



CON5010Z

**Minor Dissertation**

**BEHAVIOURAL ECONOMIES IN DEVELOPMENT  
DECISION MAKING**

by

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**Date: 9 February 2024**

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## **LIST OF ACRONYMS**

CAPM	Capital Asset Pricing Model
EMH	Efficient Market Hypothesis
IPD	Investment Property Databank
MPT	Modern Portfolio Theory
SEU	Subjective Expected Utility
SML	Security Market Line

# CHAPTER 1: BACKGROUND TO THE RESEARCH PROBLEM

## 1.1 BACKGROUND TO THE RESEARCH PROBLEM

This paper will research why businesses fail, the human connection to business failure – especially in the real estate market – and how to plan for success in real estate developments.

Decision theory concentrates on how decisions are made based on observation and historic decisions. Three decision models can be derived from: (i) Descriptive analysis: describing how people decide; (ii) Normative models: suggestive decision models, and (iii) Prescriptive analysis: intricate models with various normative models entrenched as guides for the decision makers.

Szyszkka and Baltussen (1990) outline four separate ideas around the behavioural approach in investment decisions; the same decision methodology is applicable for the problem statement. (Szyszkka, 2003).

1. Mistakes are made when people perceive information and form their ideas (Szyszkka, 2003).
2. The context in which alternatives are presented causing irrationality (Kahneman, 1979).
3. Human emotions, moods and time (Szyszkka, 2003).
4. Social interaction and influence on other people (Szyszkka, 2003).

These four basic ideas around human interference in modelling is prevalent in the investment world where biases influence decisions on a large scale, but arbitrage is used to solve the shortcomings.

Paul Babiak, Ph.D. and Robert D. Hare, Ph.D. (2006) in their book, *Snakes in Suits: When psychopaths go to Work*, analyse a very specific personality disorder that has a potential destructive trait – psychopathy. This trait conflicts with accepted norms and standards and leads to crimes against businesses, institutions, and people (Babiak & Hare, 2006). The above-mentioned points are indications of overconfidence, overreaction and personality – the three limits that are measurable through empirical testing as done by Durand, Newby, Tant and Trepongkaruna (2013), where meta-

analysis is used in the development of theories around behavioural traits affecting investments and considering the Big 5 personality traits measured by DNS and DNPS (Durand et al., 2013)

It is important to understand the heuristics or rule of thumb of what, why and how an individual is driven to make certain decisions, their personality traits, past experiences and biases, how historic data can assist in predicting future market events, the variables thereof, and the use of traditional finance models within these paradigms.

Market failure is not a new phenomenon and has received significant attention in the last decade. Emeritus Professor Edward Altman from New York University's Stern School of Business writes in his 2007 report that "over 50 000 firms portioned the courts to liquidate under the bankruptcy act" (Altman, 1983). Before 1970, firms with an asset base higher than \$25 million almost never failed; after 1970, more than thirty-five non-financial firms with assets over \$125 million failed (Altman, 1983).

Small businesses provide critical support to the U.S. economy. Over 99% of businesses in the U.S are small but create two of every three new jobs. (Williamson, 2000). Locally, SMME's employ between 2 and 3 million full-time employees (Writer, 2018) and at the time of writing the South African workforce was 9,8 million strong (Stats SA, 2020). Thus, SMMEs account for up to 30% of South Africa's workforce.

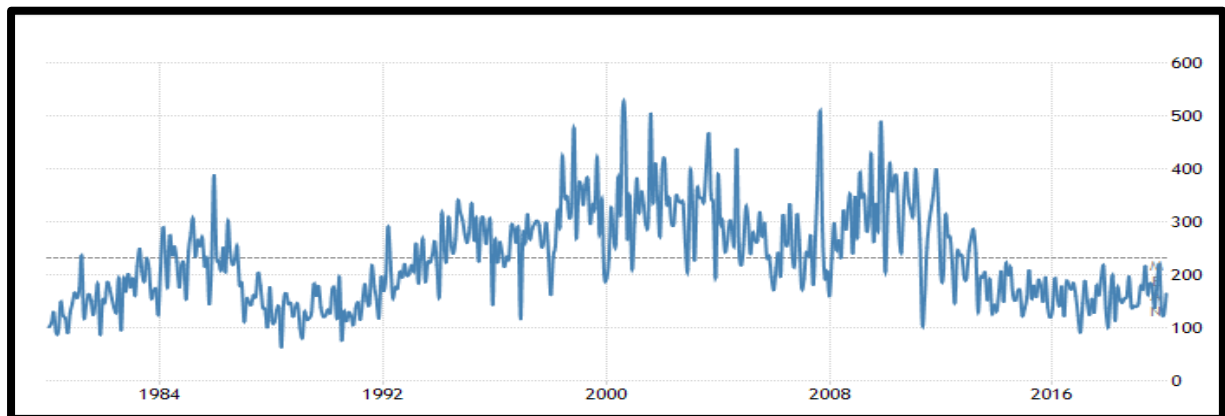
In South Africa alone, a staggering trend exists where liquidations between 2008 and 2019 average around 150 firms annually. The table below reflects the total liquidations per industry.

**Table 1: Liquidations per industry, Statistics SA (2020)**

Industry	January – June 2019			June 2018			May 2019			June 2019		
	C	V	Total	C	V	Total	C	V	Total	C	V	Total
1.Agriculture, hunting, forestry and fishing	3	6	9	0	1	1	1	1	2	0	3	3
2.Mining and quarrying	1	4	5	1	0	1	0	1	1	0	0	0
3.Manufacturing	4	40	44	0	8	8	1	6	7	2	6	8
4.Electricity, gas and water	0	5	5	0	1	1	0	0	0	0	0	0
5.Construction	8	36	44	1	9	10	1	5	6	2	7	9
6.Trade, catering and accommodation	31	208	239	2	26	28	7	46	53	6	28	34
7.Transport, storage, communication	2	15	17	0	5	5	0	4	4	0	2	2
8.Financing, insurance, real estate, business services	42	284	326	4	43	47	12	55	67	8	48	56
9.Community, social, personal services	9	57	66	0	13	13	3	14	17	0	6	6
10.Unclassified	31	229	260	3	37	40	6	53	59	6	39	45
<b>Total number of liquidations</b>	<b>131</b>	<b>884</b>	<b>1 015</b>	<b>11</b>	<b>143</b>	<b>154</b>	<b>31</b>	<b>185</b>	<b>216</b>	<b>24</b>	<b>139</b>	<b>163</b>

\*\*C – Compulsory    \*\*V – Voluntary

Importantly, 326 in the financing, insurance, real estate and business services industry were affected (Stats SA, June 2019). South Africa is especially hard hit with the financing, insurance, real estate and business services seeing the most closures. (Writer, 2019). Trading Economies report that between 1980 and 2019, a mean of 220 bankruptcies were reported (Stats SA, 2020).



*Figure 1: Closures in financing, insurance, real estate and business services (Stats SA, 2019)*

Notable failures that impacted the real estate sector are the deindustrialisation of Detroit, logistical and technological advances in shipping and deindustrialisation of the London Docklands. In South Africa, the Maboneng Precinct in central Johannesburg, Century City, via Monex and the Durban Point development were affected.

It is of course interesting to note that how many of the listed failures have been turned into successful projects, The second developer/investor often turned these into success stories. Daniel Kahneman (2011) refers to two levels of thinking; Level 1, being intuitive thinking, where people react on immediate stimulus, knowing how to react from previous encounters in similar situations, and Level 2, being process-driven thinking, where a specific problem is identified by the brain with steps on how to complete the problem and the outcomes (Kahneman, 2011). Developers rely largely on both levels of thinking, with some more reliant on one level than others. Some developers have developed intricate feasibilities that guide decisions; this takes time to populate and has a chance of being biased to the developer's personality. Others use intuition and matchbox calculations to make initial assessments on projects, guided from years of experience in the field. It could be argued that developers should operate in a chosen or local market, where they understand the immediate market and have the necessary networks assisting in Level 1 thinking. Risk analysis tools have been available for years and these procedures have been used to measure the economic and technical risks integral to many commercial projects.

Loizou and French (2012) cite Risk and Uncertainty as defined by Sloman (1995), as follows: (Loizou & French, 2012)

*Risk* – when an outcome may or may not occur, but its probability of occurring is known.

*Uncertainty* – when an outcome may or may not occur and its probability of occurring is not known (Loizou & French, 2012). Otherwise known as black swan events, these are rare and unpredictable and are usually dealt with retrospectively (Taleb, 2007).

It is in a developer's best interests to make decisions on the likelihood of risks happening rather than uncertainties, as it is near impossible to predict or model (Taleb, 2007). Some of these risk analysis tools are too complex to filter simplistic information and will not yield desired or accurate results, reflecting the importance of local knowledge and Level 1 thinking. More complex metrics require experienced personnel at high costs to produce relevant information (Diekmann, 1992).

Contrary to Level 1 thinking, psychologist Paul Meehl (1954) suggests that mechanical data-driven algorithms could better predict human behaviour than clinical

psychologists, proving that algorithms have a greater predictive capacity than humans. Meehl (1954) and Kahneman (2011) detail a selection of fields which have indicated inferior judgement to algorithms, ranging from the medical field, governments and banking decisions. He goes further to say that algorithms do not need to be complex, referencing Robyn Dawes' research on the strength of simple algorithms in the example of marital stability: With frequency of lovemaking, minus frequency of quarrels, the result should not be negative (Kahneman, 2011).

Lewis (2017) performed a study in Oregon on ulcers and the likelihood of them being malignant or not. This proved that simple algorithms outperformed specialist doctors in the field every time. The fact that the doctors could not agree with themselves is called decision making noise; given the same set of data, they made two different decisions. Algorithms do not do this; the same inputs will result in the same outputs every time, as they are not distracted by human instincts or biases (Lewis, 2017).

## **1.2 INTRODUCTION OF A CONCEPTUAL FRAMEWORK.**

As stated in the background to the research to be conducted, this research will investigate the relationship between business failures in the real estate development sphere and the decisions real estate developers make within certain parameters.

To identify why businesses fail the research made use of the Lussier model (Lussier, 2005) to obtain a framework of potential elements that can be associated with failures or the inverse, successes.

The tool or method to be researched can be stated as the analysis of decision-making theory within the parameters set by the Lussier model evidence which correlations can be drawn to the method.

