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## The use of judgement by commercial property developers

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### **Abstract:**

In the UK, as in other developed market economies, commercial property is a multi-million pound industry that makes an important contribution to GDP and employment. Commercial development is a classic example of a high risk / high return business; a fact that is particularly apposite in times of economic uncertainty. Developers clearly take significant risks at various stages of the development process; and they do this in anticipation of the considerable financial rewards on offer. Equally, when their assessment indicates it, the decision will be taken not to proceed. On what basis do they make these decisions? Previous research by the author found that, while formal risk assessment is undertaken by developers, the process is heavily influenced by their risk attitude and 'judgement'. The research seeks to explore these issues by generating empirical data on developers' 'judgement' and setting them against existing theoretical work. The overall aim of the study is to examine the issue of 'judgement' in risk-related decisions in the property development process, and to determine whether this concept can be theoretically explained using existing work on risk, risk attitude and heuristics. The method of enquiry is predominantly in-depth, semi-structured, face-to-face interviews with experienced property developers. At this stage the data has been analysed by a sorting and sifting process to try and find similarities, differences and patterns in the responses. The research has found that property developers essentially believe that they adopt a fairly objective approach to risk related decision making however the use of judgement, intuition and experience was frequently referred to. A preliminary analysis of the data suggests that heuristics play a role in the decision making process. In particular the availability heuristic, confirmation trap and cautious shift heuristic are evident. The work reports on the interim findings of a continuing study, and conclusions are, as yet, provisional, but in terms of its aims, objectives and method the paper gives an insight into an important and little researched issue in the property development industry.

### **Keywords:**

Commercial property, developers, heuristics, judgment, risk

## **1 Introduction**

In the UK, as in other developed market economies, commercial property is a multi-million pound industry that makes an important contribution to GDP and employment. Commercial development is a classic example of a high risk / high return business; a fact that is particularly apposite in times of economic uncertainty. Developers clearly take significant risks at various stages of the development process; and they do this in anticipation of the considerable financial rewards on offer. Equally, when their assessment indicates it, the decision will be taken not to proceed. On what basis do they make these decisions? Previous research by the author found that, while formal risk assessment is undertaken by developers, the process is heavily influenced by their risk attitude and 'judgement'.

The research seeks to explore these issues by generating empirical data on developers' 'judgement' and setting them against existing theoretical work. The overall aim of the study is to examine the issue of 'judgement' in risk-related decisions in the property development process, and to determine whether this concept can be theoretically explained using existing work on risk, risk attitude and heuristics.

The method of enquiry is predominantly in-depth, semi-structured, face-to-face interviews with experienced property developers. At this stage the data has been analysed by a sorting and sifting process to try and find similarities, differences and patterns in the responses. It is the researcher's intention to conduct a significant number of additional interviews which will generate a substantial amount of data requiring a more structured approach to analysis. It is the researcher's intention to use the qualitative research software package NVivo to undertake template analysis of the data. This is a technique for thematically organising and analysing textual data.

The research has found that property developers essentially believe that they adopt a fairly objective approach to risk related decision making however the use of judgement, intuition and experience was frequently referred to. A preliminary analysis of the data suggests that heuristics play a role in the decision making process. In particular the availability heuristic, confirmation trap and cautious shift heuristic are evident. The intention is to expand this research project and interview a wider range of property development executives. It is hoped that this may result in the construction of some theory that may ultimately help to improve the quality of the property development decision making process. (Wilkinson & Read, 2008)

## **2 Literature Review**

Commercial property development encompasses aspects of real estate, construction and project management but is in itself a complex process involving a variety of sub processes. Property development has been defined as 'a process that involves changing or intensifying the use of land to produce buildings for occupation'.

*'Uncertainty lies at the root of property development, which produces a product in anticipation of unknown future demand. Development is a complex stochastic process whose features vary with time and place'.* (Fisher & Robson, 2006)

Various approaches have been devised to model the property development process and these can be used to help identify and analyse property development risk. These include the traditional event sequence approach (Birrell & Bin, 1997), structure and agency theory (Healey & Barratt, 1990), institutional analysis (Ball, 1998), and institutional economics (Keogh & D'Arcy, 1999).

