A Classification of Risks in Real Estate Development Business
การจัดประเภทของความเสี่ยงในธุรกิจอสังหาริมทรัพย์

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Abstract

Risks generally denote the negative impact to the real estate project's progression in regard to these will affect to the construction schedule, project cost and the quality of the products. This article highlights the importance, consequences and impacts of risks in the real estate development projects. This article also classifies risks in the general business, and then focus specifically on those in the real estate business, then it provides the academic and practitioners term of risks as well as define the risks those involve in the real estate business. The risk classifications in this article will be used to support and establish the risk assessment criteria based on the definitions of Social, Technological, Economic, Environmental and Political factors or STEEP factor, which is popularly used in the general and real estate business.

บทคัดย่อ

โดยทั่วไปแล้ว ธุรกิจอสังหาริมทรัพย์จะได้รับผลกระทบจากความเสี่ยงในหลากหลายรูปแบบด้วยกัน ซึ่งความเสี่ยง ดังกล่าวนั้นจะส่งผลกระทบต่อระยะเวลาในการก่อสร้าง งบประมาณของโครงการ และคุณภาพของผลิตภัณฑ์อสังหาริมทรัพย์ บทความนี้ได้เน้นย้ำถึงความสำคัญ ความรุนแรง และผลกระทบของความเสี่ยงที่มีต่อโครงการพัฒนาอสังหาริมทรัพย์ นอกจากนี้ ได้ให้คำจำกัดความของความเสี่ยงด้านธุรกิจทั่ว ๆ ไป และได้ให้ความสำคัญกับความเสี่ยงที่เกิดขึ้นในธุรกิจ อสังหาริมทรัพย์ และให้คำจำกัดความทั้งด้านวิชาการและวิชาชีพของความเสี่ยง รวมทั้งเสนอแนะวิธีการในการจัดรูปของ ความเสี่ยงโดยอ้างอิงถึงปัจจัย STEEP ที่ประกอบไปด้วย ความเสี่ยงทางสังคมวิทยา (Social) ความเสี่ยงด้านเทคโนโลยี (Technological) ความเสี่ยงด้านเศรษฐกิจ (Economic) ความเสี่ยงด้านสภาวะแวดล้อม (Environmental) และความเสี่ยง ด้านการเมืองการปกครอง (Political) ซึ่งปัจจัย STEEP ดังกล่าวนี้ได้ใช้กันอย่างกว้างขวางในธุรกิจต่าง ๆ ในปัจจุบัน

Keywords

Risk (ความเสี่ยง)
Risk Classification (การแบ่งประเภทของความเสี่ยง)
Real Estate Business (ธุรกิจอสังหาริมทรัพย์)
Factor STEEP (ปัจจัยความเสี่ยงด้านสังคมวิทยา เทคโนโลยี เศรษฐกิจ สภาวะแวดล้อม และการเมืองการปกครอง)

1. Risk: General Definitions

Risk can be simply defined as a potential negative impact to an asset, project or some characteristic of value that may arise from a present process or future event. In everyday usage, risk is often used synonymously with the probability of a known loss. However, in its scientific meaning, risk is defined in various manners, generally as exposure to adversity or loss, or the possibility of a danger or threat occurring. According to the definition of the Royal Society (Crossland, et al., 1992), risks can be classified into at least three categories:

a) Risks for which statistics of identified casualties are available.

b) Risks for which there may be some evidence, but where the connection between the suspected cause and injury cannot be traced.

c) Experts' best estimates of the probability of an event that has not yet happened.

In term of real estate business or investment, risk also covers the uncertainties related to the expected rate of return from an investment (Reilly and Brown, 2002 as cited in Baum and Crosby, 2008). Using these definitions, risk can be described as follows. Firstly, risk means loss, damage or any undesired consequences that impact to the project. Secondly, risk is scientifically defined as the probability that a particular adverse event occurs during a stated period of time, or results from a particular challenge. Risk in statistical theory also follows through all the formal laws of combining probabilities. Thirdly, risk is defined as "the probability of loss and the significance of that loss to the organisation of individual" (Mitchell, 1995 as cited in Harland, et al., 2002). In a business or investment context, risk is also used to describe the unpredictable financial consequences of actions and decisions. In operational terms, risk is referred to as a set of unwanted and uncertain events, but in the analytical sense, risk is regarded as the description of the extent to which the actual outcome of an action or decision may diverge from the expected outcome (Hargitay and Yu, 1993).