Decision theory concentrates on how decisions are made based on observation and historic decisions. Three decision models can be derived from: (i) Descriptive analysis: describing how people decide; (ii) Normative models: suggestive decision models, and (iii) Prescriptive analysis: intricate models with various normative models entrenched as guides for the decision makers. This research can then show that the prescriptive nature of decision theory matches the Lussier (2005) model accurately.

The property sector is critical to the South African economy contributing 5.6% to the GDP based on 2016 data. In 2016 the listed property sector in South Africa was worth about R500 billion with about 47% of the value from overseas markets (Mitchell, 2018).

The feasibility study is the only quantifiable information being fed into the Lussier model; thus, the inputs drive the model (Atherton et al., 2008) which can be largely influenced by human biases. The Lussier model, being a quantitative model, simply cannot solve these biases, as they are qualitative of nature and disadvantage the human element of the process. Loizou and French (2012) state that “It would be simplistic to assume that man is rational” (Loizou & French, 2012).

Developers have to account for a wide range of risks and uncertainties in making investment decision. These risks and uncertainties are near impossible to account for in day-to-day analyses, which is largely driven by a developer’s own matrix, usually an Excel spreadsheet with various inputs driven by the developer’s understanding of a specific area in which they choose to invest. This understanding is driven by the information available to the developer, which in many cases is not consistent throughout the development sphere, indicating that not all developers are aware of, or know of the same risks and uncertainties for similar developers (Loizou & French, 2012).

Developers face numerous risks and uncertainties when making decisions relating to the choice of specific developments. The importance of years in industry are reflected in the knowledge and application of historic events and how these impacted specific developers and the market, emphasising that time in the sector becomes critical to decision making.

The liquidation or bankruptcy of some of South Africa’s top development firms are evidence of the risks and uncertainties and includes the likes of Group Five, Murray and Roberts (M&R) and Basil Read (Kew, 2019). Some of these risks may include financial risk, land cost, construction, timing, sales/rents and socioeconomic situations (Loizou & French, 2012). Loizou and French (2012) report that human relationships in real estate developments is a notable and relevant risk to projects; relationships between developers and subcontractors can easily become strained to the detriment of a project (Loizou & French, 2012). Developers juggle numerous “balls” relating to

relationships with partners, legal representatives, professionals and subcontractors. Harmonising these relationships is a strenuous exercise and is not always possible.

Developers are largely attracted to projects by the potential exit value these projects may deliver to the developers' bottom line. In the South African context, the economy has seen significant risks coming to the fore, almost negating any possible value attribution. Failure of State-Owned Enterprises (SOEs) is well documented, affecting ratings decisions for the country. This in turn affects the foreign investment flowing into the country. A notable SOE is ESKOM, where significant failures at Medupi and Kusile power plants and failure of local government infrastructure has caused inflationary budgets and time increases to power delivery (Trollip et al., 2014). Eskom generates close to 95% of South Africa's electricity, and with an aging infrastructure leaving the development market at risk, the provision of this necessity is ever decreasing. Most recently, the previous Chairman of Eskom, Mr Mabuza, announced a R20 billion deficit in ESKOM's trading account and an electricity availability of 70% compounding uncertainty in investment decisions (Zulu, 2019). Administration prices at municipal level are ever increasing, impacting the value proposition of developments. South Africa and most third world countries are facing a surge of civil unrests, the most recent causing havoc in the Johannesburg inner city. These are events that simply cannot be planned for by developers as the extent and timelines of these unrests are unmeasurable. The South African Forum of Civil Engineering Contractors (SAFCEC) has estimated that 183 construction and infrastructure developments have been delayed nationally due to an element of civil unrests and violent disruptions by individuals now being labelled, 'Construction Mafia'. Construction site unrests have now become a regular occurrence and SAFCEC has estimated that damages due to delays of this nature total in excess R 63 billion (Donnelly , 2019)

Most recently, the COVID-19 pandemic has caused significant declines in the value of real estate industries, with the listed sector in South Africa down by almost 30%, the service and retail sectors being the hardest hit. Companies like Redefine and Vukile have postponed dividend pay-outs to manage their balance sheet risks (REIT, 2020). Hedged funds are facing significant exchange rate risks, with the rand dropping 19% against the American Dollar from March 2020 to April 2020 (XE, 2020).

The conceptual framework posed in 1.2 brings together the Lussier model and behavioural theories discussed further in the literature review 2.2. and brings to the fore that a further model.

The research will attempt to better understand the risks associated to projects by looking at how decisions taken by real estate developers affect their developments.

### **1.3 PROBLEM STATEMENT**

The problem to be examined in this study may be stated as:

- Real Estate underpins an important part of the economy, securities and general market activity. Many of these problems are not financially driven, but by decision making. The roles played by humans and their behaviour are important factors in understanding failures and successes in real estate.
- Developers' understanding of real estate fundamentals could be limited by these biases affecting the outcomes of successful development modelling.

### **1.4 PROPOSITION**

Human behaviour has a critical role to play in explaining decision making risk in real estate developments.

### **1.5 RESEARCH QUESTIONS**

The research questions to be addressed may be stated as:

- *What is the main risk variable in running a successful real estate development; and*
- *To what extent does the human element behind the real estate development affect the chances of a real estate project being a success or a failure?*
- *What is the impact of decision making to risk in the South African property development sphere?*

## **1.6 METHODOLOGY**

The following research method will be applied:

- (a) A literature review of material relevant to the study identifying risks associated with human biases in decisions, failures within this sector and remedial actions that can be taken.
- (b) Interviews with property developers to determine the negative or positive effects of the decisions they make on developments.
- (c) Analysis and interpretation of data.
- (d) Conclusions and recommendations.

## **1.7 LIMITATIONS**

The research is subject to the following limitations:

- (a) The study was limited to developers in certain regions: Gauteng and the Western Cape.
- (b) Data from the residential and commercial sectors only was analysed.
- (c) Gaining insight into the functioning of commercial real estate development companies that have failed was challenging.
- (d) It was a challenge to get people to answer a questionnaire if they were involved in a project that had failed.
- (e) Many companies are liquidated after the completion of a development, skewing data.
- (f) If a quantitative model was built, data needed to be extracted from a model with a limited understanding and background of development.

## CHAPTER 2: CRITICAL LITERATURE REVIEW

### 2.1 INTRODUCTION

The availability of literature on the integration of decision-making theory and successes or failures in the real estate development industry is limited. Much has been written from a quantitative and neo-classical perspective on these two concepts in isolation, but the relationship that exists of how real estate developers make decisions has been largely unexploited (Coiacetto, 2001).

A simplistic reason for this research deficit could be that developers themselves are not aware of the intricate roles they play in social, technological, economic, environmental and political urban environments. Coiacetto (2001) indicates that six types of developer behaviours coincide in two very small Australian towns, some thought through and analytical, but most anecdotal and almost by chance (Coiacetto, 2001). Coiacetto goes on to indicate the over reliance of neoclassical economics in real estate decision making (Mirowski, 1992), accusing economists of 'physics envy'.

Schler (1966) stated that it is not possible "...to fully understand nor guide the nature of urban growth in a pluralistic society without taking the perspectives of the variety of actors into account who perceive and act in various ways upon the opportunities and influences of land development..." (Coiacetto, 2001).

This research report aims to open a debate around the way in which real estate developers make decisions and how these decisions lead to successful or failed outcomes of developments. The purpose of this literature review is to analyse the academic literature on decision making theory and business success or failure critically, focusing on how decisions are made and how they impact real estate developments in a South African context.

This will be done to determine if all developers, regardless of their choice of real estate industry, face similar challenges in theory or if these challenges are sector-specific due to scale of development or other probable causes. This is of key interest to the real estate body of knowledge, as understanding these challenges will provide real estate developers with a greater understanding of where possible opportunities lie in

making certain decisions and how these decisions affect the probability of a successful real estate development.

The framework of this literature review looks at a developing nation context – South Africa – by analysing research of developed nations, assuming the development process that is followed remains static. This has been described as “... a systematic and practical analysis of the phases of the real estate development process, including conceptualization, site acquisition, planning and design, the construction process, financing, and leasing and marketing followed by investment management” (Peca, 2012).

The review of the real estate development process is to draw on similar global challenges faced by real estate developers affecting decisions made in successful or failed real estate developments, which could be similar to those faced by South African developers.

Decision making theory that started to build up in the 1970s to 2000s needs to be analysed to see if it still holds true to the issues real estate developers have faced over time until now, despite social, technological, economic, environmental and political advancements. The question to be answered here is whether all real estate developers should expect to always encounter similar challenges when assessing a real estate development or if there are methods to improve these challenges to ensure a successful development.

Academic journal articles, books and industry reports were analysed. Journal articles and books gave academic perspective on concepts and a deeper understanding thereof. Industry reports were used to gain a current view on the risks developers face relating to decisions made, especially in a South African context. These sources formed an integral part of the literature review; they not only provided an enhanced view of the author’s understanding but provided significant background to establish a thought process by the author to draw direct and indirect relationships of decision-making theory and the success factors in real estate development.

## 2.2 DECISION MAKING THEORY

In the last five decades, asset management and the real estate investment decision making processes have seen significant development. Decision theory as a whole is concerned with the analysis of empirical findings. A variety of subjects is used to derive decision theory, such as mathematics, philosophy, economics and social sciences, including psychology and sociology (Ricciardi & Simon, 2000).

Decision analysis is a schematic procedure for transforming unclear decisions into clear decisions by a sequence of clear steps. Human nature is the reason many people do not analyse decisions consistently and consequently (Bispinck, 2012).

Decision theory concentrates on how decisions are made based on observation and historic decisions. Three decision models can be derived from the theory presented:

1. Descriptive analysis or positive decision theory: Models which claim to describe how we decide, assuming that consistent rules are applied in enforcing the behaviours of decision makers (Slovic et al., 1990).

Descriptive models do not cater to help developers in making “rational decisions or act rationally”. They do not indicate how world views can change to avoid biases and inconsistencies (Atherton et al., 2008).

2. Normative models: Models which pose how we should decide: Identifying optimal decisions where a decision maker is fully rational and can calculate the optimal answer with pinpoint accuracy (Slovic et al., 1990).

Normative models are usually based on extensive mathematical and statistical principles that define “rational behaviour”. If a developer trusts information on hand, (a) and (b), they should do (x) and (y) (Atherton et al., 2008).

3. Prescriptive analysis: Normative models are used to guide the decision maker within limiting confines (how people should make decisions) – also named decision analysis – and is aimed at finding tools, methodologies and software to assist decision makers in making better choices (Slovic et al., 1990).