Although the Birrell and Bin model can be criticised for its linear nature it is a useful model for the purpose of this research. The model shows the trader developer's property development process as a four stage process involving fourteen phases. The model can be represented as follows:

1. Evaluation
  - a. Opportunity / site identification
  - b. Market analysis
  - c. Site investigation
  - d. Feasibility study
2. Acquisition
  - a. Professional appointments
  - b. Financing
  - c. Planning application
  - d. Site assembly / purchase
3. Procurement
  - a. Design
  - b. Tender / contracting
  - c. Construction
4. Disposal
  - a. Promotion
  - b. Letting
  - c. Sale

All the events in the process involve a huge amount of decision making. Risk is attached to the taking or not taking of decisions not the events themselves. Risk can be defined as 'the probability of an event and its consequences'. (British Standards Institution, 2002) Risk management traditionally focused on threats however in recent years the potential

for events to have positive consequences has been recognised as part of the process. (Hillson & Murray-Webster, 2007)

The relationship between risk and profitability in property development has long been recognised. 'For development to proceed, an acceptable profit must be believed to exist commensurate with the risks involved. (Millington, 2000)

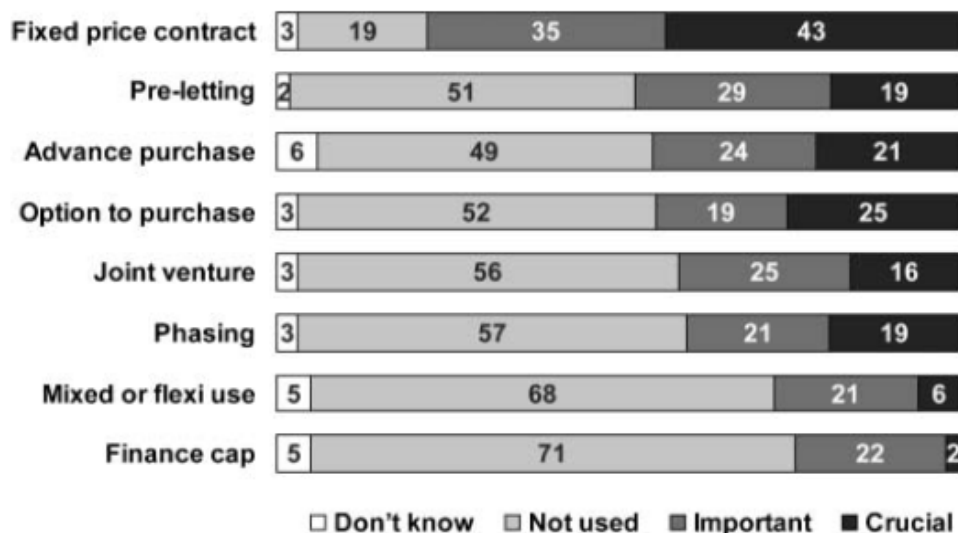
When making individual decisions relating to the various phases of the development process developers should apply the normal principles of risk management as set out below.



(British Standards Institution, 2002)

Fisher and Robson (2006) explored how developers perceive risks and the techniques they use to manage them. Risk analysis and evaluation can involve techniques such as brainstorming, SWOT analysis, probability-impact matrices and sensitivity analysis. A decision is then required as to how to treat or respond to the risk. Risk responses can be categorised as avoidance, reduction, transfer and retention.

Fisher and Robson (2006) identified the key risks facing a developer as rent, letting, investment, building, finance, site condition, site assembly and planning. Developers were asked how important they considered the following risk response methods were to the success of their projects: fixed price contract, pre-letting, advance purchase, option to purchase the site, joint venture, phasing, mixed or flexi use, and finance cap. A 'league table' of these methods was assembled. This showed the fixed price contact as the most widely used form of risk management with the finance cap as the least used.



The Use of Risk Management Tactics (Percentages)

(Fisher & Robson, 2006)

As can be seen from the above table there was considerable variance in the use of risk response methods by developers. The most used technique not being used by 19% of respondents and the least used technique being used considered important or crucial by 24%.

This suggests a less than objective approach to risk management by property developers. Fisher and Robson (2006) concluded that 'While developers do manage risk, decisions are made on the basis of professional and business experience'.