By the analytical definitions of investment, risks are usually expressed in either probabilistic terms or in terms of variability. In accordance with this, Hargitay and Yu (1993) defined risk in analytical terms as follows:

a) The probability of loss

b) The probability that the investor will not receive the expected or required rate of return

c) The deviation of realizations from expectations

d) The variance or volatility of returns

According to the aforementioned definition of risk, risk is simply illustrated by the following equation:

$$\text{Risk}_n = P_n \text{ x } l_n$$

Where P = Probability of loss
l = The significance of the loss

Risk and risk management is at the heart of every investment decision. Every time an investor puts money into another asset or investment, rather than cash alone, a trade-off is made between risk and return. Cash deposits offer a virtually risk-free return at any point in time; government index linked bonds are frequently regarded as the 'real' risk-free rate over the longer term. However, with property investments the tenants can default, thus affecting the rental income stream, and there is no certainty over the level of property values in the future. Changes in these and other variables can have a marked effect on the delivered level of returns, resulting in uncertainty and potential volatility (Chapman, 2009).

2. Systematic and Unsystematic Risk

Hargitay and Yu (1993), Brown and Matysiak (2000) and Baum and Crosby (2008) define risks in

property investment as "total risk." Total risk itself is associated with several factors, but can be subdivided into 2 major categories: "systematic" and "unsystematic" (or "specific") risk. It is simply described by the equation of *"Total risk = Systematic risk + Unsystematic risk."* In this regard, systematic risk can be summarised as the risk caused by several factors that affect the investment: for example, risk caused by a change in the economic situation or in government policy towards property investment could be counted as systematic. This means that the investors or developers are not able to control either the probability or the consequences of risk caused by broader economic and political issues. But on the other hand, investors and developers have some degree of control over unsystematic or specific risk as they are able to deeply investigate the companies and projects they are going to invest in, as well as make their investment decisions based on project or management team performances. Moreover, developers are able to control the causes and consequence of such risks occurring in the invested project, because most unsystematic risks are caused by internal factors.

Therefore, Hargitay and Yu (1993) summarised the components that comprise to systematic and unsystematic risks. Systematic risks may involve the following:

a) *Market risk* or risk related to fluctuations in the market that the investors or developers intend to engage in.

b) *Cyclical risks* or risks related to variations in the business cycle.

c) *Inflation or purchasing power risk* or risks related to the uncertainty of the future purchasing power of the returns produced by the investments.

d) *Interest rate risk* or risk related to the fluctuation of interest loan rates, particularly in the area of real estate development, in which developers have to loan large amounts of capital from banks or financial institutions.

On the other hand, unsystematic or specific risks involve the following:

a) *Business risk* or risk associated with a company's business operations. The factors that influence risk are to do with the size of the company, product mix, competition and the general orientation of the management team in charge.

b) *Financial risk* is dependent on the way the company or project's operations are financed. This includes the ratio of debt and equity that the company or the project holds, since the larger the debt finance, the larger the associated financial risk.

c) *Liquidity risk* may be caused by the following aspects: the degree of difficulty associated with the realization of the capital invested; the divisibility and marketability of the asset; and the costs involved with the realization of the capital. In this regard, the liquidity risk also covers the risk caused by an illiquidity of project funding during project processing (Chen and Khumpaisal, 2008).

d) Other specific risks which usually affect individual investment, such as location concentration, construction and execution risks.

Furthermore, Fraser (1993) gives the definition of risk in property investment as the variability of its annual return (or Internal Rate of Return: IRR). As the return may vary as a result of changes in both income and price, this encompasses risk to income as well as risk to capital. Additionally, he also provides some sources of risk that may affect the vitality of a particular investment project:

● *Liability matching:* The ability of investment returns to match its liabilities must be addressed by the investors. The duration and the type of property invested in will reflect the degree of risk to that investment.

● *Liquidity:* Real estate property has less liquidity in comparison with other investments, since it requires more time to find the purchaser or other interested parties. This will affect the risk and expected return from the property investment accordingly.

● *Marketability:* Due to its illiquid characteristics, real estate property is less marketable than other investments as property can sometimes languish unsold for some time. Property demand may also frequently fluctuate and not balance with the market supply.

● *Taxation liability:* Investors have to factor in various forms of tax when they invest in property development, such as income tax deducted from rental income, property tax, etc.

● *Transaction costs:* A variety of expenses appear during the transaction period when the property is transferred from the investor to the purchasers, such as legal fees, stamp duty, brokerage fee, etc.

● *Management costs:* These are necessary for a property that needs an annual liability for repairs and insurance. That cost is distinguished from other investments since the investors have to employ a management agency as their representative for duties such as rent collection, portfolio management and non-annual negotiations and rent review.