Prescriptive models aim to assist developers as decision makers towards consistent rational choices, understanding their limitations on a mental/world view level.

Prescriptive modelling is a blend of descriptive models indicating how decisions are made within their understanding and normative models and indicating the correct way to make decisions. The aim is to assist the developer in making correct decisions by eliminating biases and avoiding the assumption that rational thinking is applied. It is largely an interactive process that aims to guide and build decision makers' world view to better their understanding and judgment. The model is adaptable and cyclical, leading to the developers' belief system being constantly updated till no further insights can be found, leading to a decision model that decision makers can trust (Atherton et al., 2008).

## **2.2.1 The History of Decision-Making Theory**

### *2.2.1.1 Traditional (neoclassical) approach*

An efficient capital market is a market that is efficient in processing information – or in layman's terms, a market that adjusts quickly and correctly to new information available to the capital market. Information in the market reflects a "correct evaluation of the prices of securities at any time" (Fama, 1970). Adam Szyszka indicates in his paper that "from the efficient market hypothesis to behavioural finance, the efficient market hypothesis (EMH) has been the key proposition of traditional (neoclassical) finance for almost forty years" (Szyszka, 2003).

The cornerstone of traditional finance is hedged against the actor's rational decision making (*homo economicus*) and the arbitrage of self-correction (perfect market) (Szyszka, 2003).

Szyszka (2003) follows the development of EMH to modern portfolio theory (MPT) to behavioural finance. In the 1980s and 1990s new empirical proof of security prices came to the fore that threw evidence supporting EMH on its head. The thought school of traditional finance called these observations variances, as they could not be explained in the neoclassical framework (Szyszka, 2003).

The EMH is made up of three progressively stronger forms: Weak, Semi-strong and Strong forms. The weak form indicates that past prices, volume and other market statistics provide no information that can be used to predict the future. The semi-strong form indicates that prices reflect all publicly available information and expectations about

the future, and the strong form indicates that prices reflect all information whether publicly available or not (Malkiel, 2005).

Three assumptions are made, each more delicate than the other. Firstly, investors are assumed to act rationally, thus valuing assets rationally. As these investors gather information about the capital asset market, they will react instantly to this new information, even quicker than the market, thus outreaching the market. This might be possible on a very weak average, but the chances of outpricing the market every single time are near impossible. Secondly, the markets can remain efficient although not all investors are rational, making mistakes in their perceptions of information and how they react to it. It can be assumed that these irrational investors trade haphazardly and the chances are that their decisions will not be similar and will nullify each other, making the market efficient. Thirdly, if irrationality becomes so common and they act in a concise manner that they outprice the market consistently, there will remain rational traders that will notice this arbitrage in the market and bring the market back into equilibrium by selling off the overpriced assets in one market and purchasing the same or similar assets in other cheaper markets (Szyszka, 2003).

The theory of subjective expected utility (SEU theory) underpinning neoclassical economics assumes that choices are made: (1) from a certain, rooted set of options; (2) with subjectively known outcomes of each option; and (3) in a manner to enhance the likely value of a utility function (Simon, 1990).

In contrast to Szyszka (2003), Burton G. Malkiel, in the paper, "Reflection on the Efficient Market Hypothesis: 30 Years Later" (2005), and being an advocate for EMH, questions these assumptions. There are numerous events where market prices did not indicate the information available; for example, 3Com in Palm and PaineWebber (Malkiel, 2005) and most recently the Steinhoff saga. (Africa, 2018)

He goes further and in analysing 30 years' empirical data concludes that markets or indexed funds are mostly efficient and that professional investors do not beat the market due to the cost of managing these funds (Malkiel, 2005).

Two direct quotes by the world's most renowned investors ring true according to Malkiel (2005); however, no behavioural analysis has been conducted in his studies, but these indexed funds and their respective asset managers' behaviours simply cannot be overlooked.

Benjamin Graham quoted in the Financial Analysts Journal:

I am no longer an advocate of elaborate techniques of security analysis in order to find superior value opportunities. This was a rewarding activity about 40 years ago, when Graham and Dodd were first published; but the situation has changed . . . [Today] I doubt whether such extensive efforts will generate sufficiently superior selections to justify their cost . . . I'm on the side of the 'efficient market' school of thought (Graham, 1976).

Warren Buffet one of the wealthiest men in the world, who has consistently beaten the market over a prolonged period, sums up Malkiel's paper.

Most investors, both institutional and individual, will find that the best way to own common stocks (shares') is through an index fund that charges minimal fees. Those following this path are sure to beat the net results (after fees and expenses) of the great majority of investment professionals (Report, 1996).

### *2.2.1.2 Modern portfolio theory*

The Efficient Market Hypothesis is very closely related to the foundations of neoclassical financial economics; namely, the Capital Asset Pricing Model (CAPM), developed by Sharpe (1964), Lintner (1965) and Mossin (1966), and the Modern Portfolio Theory developed by Harry M. Markowitz (Szyszka, 2003).

The CAPM infers that the connection between the likely return and the amount of systematic risk (Beta  $\beta$ ) is true. Inconclusive testing of the CAPM leads to the conclusion that there are other factors influencing the market efficiency that are not related to  $\beta$ , leading to the dual hypothesis problem, where, if testing does not prove the CAPM, it cannot be concluded that the model is wrong nor that there is inefficiency in the market (Szyszka, 2003). The theory introduces the Security Market Line (SML) which indicates how the market will price a particular asset in relation to the return and systematic risk ( $\beta$ ) (Bispinck, 2012).

Bispinck (2012) notes that an important issue for CAPM is the availability of data surrounding time and quality. Developed markets such as the US and UK offer good data points, but lesser markets may offer data where the quality might be questionable, making it tough to assess the CAPM reliably (Bispinck, 2012).

Bruno De Finetti (1940) introduced mean variation analysis with correlated risks in 1940 beating Markowitz by 12 years. Although he solved the calculation of mean–variance efficient frontiers for a particular data set assuming uncorrelated risks, he might have understood the risks but did not provide an algorithm for the particular assumption (Markowitz, 2006). In 1952, Markowitz and Roy introduced mean variation analysis with correlated risks into collected works, introducing the idea that having the right proportion of a diversified portfolio can increase the marginal utility that investors can earn from this statistical diversification. This happens in two ways: “First is the output can maximize return in respect to a given level of risk and second, the output can minimize the risk of any given level of return” (Bispinck, 2012).

Numerous well-known problems exist within the realm of asset allocation models, regardless of whether real estate is included in the allocation of the portfolio. Matysiak (1993) argues two distinct errors in the MPT model. Firstly, the theory optimises overweight assets, high returns, negative correlations and minimal variances, underweighting these by reverse characteristics; this causes returns to be overestimated as the size of the asset allocation increases, with the inverse being true toward risk. Secondly, and of critical importance, the miscalculation will most certainly lead to the reduction of better portfolio mixes that are available (French, 2001). The Markowitz model calculates the expected risk and return for each asset in a portfolio over time, then correlates these to each other – positively and negatively – and finally finds a solution for the optimisation problem by applying it through a statistical model known as the efficient frontier, where an optimal set of combinations within the portfolio can be chosen by an investor (Bispinck, 2012). The Markowitz model’s largest criticism is that it largely uses historical data and does not allow for financial instruments such as hedging, financial lending and short sales, making it difficult to assess complicated portfolios in the future and placing reliance on the “gut feel” of asset managers (Bispinck, 2012).

### *2.2.1.3 Behavioural approach*

In the 1970s, social scientists largely recognised two theories around human nature. Firstly, in general, people act rationally, and their thinking is sound. Secondly, emotions like fear, anger and affection dictate why people would move away from acting rationally (Kahneman, 2011). In his book *Thinking, Fast and Slow*, Daniel

Kahneman (2011) reviews various historic views of thinking. His work with the late Amos Tversky is revealed and, surprisingly, people generally act along certain heuristics and biases not associated with psychology, their main goal being to develop a theory of how people make decisions under uncertainty and how these heuristics and biases become sources of intuitive judgements and choices (Kahneman, 2011).

Behavioural finance looks at investors' behaviour and the decision-making process to better understand the peculiar pricing of assets and supplementary ideas generated from empirical evidence within capital markets. Behavioural finance assumes that these investors behave irrationally in their reactions to new information and that this irrationality consists of psychological biases and heuristics of the mind (Szyszka, 2003).

Many years later, Daniel Kahneman, Oliver Sibony and Cass Sunstein (2021) deduced that these interpersonal biases and heuristics can be diluted to noise (Kahneman et al., 2021). Noise is the unwanted variability in professional judgements. An example is the diagnoses by doctors. If two doctors give two wildly different diagnoses, at least one could be wrong. The desired outcome is that both doctors should come to the correct answer or diagnosis when given the same set of data with which to work. When you do not get the same answer to something where that is required, noise is created (Kahneman et al., 2021).

Adam Szyszka (2007) and Guido Baltussen (2009) outline two separate ideas around the behavioural approach in which biases affect decision making.

### *Investor Psychology*

- (a) Mistakes are made when people perceive information and form their ideas. There is also extensive evidence that people become overconfident in their judgements (Szyszka, 2007). Once investors have decided, they tend to stick to their decisions, regardless of the outcomes. If a wrong or negative decision has been made, the developer will probably try to continue in the trend of the decision due to the associated pride; thus, many failures happen due to an idea that is defended and not necessarily based on fact or market trends (Szyszka, 2007).
- (b) *The context in which alternatives are presented causes irrationality.* Investors can have the propensity to solve similar problems in different ways. Kahneman and Tversky (1979) argue that investors' sensitivity to losses is greater than the

sensitivity to gains; thus, a loss will be more painful than the satisfaction of a gain. For this reason, it is easier for investors to sell a gaining asset against selling a loss-making asset (Kahneman & Tversky, 1979).

- (c) *Human emotions, moods and time have an impact.* Investors in good moods have a more positive outlook than investors in bad moods. The investors in good moods may be able to accept higher risk due to positivity, whereas investors in bad moods will scrutinise options in much more depth. It has been proven that people feel happier on sunny days than on rainy days (Szyszka, 2007). Shefrin (2000) notes two kinds of emotions – greed and fear – which directly relate to investment decisions. Greed is a winning mentality and investors will push for more, where fear will apply rationality to a decision, causing analysis paralysis (Shefrin, 2000). This approach is backed up by Babiak and Hare (2006) who indicate how people with strong personality traits tend to feed on fear through pushing a greedy agenda (Babiak & Hare, 2006).

