtained if, instead, premises were rented and the money invested elsewhere. For example, a person may rent rather than buy a shop either through lack of capital or because he considers the money can be more profitably employed in carrying stock, etc.

Owner-occupiers, e.g. shop-owners, farmers and householders, are holding wealth in the form of real property. They enjoy a full equity interest --income or satisfaction from the use of their property, and normally a hedge against inflation.

Other private persons investing in real property usually have only limited funds. Thus their direct investment tends to be restricted to dwellings and secondary shops. Indirectly, however, they can invest in prime shops and offices by buying property bonds or shares in property companies.

2. Insurance Companies

By and large, life-insurance companies try to match assets to future liabilities, and this largely determines the spread of their portfolios as between short and long-term fixed interest investments and equity holdings.

The post-war trend of insurance companies' asset holdings has been away from fixed-interest securities towards ordinary shares and property (see Table 2-1). In order to give endowment and life-insurance policies an 'inflation-hedge', companies introduced 'with profits' policies. As a result, they increased their holding of property, chiefly in first-class office blocks. Most property is acquired by direct purchase, but because of a shortage of the right type of property many institutions now participate directly in development, usually in conjunction with development companies, property companies and construction firms.

Table 2-1 Changes in the distribution (% of total) of assets of insurance companies and superannuation funds, 1968-1984

asset holdings year's	Insurance companies			Superannuation funds		
	1968	1978	1984	1968	1978	1984
Short-term assets	1.4	6.0	2.6	1.7	4.3	4.4
Government securities	26.9	27.0	24.4	20.4	21.8	19.0
Ordinary shares	22.4	28.0	40.1	53.2	44.2	59.8
Preference shares and debentures	19.2	5.7	3.7	12.5	9.0	2.2
Loans and mortgages	15.8	6.9	3.5	4.0	1.6	0.3
Land, property and ground rents	10.3	19.7	16.7	6.0	17.1	6.0
Other assets	4.0	6.7	9.0	2.2	2.0	8.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Insurance companies find it advantageous to own properties directly rather than through shares in property companies because:

- (1) direct investment in property gives the company more control than an investment in property company shares;
- (2) a substantial holding of the shares of a property company (necessary to exercise some control) may be more difficult to dispose of than a first-class building;
- (3) the prices of buildings have tended to be less volatile than the prices of property company shares;
- (4) the high gearing of a property company is of little advantage to an insurance company which always holds part of its assets in fixed money terms;
- (5) holding shares in a property company represents an inefficient way to invest in property since corporation tax is deducted from profits attributable to dividend, whereas the insurance company pays a lower tax rate on life income.^[3]

Insurance companies still hold a part of their assets in mortgages as an alternative to fixed-interest-bearing stock.

3. Pension Funds

Pension funds now compete strongly with insurance companies and property companies for first-class properties since the inflation-hedge helps to retain the real value of the accumulated pension funds.

The smaller pension funds invest in property indirectly through pension fund property unit trusts, whose trust deeds limit membership to pension funds and charities enjoying tax exemption.^[4] Such trusts afford the advantages of property investment without management problems. The larger funds, however, prefer to purchase and manage their own properties. The disadvantage of holding shares in property companies is even greater for pension funds than for insurance companies since pension funds do not pay tax on income or capital gains.

4. Charities and Trusts

Charities and trusts are concerned not only with income (from which periodic distributions are made) but also with retaining the real value of trust funds. Consequently, although they pay no income-tax, they cannot invest entirely in high-yielding securities. For example, the Church Commissioners, who pay clergy stipends from investment income, endeavour to preserve the real value of that income by holding a part of their portfolio in equity interests, including property and farmland.

Unlike most institutional investors, charities receive little 'new' money for investment each year. They are therefore constantly reviewing their existing portfolios to see what possible adjustments could best serve their beneficiaries, both present and future.

5. Property Companies

Property investment and development companies have grown considerably since 1945, largely reflecting the boom in urban redevelopment. Most tend to be highly geared, their capital consisting of a high proportion of loans to ordinary shares. Properties owned provide the security against borrowing, while interest charges are covered by regular rents. High gearing is beneficial to the few ordinary shareholders when profits are good, and it makes it easier to retain control.

The larger companies tend to specialize in office blocks or prime shop properties, and a few in industrial properties. Residential property investment is confined mainly to smaller

companies, many of which engage in 'break-up' operations, selling houses and flats to sitting tenants or, when vacant possession is obtained, to owner-occupiers.^[5]

6. Property Bond Funds

The person wishing to invest in property is faced with the snag of having insufficient funds to buy prime property, the kind which has shown the greatest capital growth. The property bond fund, a comparatively recent innovation, partly succeeds in overcoming this difficulty. Subscribers buy a number of units in a fund which invests the money in first-class property. Thus Abbey Life, the largest, has over £ 200 million invested in offices, shops and industrial property in the major cities of Britain, and also in Belgium, Holland, France and West Germany. Agricultural estates are also held. In this way the holder of property bonds has a wide spread in first-class property, with the value of the bonds varying directly with the value of the properties held. In conjunction with their agents, these funds take an active interest in the management of their properties, revaluing them at fixed intervals.

7. Property Unit Trusts

A similar principle operates with those unit trusts which specialize in property, but in order to avoid management commitments, such unit trusts use their funds to buy shares in property companies or in companies such as hotels which are concerned with property.

8. Building Societies

Building societies can be regarded as institutional investors since they are the most important source of loans for house purchase.

Section 2 Commercial

Commercial properties include those that house retail and wholesale services, banking or other financial services, office space, and shopping centers. In general, the category includes most improved property acquired for investment purposes, except apartment houses and similar residential units. The trend to locate commercial property in suburban areas has increased as the population moves away from urban centers.