● *Investors' growth expectations:* The expected growth rate of the property investment is affected by the growth of both income (from rental or sales) and costs. Income growth may vary due to fluctuations in rent levels, the broader economic situation and market conditions. Another concern for property investors is the physical depreciation of the property, as this will cause a fall in value throughout the investment period.

These risks should be considered when the developers decide to invest in or develop a new property project or even during the feasibility analysis process. It can therefore be concluded that the most significant causes of risk are financial (in term of loan, illiquidity of cash) or market-related (in terms of supply and demand, including forecasted market trends). However, when real estate projects progress to the construction stage, various risks may occur during the construction process that are also important concerns, as these will affect to the project vitality whether the fiscal or physical attributions. According to Miller and Lessard (2008), risks occurring at the construction or execution stage can be classified into 3 major categories:

1. *Market-related risks:* These are Market risks, Financial risks and Supply risks, respectively. Market risks mean the ability of project managers to forecast demand among mega-project users or customers. This is because each mega-project has its own customers. A wide variety of customers creates more difficulties to forecast demand accurately. Financial risks include shortages of available funding sources to continue the project. In this regard, supply risks are similar to market risks in that both risks are associated with price and access uncertainties. These arise from an ill-prepared contract, limited contract and procurement management, or from an inappropriate project organisation structure (Khumpaisal, 2007).

2. *Completion risks:* These encompass *Technical risks, Construction risks, Execution risks and Operational risks. Technical risks* are caused by technical factors, such as engineering difficulties and degrees of innovation, as well as risks caused by miscommunication or poor integration between design and construction units. On the other hand, Construction risks refer to the difficulties that project owners, sponsors, contractors and vendors confront in the construction process. *Execution risks* refer to issues that arise from errors or conflicts that delay the project schedule. *Operational risks* refer as to the possibility that the project will not function as expected, for example if the availability, capacity or efficiency is lower than expected.

3. *Institutional risks:* These are mostly caused by external factors such as legal, political, and community issues, social acceptability and environmental regulation. In this regard, any policies issued by regulators which affect the overall project progress are included in institutional risks.

Huffman (2002) has identified risks in real estate development at the project management level or using brainstorming techniques. These include events that may arise and affect critical aspects of the project. By his definition, the major risks associated with real estate development can be categorised as:

● *Financial risks:* These can significantly increase the corporation's risk exposure. For example, they may affect the overall financial structure of the investment, including the availability of funding injections during the project development process.

● *Physical risks:* These are associated with the physical space, as well as the site itself and its surroundings. These also include design risks and the communication between designers, contractors and owners of the property. Poor or inadequate design (functional obsolescence) can result in decreased productivity and/or increased real estate operating expenses. Poor workplace design can also increase employee dissatisfaction as well as increase employee turnover.

● *Regulatory risks:* These are incurred as a result of governmental oversight, legislation and new regulation. For example, if a government issues a policy to reduce hydrocarbon emissions, this can reduce transport options and make commuting more expensive for investors. At the local level, changes in land use regulations can affect expansion plans, while increases in property tax assessments can raise the costs of property management.

3. Objective and Subjective Risk Definitions

Even though risks can be classified by their characteristics and causes, as described above, risks are also determined by the perceptions of developers or decision makers. Additionally, risk perception is arguably multidimensional, with a particular hazard meaning different things to different people and in different contexts. In some situations, risks are not only physical, but also social and organisational

factors such as project management, risk management, etc. Therefore, it also means that risk perception can not only rely on mathematical or statistical calculations such as the probability and consequences of its occurrence, because risks are also caused by human, social and political phenomena.

According to a Royal Society investigation, Pidgeon, et al. (1992) classified risk into the *"objective"* (or statistical) and "subjective" (or perceived) categories. By this classification, objective risk is specific, substantial, physically measurable or identifiable, and can be determined precisely by quantitative risk assessment.

In contrast, Spaulding (2008) terms subjective risk as what an individual perceives to be a possible unwanted event. However, most people realise that risk is a part of everyday life: for instance, that it's possible to have an accident or a heart attack or some other health problem, or gambling. The degree of subjective risk depends on a person's experience and their expected possibility of its occurrence. For example, an investor who has lost a lot of money in the stock market will probably feel more risk averse when speculating than one who has not. Subjective risk may alter the behaviour of the risk taker if the potential outcome is relatively likely or highly undesirable. Subjective risk also involves the perception of the decision maker about the likelihood and consequence of the event.