Time is another factor to be considered when preferences differ from the “homo economicus” or rational assessments. People make thoughtless decisions when the outcomes are immediate and wise decisions when outcomes are in the future (Baltussen, 2009).

- (d) *Social interaction and influence on other people.* People behave like sheep and investors with influence and strong behavioural traits can easily influence others and their decision-making capabilities (Szyszka, 2007). Herding is not just doom and gloom, as rational investors may follow the same trajectory if they can calculate the positive effects of riding this wave. This is widely practised in real estate. Many developers fall into the trap of developing the “next best thing”, while discounting where the design methodology comes from.

Babiak and Hare (2006), in their book, *Snakes in Suits: When Psychopaths go to Work*, analyse a very specific personality disorder that has potential destructive traits; namely, psychopathy. This trait conflicts with accepted norms and standards and leads to crimes against businesses, institutions and people (Babiak & Hare, 2006).

The above-mentioned points are indications of overconfidence, overreaction and personality; the three limits are measurable through empirical testing as done by

Durand, Newby, Tant and Trepongkaruna (2013) where meta-analysis is used in the development of theories around behavioural traits affecting investments, taking into account the Big 5 personality traits measured by DNS and DNPS (Durand et al., 2013).

### *Limits to arbitrage*

Behaviour of investors that deviates from the “homo-economicus” or rational assessments can cause prices to vary from their underpinning values. Some investors might not be rational in their decisions and other more rational investors will correct the mispricing. Mispricing creates an attractive market for rational traders and is an opportunity for arbitrage, which should realign the market. However, due to the cost of these corrections, mispricing will always exist (Baltussen, 2009).

#### *2.2.1.4 Heuristics and biases*

“Bounded rationality” is one of the underpinning notions of behavioural economics and is used to select logical options that consider the mental restrictions (limitations of understanding and computation) a decision-maker has, deeply rooted in the way the actual decision-making process impacts the eventual decision that is made (Simon, 1990).

Theories of bounded rationality is the source of how we arrive at heuristics. Relaxing some of the assumptions of the subjective, expected utility theory one can start looking at what alternatives are posed. By generating alternatives, the search for possible outcomes and understanding their consequences become “real” and give a level of familiarity. This is best described as the search for heuristics – posing acceptable alternatives or alternatives that offer better outcomes than the ones historically available (Simon, 1990).

Heuristics or common-sense rules (for example, rules of thumb, instincts and intuition) are cognitive responses to constant decision making under uncertainty. Heuristics allow humans to respond automatically, without much thought. As illustrated in Figure 2, this is an immediate response system that we as humans acquire over time.

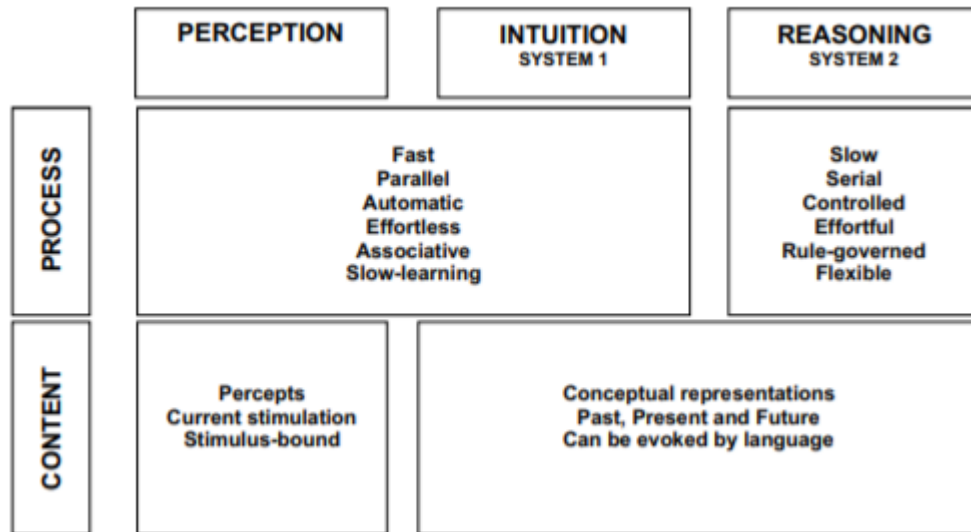


Figure 2: The three heuristics (Kahneman, 2002)

## The Three Heuristics

### Availability Heuristic

Kahneman and Tversky (1982) define this heuristic as a mental shortcut for making frequent or probability judgments based on “the ease with which instances or occurrences can be brought to mind”.

The availability heuristic occurs because we can call certain memories to mind more easily than others. The example Kahneman and Tversky use involves asking whether more words in the English language start with the letter K, or more words have K as the third letter; most responses were with the former. The latter response is more accurate, but due to the difficulty in thinking of words with K as the third letter, respondents will revert to the easier option because memory brings words starting with K to mind much quicker (Tversky & Kahneman, 1982).

### Representativeness Heuristic

We rely on this heuristic when making probability judgments. We tend to classify events into categories, which, as illustrated by Kahneman and Tversky (1982), can result in our use of this heuristic.

When we use the representativeness heuristic, we make probability judgments about the likelihood that an object or event arises from some category based on the extent to which the object or the event in question is similar to the prototypical example of that category. For example, if someone we meet in one of our university lectures looks and acts like a stereotypical medical student, we may judge the probability that they are studying medicine as highly likely, even without any hard evidence to support that assumption.

The representativeness heuristic is associated with prototype theory. This prominent theory in cognitive science provides an explanation for object and identity recognition. It suggests that we categorise different items and identities in our memories. For example, we may have a category for chairs, a category for fish and a category for books.

Prototype theory proposes that we develop original examples for these categories by averaging every example of a given category we encounter. As such, our prototype of a chair should be the most average example of a chair possible, based on our experience with that object. This aids in object recognition because we compare every object we encounter against the prototypes stored in our memory for identification. The more the object resembles the prototype, the more confident we are that it belongs in that category.

Prototype theory may give rise to the representativeness heuristic, as this heuristic occurs in situations where a certain object or event is viewed as similar to the prototype stored in our memory. This leads us to classify the object or event into the category represented by that prototype. Reverting to the previous example, if your peer closely resembles your prototypical example of a medical student, you may place them into that category, based on the prototype theory of object and identity recognition. This, however, causes you to commit the representativeness heuristic, which could be a poor decision and/or cause inaccurate judgement and predictions (Tversky & Kahneman, 1982).

## Anchoring and Adjustment Heuristic

This heuristic describes how, when estimating a certain value, we tend to give an initial value, then adjust it by increasing or decreasing our original estimation. However, we often get stuck on that original value, referred to as anchoring, resulting in the making of insufficient adjustments. Thus, our adjusted value is biased in favour of the initial value on which we have anchored (Tversky & Kahneman, 1982). A 2006 study by Epley and Gilovich, "*The Anchoring and Adjustment Heuristic: Why the Adjustments are Insufficient*", investigated the causes of this heuristic. They surmised that anchoring often occurs because the information we anchor on is more accessible than other information because we have just encountered it. Furthermore, they provided empirical evidence to demonstrate that adjustments tend to be insufficient because adjustments require significant mental effort, which humans are not always motivated to dedicate to the task. It was also found that providing incentives for accuracy led participants to make more sufficient adjustments. Thus, this heuristic generally occurs when there is no real incentive to provide an accurate response (Epley & Gilovich, 2006).

## Bias

Biases in how developers think can be significant obstacles in their world views and decision-making processes. Biases distort and disrupt objective perceptions of a problem by introducing influences into the decision-making process that have nothing to do with the decision itself. Developers are usually unaware of these biases that could affect their judgement (Kahneman, 2011).

The most common cognitive biases are:

1. Confirmation bias: This bias occurs when decision makers seek out evidence that confirms their previously held beliefs, while discounting or diminishing the impact of evidence in support of differing conclusions (Kahneman, 2011).
2. Anchoring: This is the overreliance on an initial single piece of information or experience to make subsequent judgments. Once an anchor is set, other judgments are made by adjusting away from that anchor, which can limit one's ability to accurately interpret new, potentially relevant information (Kahneman, 2011).

3. Halo effect: This is an observer's overall impression of a person, company, brand or product, and it influences the observer's feelings and thoughts about that entity's overall character or properties. It is the perception, for example, that if someone does well in a certain area, then they will automatically perform well at something else, regardless of whether those tasks are related (Kahneman, 2011).
4. Overconfidence bias: This bias occurs when a person overestimates the reliability of their judgments. This can include the certainty one feels in one's own ability, performance, level of control or chance of success (Kahneman, 2011).

### **2.3 THINKING, FAST AND SLOW (Kahneman, 2011)**

In his bestselling book, *Thinking, Fast and Slow*, Kahneman defines two systems that have been widely analysed by psychologists.

In the famous picture of the angry woman, where a person quickly understands that the woman is angry and effortlessly assesses that a significant tongue lashing is bound to happen. This produces System 1 thinking. Thereafter a mathematical problem is presented,  $17 \times 24$ , to the same audience as in the picture, where a very deliberate, effortful and orderly process is followed to come to a result: System 2 thinking is used (Kahneman, 2011).

These examples are both supporting structures for the Two Systems theory.

System 1 is an immediate reaction to what is seen, an automatic and quick response, with limited or no effort and the respondent has no sense of intended control.

System 2 focuses attention to the strenuous mental activities that require it, inclusive of hard calculations (Kahneman, 2011).

Prescriptive modelling is a clear mix of what Daniel Kahneman (2011) tried to achieve. System 2 thinking, which is highly normative in nature and based on models, metrics and tools, provides a base for the world view of decision makers. However, the more these models are utilised, the more decision makers' cognitive ability grows and starts to identify triggers that ultimately lead to System 1 thinking.

Contrary to System 1 thinking, psychologist Paul Meehl (1954) argues that mechanical, data-driven algorithms could better predict human behaviour than clinical psychologists, proving that algorithms have a greater predictive capacity than humans (Meehl, 1954). He uses the example of experienced radiologists who evaluate chest x-rays while contradicting themselves 20% of the time. Well-designed formulas have a low tolerance for such problems, they will always give the same result with the same input (Kahneman, 2011). The prevalence of technology under the fourth industrial revolution will strengthen this argument considerably.