'Surely if risk management is well understood, with clear principles, user-friendly tools, efficient techniques, trained and skilled people, and so on, then its implementation should not be variable. Applying the same standard approach to managing risk should deliver results every time.' (Hillson & Murray-Webster, 2007)

Risk management literature presents two main explanations why risk management is generally not so straightforward: risk attitude and human judgement.

Risk attitude has been defined as a 'chosen response to uncertainty that matters, driven by perception.' (Hillson & Murray-Webster, 2007) Four basic attitudes to risk have been identified: risk averse, risk tolerant, risk neutral and risk seeking. Risk attitudes exist on a spectrum and although individuals or groups may have a default attitude this



may be modified by situational or environmental factors. The risk attitude of the individual or group will have implications for the risk management approach chosen.

Risk averse individuals or groups are characterised as over-reacting to threats and under-reacting to opportunities. Risk tolerant individuals or groups are comfortable with risk. Although this may seem to be an acceptable position it may result in problems impacting from unmanaged threats and opportunities being missed. Risk neutrality is a more mature attitude focused on the longer term and seeks strategies to secure tangible benefits. Risk seekers are attracted by challenges and are likely to underestimate threats and over estimate opportunities. (Hillson & Murray-Webster, 2007)

A significant amount of work has been undertaken into the role of intuitive judgement in decision making. Much of this has centred on the notion of heuristics. A heuristic has been defined as ‘A short cut or rule of thumb that yields a rough and ready answer, which may be correct, but which is often biased. Heuristics underlie many of our intuitive inferences.’ (Johnson-Laird, 2006)

This theme is further developed by Hillson and Murray-Webster (2007) ‘Heuristics can subconsciously and systematically introduce sources of bias when considering a situation where the answer is unknown or unfamiliar, and when the person is required to make a judgement with insufficient information.’

Tversky and Kahneman (1974) were leading pioneers in the field of heuristics. They frequently stated that heuristics sometimes succeed and sometimes fail, and contended that irrationality and bias were the main contributors to errors in human reasoning. However Daniel Kahneman, in his 2002 Nobel Prize Lecture, seemed to suggest that he was more inclined to their positive role referring to Klein’s assertion that ‘Most behaviour is intuitive, skilled, unproblematic and successful’. (Klein, 1998) Kahneman continued ‘In some fraction of cases, a need to correct the intuitive judgements and preferences will be acknowledged, but the intuitive impression will be the anchor for the judgement.’ (Kahneman, 2002a)

Numerous authors have described the characteristics of various heuristics. Four of the most commonly referred to are availability, representativeness, anchoring, and the confirmation trap. (Hillson & Murray-Webster, 2007) (Kahneman, Tversky & Slovic, 1982a) (Gigerenzer & Engels, 2007)

The availability heuristic is a subconscious search for data to compare to the current situation. It depends on the extent to which an item is available to the memory inevitably meaning that recent events are given disproportionate significance. It can be simplified as ‘it happened before so it can happen again’.

The representativeness heuristic tries to pigeonhole situations into a range of stereotypes. Although this can be a useful starting point it over emphasises aspects of the current situation that are similar to the stereotype. This may lead to a less thorough assessment of a situation than that required.

The anchoring and adjustment heuristic starts with an irrational choice of an initial value. This then acts as an anchor around which adjustments are made. The starting

point may come from a suggestion or from experience. Problems with this heuristic are an over attachment to the number first thought of and a reluctance to adjust sufficiently around it.

The confirmation trap is in effect an approach that involves assuming an answer and then looking for supporting or refuting evidence. Subconsciously the decision maker will overly rely on their preformed position and fail to consider all the available data.

In addition to individual heuristics a number of group heuristics have been identified. These include the risky shift where the group becomes more risk seeking than its members, and the cautious shift where the group becomes more risk averse than its members.

Paul Slovic stated that 'there are two fundamental ways in which human beings comprehend risk: the analytical system using formal logic and normative rules, and the experiential system which is intuitive and not always accessible to conscious awareness.' (Slovic *et al.*, 2004)

This view was supported by Gigerenzer et al (1999) who believe that we are all equipped with an innate toolbox of 'fast and frugal heuristics' that can be used in a variety of situations to produce adaptive solutions, however this does not preclude the use of more objective approaches. 'Models of reasoning need not forsake rationality for psychological plausibility, nor accuracy for simplicity. The mind can have it both way.'