4. A Classification of Risk by Steep Factors Determinations

This article mainly supports the assumption that risk in real estate development is mostly caused by the effect of STEEP factors. In this regard, STEEP is an acronym for *Social, Technological, Economic, Environmental and Political* implemented by Morrison (2007). These are the major factors that may severely affect the development process of a project or investment. Therefore the decision makers

and project managers must concern themselves with these factors prior to taking any particular action to ensure that the full range of risks, whether systematic or unsystematic, subjective or objective, have been considered. For instance, risk may relate to the separation of design from construction, a lack of integration, poor communication, uncertainty, a changing environment, increasing project complexity, economic changes such as inflation and deflation, regional economic crises or political pressure (Gehner, et al., 2006; He, 1995). Thus, the risks caused by STEEP factors and their consequences must be considered and should not be underestimated, because these will impact on the overall project management processes – for example, through project schedule delays, cost overrun and reduced project quality, which then adversely affect both the project stakeholders and public interest. Putting it another way, risks may compromise the project management backbones of Time, Cost and Quality (PMI, 2004).

STEEP factors analysis has been widely used in business decision making, but is also known alternately name as PEST, TESP and STEP. However, they share similar Political, Economic, Sociological and Technological concerns. This form of analysis was developed to analyse both the risks that arose from these related factors and their consequences, as well as to measure the market situation, particularly growth or decline, and thereby the attractiveness, suitability and business potential of the investment. PEST analysis uses four perspectives, which together provide a logical structure to help the investor to understand, consider and decide on a project based on these four dimensions (Chapman, 2009).

The STEEP classification of investment risks is pragmatic as well as simple enough to be clearly understood by all project participants. This is also supported by Nezhad and Kathawala (1990), who conclude that the risks that affect the decision-making process in an international investment relate to:

- *Socio-cultural factors:* These include the conflict between the host country's norms and the investor's own belief and cultural outlook.

- *Economic/Financial factors:* The investors should be concerned with the economic system and current situation of the country they are investing in, as well as the economic infrastructure of the investment area, including access to human resources, product standardisation and the existence or absence of a particular technology, as these may vary the development cost. For instance, licensing, acquisition, and joint ventures may be restricted severely by a certain host country. In addition, in most countries inflation and currency exchange rates create further difficulties for investment (Wheeler and Hunger, 1986 as cited by Nezhad and Kathawala, 1990).

- *Political risk:* These may exist when discontinuities occur in the business environment due to political instability, which is difficult to anticipate. Political risk also covers risk which may affect the investment atmosphere due to a change in fiscal or trading policy.

- *Legal factors:* These cause a risk to the investor and may depend on the country's legal system, the degree of legal enforcement and the regulatory body which responds to legal issues with regards to investment.

- *Technological factors:* These include, but are not limited to, the availability of the appropriate technology for construction or manufacturing and the ethnocentric orientation in the investment area.

- *Physical factors:* These include physical attributions such as transportation, natural resources, climate, topography, and the territorial size of the invested area.

- *Availability of resources:* The decision makers shall make decisions regarding the range of responsibility management towards employees, labour union, training and development of employee, payment and welfare. However, this factor also causes risk when the developer have more competitors in the same market.

● *Market factor:* the investors have to consider the competitive condition of the market, the opportunities for product orientation (including the channels to distribute the product to customers), as well as the barriers to entry due to other market restrictions, the supply demand cycle and fluctuation of overall market trade area.

5. Conclusions

According to the extensive literature review presented above, it could be concluded that decision makers should be concerned about the risks to their projects as these may affect a project's vitality through income loss, increased time consumption resulting in project delays, and reduced customer satisfaction with the quality of the product. Risks also affect the return of investment (IRR), which may vary or fluctuate despite the investor's expectations, because the longer period of investment would result in a greater opportunity cost for other investments as well.

This article also proposes general and specific classification of risks in the real estate industry. This could be achieved through a range of approaches. Firstly, risk can be regarded as systematic or unsystematic in accordance with its origin, whether external or internal. Secondly, depending on how it is perceived, the risk may also be classified as "Subjective" and "Objective". this classification also relates to the method of risk assessment: if the risk can be mathematically or statistical assessed, then it is counted as objective. On the other hand, if it cannot be readily quantified, it is regarded as subjective. Thirdly, risks could also be classified by their sources of origin, or their "causes", using STEEP, PEST, PESTIE or other similar criteria.

Finally, this article proposes the use of STEEP factors to classify risks in real estate development projects. These are already popularly used in business decision making prior to investment in or development of a project because their principles are uncomplicated and simple to understand. The other advantage of STEEP factors is that they cover the widest area of risks and other issues that may affect the project development process and investment.

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