In the development context, a “matchbox” calculation that many developers use is a rich form of System 2 thinking. An algorithm that is planned as a method of calculation by a developer on the back of a matchbox is just as good as a weighted formula and will likely be better than expert judgement (Kahneman, 2011). This is supplemented by Level 1 thinking, such as the developers’ knowledge of the local market, which in many cases is the first step or a component of the first step of the development process (Peca, 2012).

Gerd Gigerenzer (2014) gives a scathing review of probability theory, which in its simplest form can be explained as a branch of complex mathematical and statistical models used in the analysis of random phenomena. The model is largely based on available information and shows how it can be constantly tweaked to yield better results, the problem being that it largely uses historic data which is biased by the information available. He believes this leads to defensive decision making, where decision makers choose to take the easy way out and look for reasons to justify decisions in hindsight or hire expensive consultancy firms to provide opinions to justify decisions (Gigerenzer, 2014).

Gigerenzer (2014) uses two examples to indicate the failure of the probability model in uncertainty:

(1) The Turkey Illusion: The turkey is born and meets the human for the first time. By nature the turkey is afraid of the human, as the human will kill the turkey, but the turkey is fed, and this behaviour continues over time. The turkey becomes accustomed to the hand that feeds it until the day the black swan event occurs. On the thirtieth day it is Thanksgiving; the relationship changes and the turkey meets its maker. By use of the probability model, the eventuality could never have been predicted, but simple

heuristics would give the straight-line answer, which would have been available from day one.

(2) Every end of year the largest banks attempt to predict the exchange rates for the next year. In the 10 years of analysis provided, the asset managers only got it right once, indicating the historic fallibility of the model. These models are in their worst prediction shape in black swan events, such as the 2008 global financial crises and more recently in the 2020 COVID-19 pandemic (Gigerenzer, 2014).

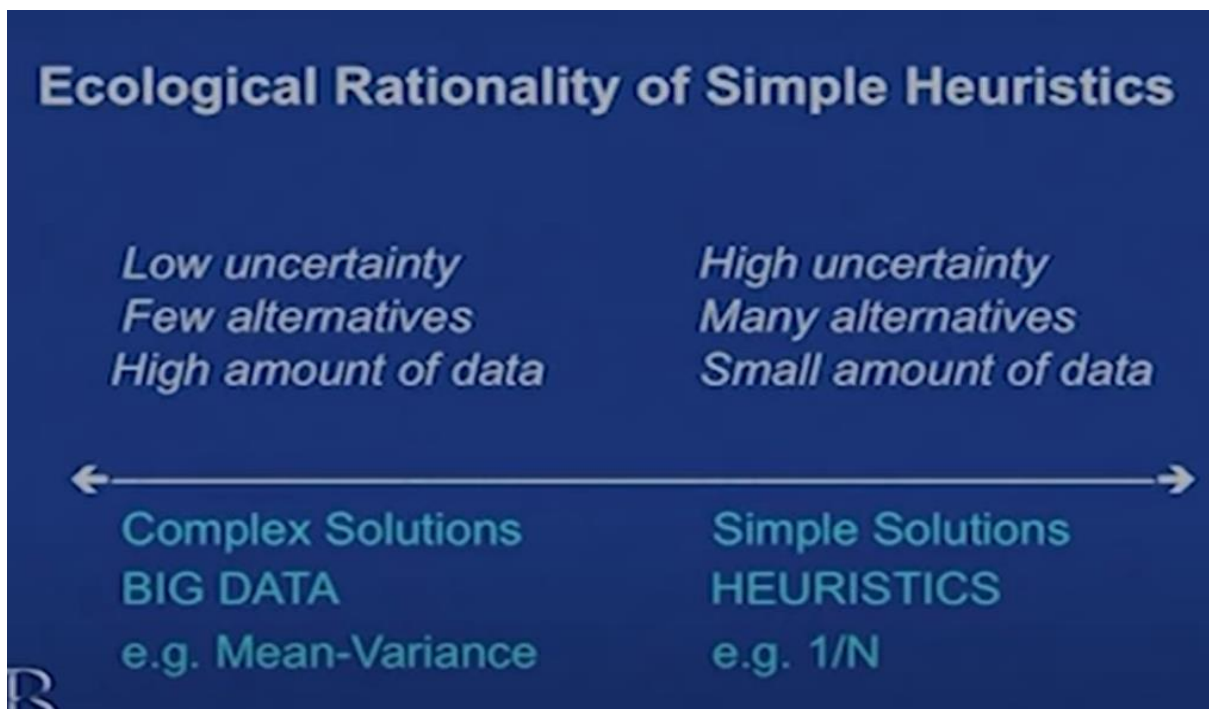


Figure 3: Ecological rationality of simple heuristics (Gigerenzer, 2014)

In the above table, Gigerenzer (2014) indicates the straight-line simplicity of how he believes data should be used under uncertainty.

He gives four indications of risk and uncertainty, primarily since risk does not equal uncertainty:

- The best decision under risk is not the best decision under uncertainty.
- Heuristics are indispensable; they are not the products of a flawed mental system.
- Simplicity – complex problems do not require complex solutions.
- Less is more – More information and time on computation is not always better (Gigerenzer, 2014).

## **2.4 REAL ESTATE DECISION MAKING AND THE DECISION MAKER (DEVELOPER)**

The real estate development process is an enticing web of complex forces pushing and pulling in different directions. Risk is high, with significant cash injections that are tied up for long periods of time within the development process and the result not being divisible or movable. The condition of the economic environment, both on macro and micro levels, plays a direct role on the perceived value of a development and the delivery timing (Cadman & Topping, 1995).

Development in the real estate sector is based on knowingly taking risks under various levels of uncertainty. This process normally starts with an opportunity that is presented, where a property can be constructed for people to live, work or play. This opportunity is usually borne in the mind of a developer. From this moment, a developer or development company needs to manage all risks, from taking ownership of land, development contributions, permits, development, design and construction, tenancing, management to the eventual sale of a development (Gehner, 2008).

In the real estate development process a decision model is governed under normative decision-making analysis. Thus, if developers trust the data and information, they will choose the best outcome to their understanding (Atherton et al., 2008). Unfortunately, minimal distinction is made between the categories of information and the availability thereof to the market and the decision makers; it is assumed that the market players are fully rational and make use of all information available (Gallimore et al., 2000). In the study conducted by Gallimore et al. (2000), the conclusion on information sources and the use thereof provides an interesting view, comparing the UK property market of 2000 to a “coffee house” business, purely based on the fact the investors received their information from personal contacts and information gathered from data sources outside of the public domain, rather than public sources that are available to all. Minimal use is made of the Investment Property Databank (IPD), which is the leading information provider for the property profession. The opinion is that it does not yield to an edge over competitors (Gallimore et al., 2000). Information is expensive, unbalanced and it is difficult to understand the full value it provides at the time it is acquired. The result is that information is perfectly imperfect and that developers enter the market with limited market knowledge (Arvanitidis, 2006).

This provides critical insight to the move away from the institutional view of an efficient market and possibly directing the real estate developer into a more imperfect scenario – the Entrepreneur/developer view – which could possibly be explained by the mere fact that a developer uses information available to them, discards what they perceive as useful and moves on. This is a weak form efficient market hypothesis.

Ellen Gehner (2008) writes that there are four indicators that account for the nature of real estate development.

- Firstly, A developer is responsible for various activities in making a development decision, defined by location, use of parameters, the unfolding of the development process, finance, sales and/or leasing. Most, if not all these functions are managed by a specialised individual or team reporting to a developer.
- Secondly, each property has its own character, defined by the uniqueness of its location, the legalities pertaining to the location, rights allocation, and eventually what sector the building is developed for.
- Thirdly, the long nature of the development process may cause a property to be developed in a counter-cyclical market. Thus, the original envisaged development could have diminished value should the market requirements change.
- Lastly, a developer takes the risk of holding or selling a property. This largely ties in with the third point, but with regard to the longevity of developments, developers are never fully sure about the investment return of a property (Gehner, 2008).

#### **2.4.1 The Decision Maker (Developer)**

A developer can be described as the person or institution that can understand, clarify and convert market and end user requirements to a tangible product within the confines of the built environment (Coiacetto, 2001). The main driver for a developer is the return a perceived risk gives to a project, measured by profit, income or financial metrics, such as rates of return (Gehner, 2008).

The developer is not required to have the specialist skills, like town planners, architects and engineers, but is required to make decisions around the risks and uncertainties that lie ahead, direct the specialised skills of the teams toward the end goal and frame

a product to the market so that it can be well perceived (Cadman & Topping, 1995); (Gehner, 2008).

It is important to understand the framework a developer acts within to ultimately understand how a developer translates their world view into their cognitive behaviours.

This section of the paper examines the behaviour of developers by aligning the three distinct decision-making models to the perception of risk and uncertainty against the development process.

#### **2.4.2 Risk and Uncertainty**

As indicated by Gerd Gigerenzer (2014), risk does not equal uncertainty (Gigerenzer, 2014).

Loizou and French (2012) cite Risk and Uncertainty – as defined by Sloman (1995) – as follows:

*Risk* – when an outcome may or may not occur, but its probability of occurring is known. Gehner (2008) contends that there is no universal definition for risk and proposes the following within the context of real estate:

A risk is the probable negative impact on the expected value of a real estate development project caused by uncertainty about an event or events that may occur and/or the reduced ability to influence the events, after an actor has irrevocably allocated his scarce resources to that project (Gehner, 2008).

*Uncertainty* – when an outcome may or may not occur and its probability of occurring is not known (Loizou & French, 2012). Otherwise known as black swan events, these are rare and unpredictable and are usually dealt with retrospectively (Taleb, 2007).

#### **2.4.3 Categories of Risk**

Risks can lead to major issues in the real estate development process, for example, when land cannot be acquired, town planning considerations, significant budget overruns, misappropriation of income streams, tender irregularities in the construction process, delays and injuries during construction.

The intention of the categories is to cover a wide range of risks. According to Gehner (2008), examples of these categories are:

- *Land development risks*: land cannot be purchased – land price is disproportionality high, considering local conditions and current zoning plans.
- *Design risks*: programmes of requirements cannot be realised on the site – design is not kept within budget.
- *Entitlement risks*: no approval of zoning plan or building permit – delay of planning procedure.
- *Financing risks*: financing cannot be arranged.
- *Construction risks*: at tender, construction costs exceed budget causing a delay of a construction process.
- *Leasing risks*: time to market lags behind schedule – design does not meet demand of space (decrease in rental prices) due to economic fluctuations or innovations of the product.
- *Sale risks*: wrong estimation of yield development (Gehner, 2008).