Behavioural research is extensively used in a variety of business disciplines including management, marketing and accounting. Although there have been a number of applications of this approach within real estate, it is still an underused in this discipline area. One of the first studies of heuristics in Real Estate research looked at whether anchoring and adjustment caused bias in residential valuations. (Northcraft & Neale, 1987) Subsequent research by Diaz, Hansz and Gallimore has primarily focused on the application of heuristic theory in property valuation and appraisal. (Diaz III, 1990; Gallimore, 1994; Diaz III & Hansz, 1997). There appears to be a lack of research on the application of behavioural theory to decision making in property development. The key decisions in the development process are made by experienced professionals and much of the existing research has concentrated on novice surveyors. 'if one wants to determine if experts use, and or, are biased by heuristics, one will have to move to real world, empirical research. This is difficult as it is time consuming and extremely unappreciated, but necessary to advance knowledge.' (Hardin III, 1999) In the ten years since Hardin wrote this there appears to have been significant strides in the application of behavioural theory in the finance discipline but little progress in real estate. This research represents an early stage in trying to fill this gap.

### **3 Research Methodology**

Developers must decide how much of which risks to retain to enable them to proceed with what they hope will be a profitable scheme. Numerous decisions within the process, including the ultimate decision on whether to proceed with a scheme come down to judgement.

Property development literature appears to simply accept this and there does not appear to be any attempt to explore the concept of judgement. This is where there seems to be a gap in the literature. In the more generic literature on risk, behavioural decision making and heuristics are explored.

This paper reports on the pilot stage of a research project that will ultimately seek to answer the following questions:

- In decision making, what factors determine the balance between formal analysis and the developer's judgement?
- Does judgement consist of more than intuition and gut feel?
- Is 'judgement' determined by attitude?
- Are individuals born with a particular risk attitude or does it develop in response to experience (nature or nurture)?
- Can theories be developed for decision making in property development which draw on research into behavioural decision making and heuristics?

The epistemological stance for this research is constructionist. This stance assumes that there is no objective truth waiting to be discovered. Meaning is constructed, and 'different people may construct meaning in different ways, even in relation to the same phenomenon' (Crotty, 1998)

The extremes of objectivism and subjectivism are rejected as the researcher does not believe there is a 'right' answer to the research question which is out there to be found or that the object makes no contribution to the generation of meaning. The approach to the relationship between theory and the research will therefore be inductive in that it is hoped eventually to produce some theory from the research.

The theoretical perspective for this research is interpretivism. The stream of interpretivism with most relevance to this research is phenomenology. This approach involves studying experience from the subject's perspective. The phenomenological method involves the collection and analysis of data in a way that does not prejudice their subjective character. An important requirement of this approach is to prevent or minimise the imposition of the researcher's presuppositions on the data. This is achieved by what is known as 'bracketing'. Crotty (1998) says that the rubric of phenomenology is a 'quite single minded effort to identify, understand, describe and maintain the subjective experiences of the respondents'. The approach is expressly subjectivist and uncritical. Crotty (1998) refers to what is described as the great phenomenological principle of putting oneself in the place of the other. This represents a significant challenge to the researcher in trying to suppress their professional knowledge of the subject area.

The research seeks to explore how attitude and judgement (perhaps sub-conscious) affect decision making about risk. The most appropriate method of eliciting this information was by interview.

‘The goal of any qualitative research interview is .... to see the research topic from the perspective of the interviewee, and to understand how and why they have come to this particular perspective.’ (King, 2004)

An important issue that must be considered when carrying out qualitative interviews is the relationship between the interviewer and the interviewee. Rather than seeing the interviewee as a research ‘subject’ as one would in a structured quantitative interview, a qualitative interviewer must recognise that there is no such thing as a ‘relationship free’ interview. In this approach the interviewee is considered to be a ‘participant’ in the research who will help ‘shape’ the course of the interview and not just passively respond to the questions. (King, 2004)

It is therefore important that the researcher develops a habit of awareness and critical thinking regarding their engagement with the research and its participants. (King, 2004)

The researcher carried out four in depth interviews with the decision making directors of property development companies. This is a pilot stage of what will subsequently be a more substantial study.