Gehner (2008) goes on to list certain risk control strategies; for example, reduction or elimination, transfer or sharing, avoidance and acceptance. The understanding that these measures are guided by the availability of information and that decision makers are rational and unbiased, makes it a matter of contention. However useful these risk control strategies are, they are normative of nature, are largely disregarded in decision making studies and tend to lean more towards the neoclassical approach (Atherton et al., 2008).

#### **2.4.4 Real Estate Development Process and Decision Framing**

The real estate development process is largely indicated as a series of interconnected phases (Gehner, 2008). A systematic and practical analysis of the phases of the real estate development process includes conceptualisation, site acquisition, planning and design, the construction process, financing, leasing and marketing, followed by investment management, where the investment management phase can include a revision of the highest and best use of the property, restarting the development process (Peca, 2012).

The research paper will use of the Hargitay and Yu (1993) model, due to their model being that of circular nature, meaning that the last step, post auditing and optimising, refers back to the first, thus ensuring the model is continuously optimised for better results and comparing it to the development process outlined by Peca (2012).

The author assumes that the development process as outlined by Peca (2012) remains static if developers the world over-rely on similar if not the same processes to assess and complete a development. It could be argued that the Hargitay and Yu (1993) model refers more to the acquisition of a portfolio. However, the author does not look at the process but rather the interrelation of the two processes, the circular nature thereof and how decisions should be made.

It is important to determine a decision process and the various actions taken in this process (Hargitay & Yu, 1993). Hargitay and Yu (1993) outline the following steps relating real estate decision making; these are most often seen in larger listed companies such as REITs and can almost be seen as a prelude to the development process outlined by Peca (2012).

1. *Definition phase: Definition of purpose and objectives of the real estate portfolio. Definition of the investment strategy, establishing of tangible objectives with regard to risk and return; these are largely financially orientated like yields and IRR.*
2. *Planning Phase: Formulation of a specified strategy and their selection/assessment criteria.* A further attempt to define and refine the objectives to goals. Hard and fast instructions pertaining to the analysis and searching phases. Like the assessment of the macro environment, inclusive of the larger market.
3. *Dealing phase: Assessment of individual projects against the predefined criteria and strategy.* The search and assessment of potential projects fitting of the outlined criteria. This includes the feasibility building and risk assessments.
4. *Executing phase: Closer examination of projects that meet return and risk profile.* Here, the focus is on the decision that needs to be made. Information gathered is presented in a sequential manner for the decision maker to make an ultimate decision and the transaction will be packaged, structured and negotiated.
5. *Watching Phase: Closing the investment decision and implementation of actions.* This phase focuses on the continuous measurement of results and protocols to manage the investment outcomes.
6. *Optimising phase: Post auditing and optimising (link to Step 1).* Continuous strength, weakness, opportunity and threat analysis, to determine if the asset is performing optimally, which will normally lead to further investment to the asset or the disposal thereof.

The third phase is noted as being the most important. Testing done by Bispinck (2012) revealed that respondents identified that practical techniques and property specifics play an important role in decision making. Further, experience and benchmarking were the most important factors for the tested investors, where only one highlighted the MPT as a relevant model to be used. It is important to note, however, that MPT gives context for asset managers to make decisions, but practical decisions models such as Discounted Cash Flow, Internal Rate of Return, downside risk minimisation and resampling are used much more in the property sector (Bispinck, 2012). This is a clear indication that prescriptive modelling as described by Atherton et al. (2008) is largely prevalent in the decision-making process and a clear move way form the normative decision-making processes that have ruled the real estate sector for many years (Atherton et al., 2008).

It is important to note that there are differences between the various decision-making models, most of which include a sequential structure (Bispinck, 2012).

**Table 2: Comparison between the real estate development model as described by Peca (2012) and the real estate decision making of Hargitay and Yu (1993)**

<b>Peca (2012)</b>	<b>Hargitay &amp; Yu (1993)</b>	<b>Decision models</b>
Conceptualization	definition phase Planning Phase Dealing phase	Normative
Site acquisition	Dealing phase executing phase	Normative Prescriptive
Planning and design	definition phase Planning Phase Dealing phase	Normative Prescriptive
The construction process	definition phase Planning Phase Dealing phase Executing phase Watching Phase	Normative Descriptive Prescriptive
Financing	Watching Phase Dealing phase	Normative Prescriptive
Leasing and marketing	Watching Phase Optimising phase Dealing phase	Normative Prescriptive
Investment management	Optimising phase Dealing phase	Normative Prescriptive

Table 2 indicates the prevalence of normative and prescriptive modelling in the real estate development model of Peca (2012) and the real estate decision making model

of Hargitay and Yu (1993). A large section of the studies and academic literature in decision making theory focus on “how decisions are made”, reliant on how previous decisions were made, rather than looking at “how decisions should be made” (Atherton et al., 2008), This is backed by empirical evidence that the predicted rational models are seldom found in the workplace. The implication thereof is that what is expected of people in theory is considerably different from what happens by the time the result is achieved (Atherton et al., 2008).

#### **2.4.5 The Future of Decision-Making Theory**

This research paper introduces the fact that years of research has gone into the science of decision-making theory that has largely been vilified by qualitative research and a case is to be built for future models to be more inclusive of research strategies. A strong body of evidence exists that the predictive rational models in decision making, normative and descriptive, go unseen in practice. What developers theoretically should do is frequently different from the final decision taken. This could be that the normative model was not followed correctly or that all information available at the time of decision was not correctly utilised (French, 2001). This eventually leads to a prescriptive theory that encompasses a mix of normative and descriptive theories to outline modelling within the decision-making sphere.

It seems that academics and researchers alike are largely focussed on building decision-making models for all occasions and applications, rather than focusing on models that contain many contexts and research objectives (McFall, 2015).

Joseph McFall (2015) calls for the development of multi-variant decision-making model/models accounting for observed behavioural elements of decision making and underlying decision-making processes which match behaviour patterns (McFall, 2015).

Building such a model will depend on time, resources and the availability of technology to build such a model. Behaviourists do not really care for behaviours and outcomes but are more focused on the theory of how these variations intertwine (McFall, 2015)

*How could such a model look?*

Risk analysis tools have been available for years and these procedures have been used to measure the economic and technical risks integral to many commercial

projects. It is in developers' best interests to make decisions on the likelihood of risks happening rather than on single point estimates. Some of these risk analysis tools are too complex to filter simplistic information and will not yield results. More complex metrics require experienced and high costing analysis to produce relevant information (Diekmann, 1992).

The basis of the Monte Carlo model is highly statistical and mathematical, using a quantitative method to analyse risks and the accuracy of the model which is based on the input of information. Loizou and French (2012), in their paper *Risk and Uncertainty in Development*, refer to various advantages and disadvantages of the Monte Carlo simulation method. This research does not focus on the advantages of this simulation and the understanding the value a developer might get from the use of the Monte Carlo simulation – which would be to gain a clearer understanding of risks – but rather focuses on one specific disadvantage – the “human element” of the process – stating that “it would be simplistic to assume that man is rational” (Loizou & French, 2012).

In the paper written by Guillaume Chaslot et al. (2008) in *Monte-Carlo Tree Search: A New Framework for Game AI*, it is identified that the model has been used to quantify artificial learning in the gaming world, where games such as scrabble, chess and checkers have been able to learn from behaviours of gamers to beat them by learning their thinking patterns (Chaslot et al., 2008).

Figure 4 indicates the complexities the Monte Carlo Simulation can comprehend (Chaslot et al., 2008).

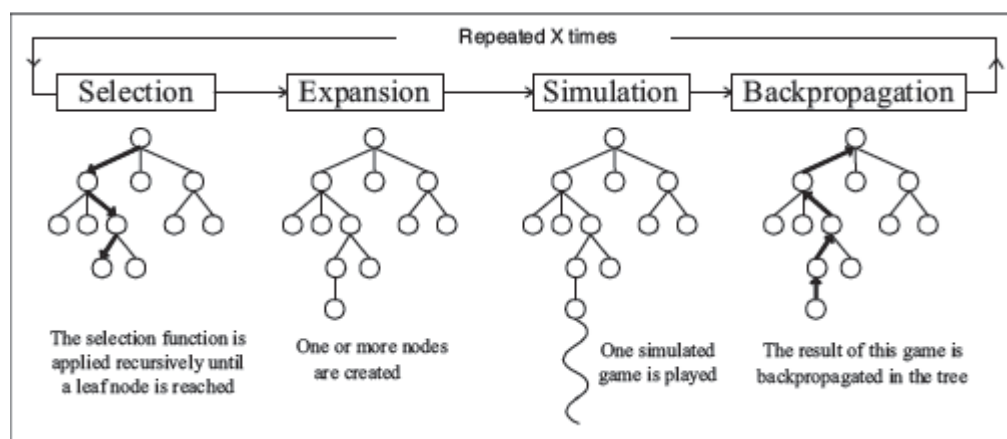


Figure 4: Outline of a Monte Carlo Tree Search

Inversely, combining the two models (Monte Carlo and Artificial Intelligence) with each other has the potential to remove human biases from the Monte Carlo simulation in its entirety.

Artificial Intelligence will drive learning from a variety of sources. Historic data from worldwide sources can be implemented in learning to avoid previous mistakes or risks influencing data; this will also prevent corporate memory from deteriorating decisions. Current events will be automatically entrenched in the model, resulting in an ease and automation of future events. This approach has the potential to remove the human element from the process of inputting data entirely, solely having an impact on the analysis of the information provided from the model. A study in Oregon on ulcers and the likelihood of them being malignant or not, proves that simple algorithms outperformed specialist doctors in the field every time. The fact that the doctors could not agree with themselves is called decision making noise; given the same set of data, they made two different decisions. Algorithms do not do this; the same inputs will result in the same outputs every single time, as they are not distracted by human instincts or biases (Lewis, 2017).

Countering this, there are many beliefs that machine learning is not as positive as it is cut out to be. Many believe that even though these models can predict that something is in fact true, they do not offer an explanation on why it may be so, detracting from learning and applying knowledge any further (Dick, 2019).

However, the development of such models will, in the most part, allow humans to control behaviours toward choice and largely eliminate bias toward decisions (McFall, 2015).

The creation of "nodes" within the Monte Carlo model can be multi-dimensional, as can be seen in Table 1 above. The use of these nodes is multifaceted, as each node provides for numerous data points in building a strong algorithmic footing (Chaslot et al., 2008).