The four interviews conducted have produced a reasonable amount of data. At this stage the data has been analysed by a sorting and sifting process to try and find similarities, differences and patterns in the responses. ‘The aim of this process is to assemble or reconstruct the data in a meaningful or comprehensible fashion.’ (Jorgenson, 1989)

It is the researcher’s intention to conduct a significant number of additional interviews which will generate a substantial amount of data requiring a more structured approach to analysis.

Template analysis will be employed to undertake this task. Template analysis is a technique for thematically organising and analysing textual data. The technique requires the researcher to produce list of codes (a template) to represent the themes identified in the textual data. It is the researcher’s initial intention to use qualitative research software package NVivo to undertake the template analysis. It is important that the researcher uses NVivo as a tool to aid the analysis but does not replace the need for interpretation.

The researcher is also cognisant of the fundamental tension that exists with template analysis which is particularly relevant to this particular research project. That is wanting to be as open as possible with the data and avoid imposing ones preconceptions on it against the need to give some shape and structure to the analysis.

## **4 Findings and Discussion**

### **4.1 Findings**

The initial focus of the interviews was to ascertain the respondents understanding of risk and explore their perceived attitudes towards it. None of the respondents had thought about how they would define risk. But all agreed that it was central to their roles commenting that “ it is top of our agenda” and” everything we do is risk management”.

Although the term risk could not readily be defined, there was more clarity about what constitutes risk management. One developer commented that the purpose of risk management is to make certain that a standardised approach is adopted, ensuring the differences in individual risk attitudes are ironed out, whereas another said that risk management is an attempt to get some science behind the gut feel you inevitably build up.

Differences of opinion were expressed about the level of risks taken by property developers. It is often said that profit is essentially a return for risk-taking and one developer commented that “risk-taking is a necessity.....if there is no risk there is no intrinsic value” meaning it is not worth going for. A contrary view expressed was that the profit earned by property developers is for “grief and hassle” not risk-taking. There was a significant diversion of opinion between one developer commenting that “real entrepreneurs don't tie everything down to the n<sup>th</sup> degree”, to approaching property development from the perspective of identifying all the risks, and then de-risking them. All the respondents profess to be naturally risk averse, one saying “personally, I am risk averse, but you have to take risks in this job or nothing would get done”. Most felt that their attitude to risk was consistent with their company's attitude, with one commenting that “there is a structure in place to ensure nothing off the wall is done”.

The general view was that although their attitude to risk had not changed over time their ability to manage it had. One said “I can judge things quicker than I used to be able to”. Another stated that “your assessment of risk is largely related to your knowledge and your knowledge is based on your experience”.

The developers were asked whether any specific incidents had influenced their attitude to risk. Most commented that their approaches had built up over time. One respondent however said that the systems they use now, had resulted from an unsuccessful development 15 and 16 years ago before the system was in place. “Gut feel enables you to sweep things away, whereas risk management ensures all factors are taken into account, and then weighted, however, one person's 10 might be another person's four.”

The developers were then asked whether Birrell and Bin's model was representative of what they did. The general response was that it was, although not necessarily in that order.

Although they recognized that all the phases of the model are important in ensuring the success of a development the general view was that the first stage is the most important. “the early stages are the most critical, if you don't get things right at the start there will always be problems, and that is when you have the least information.”

Having identified that the early stages are the most critical the use of judgement at this point was explored. One developer said that “experienced developers have the ability to make split-second decisions -- this is where experience comes in”. Another commented that “gut feel, must come before risk analysis, if it was the other way round you would miss things.”

The term judgement was used on a number of occasions. "I am making judgement calls throughout the process". The idea that decisions are a combination of scientific analysis and judgement was a common theme.

The respondents had difficulty in defining the term judgement. One commented that "we all make judgements because we have filters in place". They expanded this by saying that we constantly reference back to what happened in the past "without ever realising that we are filtering information". This same respondent considered that an individual's filters relate to their background and experience. Experience was also considered to be linked to intuition "if you have no experience you don't know what risks you are taking".

Sometimes risks did not seem to be explicitly recognized "there is a basket of risks -- I know what they are and sometimes I will balance one against another."