#### **2.4.6 The Lussier Model and the Developer's Business**

The Lussier Model uses 15 distinctly different variables contributing to success or failure modelling identified in 20 different studies. Many of these variables are factually driven, but the inputs in the regression analysis are open to human bias. The model is

nonfinancial and uses resource-based theory to understand the role these resources play in organisations. The model does not estimate the chance or probability of failure, but rather the success or failure of a business. A sample size of 150 firms was used from the six New England states, inclusive of cities such as Boston and Portland (Lussier, 2005).

The study was conducted using matched groups of contrasting pairs of successful and failed real estate firms; failed firms were nominated from Chapters 7 and 11 bankrupt firms. For successful firms to be included, these had to have posted average profits over the previous three years. The outcome of the study was to see if the model could predict the failures or successes. The model predicted the successful firms with 84% accuracy (Lussier, 2005).

The results of the survey are captured in the table below:

**Table 3: 15 variables of the Lussier model (Lussier, 2005)**

1.	Capital	Businesses that start undercapitalised have a greater chance of failure than firms that start with adequate capital.
2.	Record keeping and financial control	Businesses that do not keep updated and accurate records and do not use adequate financial controls have a greater chance of failure
3.	Industry Experience	Businesses managed by people without prior industry experience have a greater chance of failure.
4.	Management Experience	Businesses managed by people without prior management experience have a greater chance of failure.
5.	Planning	Businesses that do not develop specific business plans have a greater chance of failure.
6.	Professional Advisors	Businesses that do not use professional advisors have a greater chance of failure.
7.	Education	People without any college education who start a business have greater chance of failure.

8.	Staffing	Businesses that cannot attract and retain quality staff have a greater chance of failure.
9.	Product/Service timing	Businesses that select products/services that are too new or too old have a greater chance to fail.
10.	Economic timing	Businesses that start during a recession have a greater chance of failure.
11.	Age	Younger people who start a business have a greater chance of failure
12.	Partners	A business started by one person has a greater chance of failure.
13.	Parents	Business owners whose parents did not own a business has a greater chance of failure.
14.	Minority	Minorities have a greater chance of failure.
15	Marketing	Business owners without marketing skills have a greater chance of failure

Of the 15 variables identified, five came to the fore as the most important in predicting real estate success or failure: capital, industry experience, planning, professional advice and age of owner. The biggest difference between successful and failed businesses was years of experience (Lussier, 2005). By grouping these five variables into one globally accepted metric it can be argued that a board of directors in an entity plays a critical role in successes or failures.

By applying Khaneman's (2011) models – namely, that over time Level 2 thinking leads to intuition (Level 1) thinking – it is indicated that developers' greatest chance of success is to surround themselves with highly experienced individuals who have learnt the systematic descriptive, normative ways of thinking, applied it over years and have grown into Level 1 thinkers. They are continuously applying prescriptive decision-making principles to their business interests (Kahneman, 2011).

## **2.5. Conclusion**

This literature review concludes that behavioural studies relevant to real estate development is a very young field of study and includes data driven studies such as

those constructed by Durand, Newby, Tant and Trepongkaruna (2013) looking at the “Big 5” personality constructs (Barrick & Mount, 1991).

The move from descriptive and normative models to prescriptive modelling is clear; many critical reviews by Atherton et al. (2008), Gallimore et al. (2000) and Gehner (2000), to name a few, indicate the limitations of normative modelling and how they tie into real estate decision making, because they do not solve the untamed human bias, nor do they allow for heuristics to assist in the decision-making process (Gigerenzer, 2014). The call for the move away from traditional neoclassical normative modelling in the real estate sector must be heard. Gallimore et al. (2000) frame it perfectly. “Although normative models provide an “ideal world view” of investment, the diverse and competitive nature of the property market appears to preclude rigid decision-making strategy...” (Gallimore et al., 2000). It has been proven with relative ease that social, technological, environmental, economic, and political factors influence decisions at micro and macro levels (Kwan, 2012). This poses an even greater question: Are prescriptive models enough in the growing age of technology?”

The question then to be asked is: When does System 2 thinking become System 1 thinking? The answer is much simpler than thought (Kahneman, 2011). The more System 2 thinking is applied to a certain problem, the repetitiveness thereof over time will turn it into System 1 thinking. In the research proposal the author speaks of developers acting intuitively. At first many would have been hesitant to decide, but after many years of honing their skills and abilities they make decisions at a whim. Herbert Simon’s quote holds true: (Kahneman, 2011).

The situation has provided a cue; this cue has given the expert access to information stored in memory, and the information provides the answer. Intuition is nothing more and nothing less than recognition (In reference to why a fireman knew the house would implode) (Kahneman, 2011).

Now that System 1 and System 2 thinking are better understood, it can be suggested that developers build skills over time. Not many developers start off a skilled platform and may have a basic knowledge of the soft skills required to perform their day-to-day activities and be heavily reliant on System 2 thinking at the start of their careers, following the development process as outlined by Peca (2012). However, over time, these soft skills are built into their DNA, and understanding the basics of the trade will

become an afterthought and critical thinking relating developments will become metronomic of nature. These developers can then assess a potential development site, build a complex feasibility and make the investment decision in the blink of an eye.

It is important to understand the heuristics discussed earlier in the paper, of what, why and how an individual is driven to make certain decisions, their personality traits, past experiences and biases, and how historic data can assist in predicting future market events, the variables thereof and the use of traditional real estate development models within these paradigms. This will be analysed in Chapter 4 of this research paper.

Variables in running successful real estate businesses are vast. The attempt to use the Lussier Model to dilute some of these factors could yield success but is normative (how decisions should be made) in nature and must be connected to descriptive modelling (how actual decisions are made) to form effective prescriptive models which combine the behavioural and theoretical, eventually leading to greater integrated decision making, as called for by Joseph McFall (2015).

To eliminate or reduce human behaviour for effective decision making, future studies will have to align different fields of study – for example, finance, psychology, sociology and information technology – to define and set out a future behavioural design model which encompasses the different models and thought schools into one singular model. Even this will change radically, as behaviour patterns should never remain predictable. For the purpose of giving it a name, it could be called an “entrepreneuring model”.

It is concluded that should such a decision-making metatheory (McFall, 2015) be developed, the human error in decision making shall be reduced significantly, but we should steer clear of becoming unemotional as it detracts from passing on generational learning and the human touch to decision making (McFall, 2015).

## CHAPTER 3: RESEARCH METHODOLOGY

### 3.1 INTRODUCTION

Research of the built environment is strengthened when new and unique knowledge is added and accepted into or replaces the existing built environment body of knowledge. The discovery of such new and unique knowledge is achieved through appropriate and rigorous use of research methods and methodologies and the application thereof (Amaratunga et al., 2002). It is therefore important that the built environment researcher formulates a clear and academically sound research methodology.

The aim for this research, as stated in section 1.5 was to investigate the relationship between human influence in real estate developments and the success or failure thereof. For this reason the research attempted to understand the views of developers and their understanding of how biases affect decision making. The methodology chosen for this paper was centred around the research objectives, requirements and research questions (Amaratunga et al., 2002). It is for this reason that the qualitative research approach was selected:

“Qualitative research is a situated activity that locates the observer in the world. Qualitative research consists of a set of interpretive, material practices that make the world visible. These practises transform the world. They turn the world into a series of representations, including... interviews, conversations... and memos to the self...this means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret phenomena in terms of the meanings people bring to them” (Denzin & Lincoln, 2011).

“A good qualitative research attempts to build a rich detailed picture of a complex landscape or situation. This means relying less on normative (“cause-and-effect” and “how the world ought to be”) generalisations and instead probing complex interactions of relationships and the meaning of those relationships and concepts.” (Amaratunga et al., 2002).

### 3.2 RESEARCH QUESTIONS

The research questions posed at the inception of the research proposal in Section 1.4. were:

- *What is the main risk variable in running a successful real estate business; and*
- *To what extent does the human element behind the real estate development affect the chances of a real estate project being successful or a failure?*

These questions were analysed to develop a framework of success and failure methodology around real estate developments and how the human element or behaviours driving these factors affect eventual decisions taken.

This matrix was then utilised to develop a questionnaire with questions posed to respondents to determine the effects as outlined above. These questions are:

- Please describe your view on steps in property development (for example, identification, sourcing, feasibility, construction and closing).
- What would you say are shortcomings in the property development process?
- Would you agree that local knowledge of the location in which you chose to develop contributes to the decision you make?
- What are some critical decisions that you need to make in property development?
- Would you say that you rely on impulses, detailed reviews, or a combination of the two when making a development decision?
- If possible, could you state which decisions, quick (impulsive) or thought through (detailed review), were more successful?
- What would you say are key deliverables in real estate developments?
- What would you list as key risks from successful projects and how did you overcome them?
- What negative elements were identified in these successful projects and how did you overcome them?
- How many risks were created by poor decision making? Please describe the risks.
- How did you adjust your business after these poor decisions were made (for example, lessons learnt, new processes)?

- Would you say that humans influenced the outcome of these projects (successful or failed) to a degree?
- What would these influences be?

The questions are an attempt to gauge the views of the owners/operators of the real estate companies identified, their understanding of risks affecting their paradigms of understanding and how these decisions either affected their businesses or forced them to make structural changes to their businesses.

### 3.3 RESEARCH METHOD

The qualitative method permits the researcher to investigate the personal views of the participants to understand what they see to be true and why they see it to be so (Starks & Brown Trinidad, 2007). Three qualitative approaches exist in literature: phenomenology, discourse analysis and grounded theory (Starks & Brown Trinidad, 2007). This research seeks to gain an in-depth view – through the world view of real estate developers – of the challenges they face in the pursuit of making a success of their businesses. More specifically, it aims to observe and analyse their behaviour in response to the environment in which they operate.

As a result, the phenomenological approach was chosen as the most appropriate to gain these answers, mainly through detailed, face-to-face, in-depth interviews with a select few real estate developers who are based in Johannesburg and Cape Town. The purpose is to provide a view on locality and local knowledge.

#### **Phenomenological Approach**

The phenomenological approach was born in twentieth century European philosophy. Decryption and analysis of lived experience to understand the creation of meaning through lived perceptions of real estate developers, phenomenology is built around an in-depth understanding of life experience by better understanding “taken-for-granted assumptions” (Starks & Brown Trinidad, 2007).