The general view was that collective decision-making would normally lead to more conservative, risk adverse responses. The feeling was expressed that it was far easier to take risks individually, with the group more likely to identify additional negatives than positives.

One of the respondents considered the scientific approach to risk management being at the opposite end of the pendulum to an intuitive approach and felt that if the pendulum swung too much towards the scientific approach opportunities would be missed and if it swung too much in the opposite direction too much risk would be taken.

#### 4.2 Discussion

Risk management is clearly central to the role of the property developer although the senior decision makers in the process have not explicitly considered what constitutes a risk. There is more certainty about how risk is managed. The view initially expressed was that objective process is followed to manage and mitigate risk although when probed most acknowledged the frequent use of 'gut feel'.

Surprisingly, perhaps, all of the interviewees professed to be naturally risk averse which contrasts with the stereotype of the brash, braces clad individual. The profit/risk relationship referred to by Millington (2000) was generally recognised although one interviewee dismissed this proposition, effectively saying that they make a profit by 'de-risking' projects.

There was a general acceptance by the developers that they could judge things quicker as they became more experienced. This seems to relate to the availability heuristic which suggests that judgement and decision making will be based on individual's successful negotiations of similar tasks in the past.

The Birrell and Bin model was recognised by the developers who in addition to generally feeling that the early stages of the process are the most important in ensuring a successful project also considered that this was the stage at which they are more likely to use judgement. A repeated theme seemed to be that they would start their analysis

from a gut feel, intuitive position and then apply the 'science'. This seems to be a case of the 'confirmation trap' at work where decision makers assume an answer and then look for supporting evidence to substantiate it.

All the interviewees expressed the view that collective decision making is more risk averse than individual decision making. This assertion is explained by the 'cautious shift' heuristic where the group position moves to the risk averse end of the risk spectrum. The underlying view being that risk avoidance is a virtuous position to adopt.

A final finding worthy of discussion is that judgement based decision making and 'science' based decisions are at the opposite ends of a pendulum that effectively mirrors the risk attitude spectrum.

This view is at odds with the proposition expressed by Gigerenzer et al (1999) that the two approaches can effectively be adopted simultaneously.

## **5 Conclusion and Further Research**

Commercial property development is a complex process that involves risk in all of its stages. Developers are required to take numerous decisions in respect of risk to ensure the profitability of their projects. Generic risk management approaches are used to identify and analyse risk. Many of the decisions relate to whether to avoid, reduce, transfer or retain risk. Previous research by Fisher and Robson (2006) looked at the use of a variety of risk response tactics such as pre-letting, options and fixed price contracts. The research revealed that although commercial property developers all use some of these techniques there is an inconsistency of practice in the sector which is partially explained by developers making decisions based on their experience.

Generic risk management literature suggests that this inconsistency can largely be explained by differences in risk attitude and the use of judgment. Risk attitude is often presented as existing on a continuum from risk averse to risk seeking with the chosen risk response partially dependent on where the decision makers sit on this scale.

A large amount of research has been carried out into behavioural decision making. Pre-eminent researchers in this field were Kahneman and Tversky (Tversky & Kahneman, 1973; 1974; Kahneman, Tversky & Slovic, 1982b; Kahneman, 2002b) who have extensively investigated the use of heuristics in decision making.

A variety of heuristics have been identified including availability, representativeness, anchoring and adjustment, and the confirmation trap. Various views exist regarding the quality of decision made using heuristics, a major concern being the introduction of bias.

A limited amount of research has been undertaken applying behavioural theory to the real estate discipline. This has primarily investigated the influence of heuristics in property valuation.

This work represents a preliminary investigation into the use of heuristics in commercial property development decision making. A phenomenological stance has been adopted with data being collected using long semi-structured interviews with experienced property development directors.

The research has found that property developers essentially believe that they adopt a fairly objective approach to risk related decision making however the use of judgement, intuition and experience was frequently referred to. A preliminary analysis of the data suggests that heuristics play a role in the decision making process. In particular the availability heuristic, confirmation trap and cautious shift heuristic are evident.

At this stage the research has not sought to determine whether the apparent use of heuristics affects the quality of decision making either way or causes the introduction of any bias.

The intention is to expand this research project and interview a wider range of property development executives. It is hoped that this may result in the construction of some theory that may ultimately help to improve the quality of the property development decision making process.

## 6 Acknowledgement

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## 7 References

- Ball, M. (1998) 'Institutions in British property research: a review', *Urban studies*, 35 (9), pp. 1501-1517.
- Birrell, G. & Bin, G. S. (1997) 'The UK property development process: its phases and their degree of importance to profitability', *Cutting Edge*.
- British Standards Institution (2002). PD ISO/IEC Guide 73 Risk Management - Vocabulary - Guidelines for use in standards.
- Crotty, M. (1998) *The foundations of social research*. London, Thousand Oaks, New Delhi: Sage Publications.
- Diaz III, J. (1990) 'How appraisers do their work: a test of the appraisal process and the development of a descriptive model', *The Journal of Real Estate Research*, 5 (1), pp. 1-15.
- Diaz III, J. & Hansz, J. (1997) 'How valuers use the value opinion of others', *Journal of Property Valuation and Investment*, 15 (3), pp. 256-260.



- Fisher, P. & Robson, S. (2006) 'The perception and management of risk in UK office property development', *Journal of Property Research*, 23 (2), pp. 135-161.
- Gallimore, P. (1994) 'Aspects of information processing in valuation judgment and choice', *Journal of Property Research*, 11 (2), pp. 97-110.
- Gigerenzer, G. & Engels, C. (2007) *Heuristics and the Law*. Cambridge: MIT Press.
- Hardin III, W. (1999) 'Behavioural research into heuristics and bias as an academic pursuit: lessons from other disciplines and implications for real estate', *Journal of Property Investment and Finance*, 17 (4), pp. 333-352.
- Healey, P. & Barratt, S. (1990) 'Structure and agency in land and property development: some ideas for research', *Urban studies*, 27 (1), pp. 89-104.
- Hillson, D. & Murray-Webster, R. (2007) *Understanding and Managing Risk Attitude*. 1st edn. Aldershot: Gower.
- Johnson-Laird, P. (2006) *How we reason*. 1 edn. Oxford: Oxford University Press.
- Jorgenson, D. L. (1989) *Participant observation: A methodology for human studies*. Newbury Park, CA: Sage Publications.
- Kahneman, D. (2002a) *Maps of bounded rationality: a perspective on intuitive judgment and choice*. [Nobel Prize Lecture].
- Kahneman, D. (2002b) *Maps of bounded rationality: a perspective on intuitive judgment and choice*. [Nobel Prize Lecture].
- Kahneman, D., Tversky, A. & Slovic, P. (1982a) *Judgement under uncertainty: Heuristics and biases*. Cambridge: Cambridge University Press.
- Kahneman, D., Tversky, A. & Slovic, P. (1982b) *Judgment under uncertainty: heuristics and biases*. Cambridge: Cambridge University Press.
- Keogh, G. & D'Arcy, E. (1999) 'Property market efficiency: an insitutional economics perspective', *Urban studies*, 36 (13), pp. 2401-2414.
- King, N. (2004) 'Using interviews in qualitative research', in Cassell, C. & Symon, G. (eds.) *Essential guide to qualitative methods in organisational research*. London: Sage.
- Klein, G. (1998) *Sources of power: How people make decisions*. Cambridge: MIT Press.
- Millington, A. F. (2000) *Property Development*. 1 edn. London: Estates Gazette.

Northcraft, G. & Neale, M. (1987) 'Experts, amateurs, and real estate: an anchoring perspective on property pricing decisions', *Organisational Behaviour and Human Decision Processes*, 39 (1), pp. 84-87.

Slovic, P., Finucane, M. L., Peters, E. & MacGregor, D. G. (2004) 'Risk as analysis and risk as feelings: some thoughts about affect, reason, risk and rationality', *Risk analysis*, 24 (2), pp. 311-322.

Tversky, A. & Kahneman, D. (1973) 'Availability: a heuristic for judging frequency and probability', *Cognitive Psychology*, 5 (2), pp. 207-232.

Tversky, A. & Kahneman, D. (1974) 'Judgment under uncertainty: heuristics and biases', *Science*, 185, pp. 1124-1131.

Wilkinson, S. & Read, R. (2008) *Property Development*. 5th edn. Oxon: Routledge.