Phenomenologists research the similar features of lived experiences. Large data samples could provide a bigger range from which information can be drafted, but the approach allows for smaller samples of respondents that can provide an in-depth account of their lived experiences, as the same results could be uncovered. Observing

how real estate developers act and experience their environment provides pointers about how they could translate their world view (Starks & Brown Trinidad, 2007).

Einstein framed the phenomenological perspective as: “Put your hand on a hot stove for a minute and it seems like an hour. Sit with a pretty girl for an hour and it seems like a minute”. That is relativity (Starks & Brown Trinidad, 2007).

### **3.4 RESEARCH DESIGN**

Seven developers involved with development projects within Cape Town and one with a national footprint were willing to be interviewed in depth. The sample of seven developers were chosen by way of immediate exposure to the researcher. The reason for this is, that the study was conducted during COVID-19 enforced lockdowns which forced limited exposure to developers and limited approachability, numerous emails were sent to developers who did not return the message, reducing the original sample size.

Although the number of respondents can seem low, it must be noted that all developers agreed on the principles of the development phases in initial conversations, enforcing the methodology of developers use the same roadmap in the development phases as outlined by Peca (2012).

Based on the approach and the philosophical design discussed in the previous section, the phenomenological strategy was adopted as it was most suited to the research proposed.

Methods and tools used in the study include the structured interview method for data collection. Based on the timing of the interviews and limitations due to national lockdowns, the standardised approach was chosen. Questions were asked that could easily be compared and disseminated across a range of participants, where a specific question could be asked searching for a specific outcome in quantifying the answer (Leavy, 2020).

### **3.4.1 Data Collection Method and Analysis**

In identifying the leading role player within the real estate sector, the decision was taken to interview developers with local footing. Due to the restrictions posed by COVID-19 on face-to-face meetings, interviews were arranged electronically or online. Questionnaires were shared with the chosen developers who were willing to participate in the study electronically and followed up by virtual conferencing on secured platforms such as Microsoft Teams, Zoom or WhatsApp calls.

Due to the limitations posed by technology it was near impossible to ascertain behavioural analysis on the respondents, although it became quite clear when a respondent would become nervous or agitated when a specific question on failure in a development was asked; in general, the reluctance to share information in these circumstances proved the existence of framing (Kahneman, 2011). It was clear that developers who participated in the study were as susceptible to behavioural biases as anyone else as discussed in Chapter 2 of the paper, regarding the numerous cognitive flaws in how decisions are made and the depth of risk perception.

### **3.4.2 Research Analysis Method**

Coding is used as a transitional tool in qualitative research between the collection of data (questionnaires) and the interpretation of the data, subject to the world view of a participant (Saldaña, 2021).

Coding is performed using various patterns in text or words by assigning a code or theme to a string of text, bunching same or similar codes together with underlying strings to make sense of responses under a single category (Saldaña, 2021). In this way, growing patterns occur.

These patterns must be monitored closely, and codes must be assigned to how different respondents would answer questions utilising their speech, understanding of language and world view (Saldaña, 2021).

The codes fed into the thematic analysis tool using the Nvivo Qualitative data analysis software, leading to clear themes emerging from the assigned codes. Here the researcher identifies the emergent themes. The codes are then assigned to the emergent themes, outlining the clear connection from the initial questionnaire to the themes.

### 3.5 LIMITATIONS

Limitations are events that arise in a research study that are not in the control of the researcher. These events place limitations on the study and will sometimes go as far as affecting the result and conclusions of a study adversely. Studies will always have some form of limitation and future studies will develop over time or as information, respondents, locations and data develop (Simon & Goes, 2013).

The following limitations were assessed as part of this research paper:

- (a) *The study was limited to developers in certain regions; namely, Gauteng and the Western Cape:* Due to the researcher being in the Western Cape and the travel restrictions imposed, only Western Cape developers could be targeted. One respondent is exposed to developments countrywide, which widened the study slightly.
- (b) *Data from the residential and commercial sectors only would be analysed.*
- (c) *Gaining insight into the functioning of commercial real estate development companies that have failed was challenging, as was getting people to answer a questionnaire if they had been involved in a project that had failed.*

This research paper and questionnaire was developed largely through the widespread impact of COVID-19 and its variants.

The initial thought behind the variable was that respondents who had been exposed to failed projects over their natural life cycle would be reluctant to deliver opinions thereon, because of, for example, non-disclosure agreements, fear of victimisation and pride.

Once the questionnaire was circulated it became clear that the economic downturn affected numerous potential respondents, with three pulling out of the study completely and one entering business rescue proceedings, refusing to proceed further with follow-up questions. This natural phenomenon, a black swan event as described by Nicholas Taleb, caused many companies to close their

doors completely, but the eventuality of people not wanting to be part of a study was clearly shown.

- (d) *Many companies are liquidated after the completion of a development, skewing data.* Many developers choose to liquidate companies after a development has been completed for reasons of tax evasion, use limitation, cause and effect of finance modelling and complete exits from the market. Utilising this data in a model would yield negative results, as the financial metric behind the exit cannot be determined.
  
- (e) *Extracting data from a quantitative model with a limited understanding and background of development:* For reasons mentioned in the above paragraph, the model was not run. The reasoning behind the limitation at inception was that the researcher is not statistically trained nor technologically inclined to build a model.

The financial constraints of having a model built would not be suitable for a research paper of this magnitude.

### **3.6 RELIABILITY AND VALIDITY**

The replicability of studies that happen in natural settings makes qualitative research difficult to control (Wiersma & Jurs, 2009). Reliability can be described as the accurate and consistent representation of results of the entire population being studied (Joppe, 2000).

Validity is defined by Joppe (2000) as does the study measure responses as appropriate and truthful. (Joppe, 2000)

However, this study moves towards the trustworthiness of the respondents invited to provide their insights. The researcher is of the view that the chosen respondents have no reason to not be truthful and this was adjudged by the way they welcomed the study and because the researcher had no indication of what the truths of the respondents were. (Öhman et al., 2012)

### **3.7. ETHICS CLEARANCE**

The research conducted required the consent of interviewees relating to the protection of their personal information (POPIA), confidentiality and the use of the data, information and world views collected from the interviews in the research report. Confidentiality assured the interviewees that their information, responses, and storage of data would only be accessible and utilised by the researcher.

Ethics protocols require the researcher to obtain informed consent from the interviewees and a form was created to ensure the confidentiality and anonymity of the interviewees to prevent the creation of biases by the circumstances of the interviewees or their businesses.

Ethics clearance was obtained from the Faculty of Engineering and the Built Environment Research Ethics Committee. This signed form is provided as Annexure A. The questionnaire and confidentiality form are provided as Annexure B.

### **3.8 CONCLUSION**

In this chapter, the research attempted to provide an overview of the most appropriate research methodology and the research methods relevant to the study as outlined in Chapters 1 and 2.

There is strong evidence that the real estate literature is littered with reviews of a quantitative nature, largely based on historic neoclassical views. In Chapter 2 of the paper the researcher has found that a case exists for the use of qualitative methodologies to start building a case as outlined by Daniel Kahneman and Gerd (Gigerenzer, 2014; Kahneman, 2011).

It is clear that the qualitative research method has provided keen insight into the mind of the real estate developer, the design aided in such a way to provoke clear thoughts around the real estate developer's thoughts and provided insight into how the world view of real estate developers think.

## **CHAPTER 4: RESEARCH FINDINGS AND ANALYSIS**

This dissertation focused on how developers' world views and related experiences in the real estate industry framed their understanding of events that impact their businesses. This study originated from successes and failures within the developments, and quickly evolved into a piece on how the decisions these developers make influence their world views and the impact thereof on their businesses.

The focus was biased to developers and their businesses but could easily involve other players in the development process, such as financial institutions' credit committees, business partners in joint ventures and municipalities. A structured interview method for data collection, based on the philosophical design of phenomenology, was used to satisfy the research methodology.

### **4.1 INTRODUCTION**

This chapter analyses and sets out the transcripts from the interviews generated. This paper is positioned to attempt to understand the developers' world view by analysing their behaviours and decisions made in the development process, and if a possible solution exists, to mitigate for biases toward certain decisions which could eventually lead to success or failure of their businesses.

This chapter will start off by giving a profile of developers interviewed and will move on to examine the key themes that were obtained from the interview data. It will also attempt to draw discourse from how decisions are made and how these impact the developer business.

### **4.2 PROFILE OF DEVELOPERS**

Due to the limitations posed in the countrywide lockdown and the impracticalities this posed for the collection of data, a total of seven developers were interviewed for this dissertation; subsequently, three opted to be released from the study due to time constraints in filling the questionnaire. Due to the development process described by Peca (2012) and the distinct similarities in responses from respondents, it is believed that the sample collected is a fair representation of the market.

The remaining four developers can be considered as local developers in their respective locations, being Cape Town and Johannesburg, with one developer having national exposure.

The developers interviewed have had at least fifteen to forty years' development experience in their respective markets of choice. They have built and operated mixed use developments and had large exposure to residential accommodation, have developed real estate that could be valued from R10 million to R300 million and some remain owners of their respective developments on the bases of owning long-term portfolios able to generate cashflow.

All the developers stressed the importance of having experienced core teams of built environment professionals to support them in packaging transactions that would suit the demand in the market, provide financial closure and provide asset management services.

One participant is a qualified chartered accountant with many years of asset management experience and another works in a family-owned retail development business focussing on rural retail developments. The third participant has years of experience in the financial/banking sphere, is a qualified quantity surveyor and manages a large mixed-use portfolio. The last respondent is an ex-banker, philanthropist and intuitive developer and he has a national footprint in affordable housing and the provision of land parcels for end users.

Of the four developers, two are in Cape Town and the remaining two in Johannesburg.

For the purposes of this research paper, it is deemed that the four developers represent a strong sample due to their experience and exposure as real estate developers and are reflective of the market.

Quotes or references from each developer will be denoted by using their assigned interview number; for example, Developer 1 is OE1.

As discussed in Chapter 3 of this research paper, the coding manual for qualitative researchers by Johnny Saldaña (2021) indicates that coding needs to be used as a tool in qualitative research to identify the worldview of the participants. These codes







Question 5: Would you say that you rely on impulses, detailed reviews or a combination of the two when making a development decision? The resonating answer for all respondents were both impulses and detailed reviews.

AE10: "A combination of the two".

CE3: "Combination of the two".

OE1: "The opportunity must speak to you, that is the impulse part, but I like to do good research with TPN, Lightstone, local agents and online".

All the developers had the simplistic reasoning that their property decisions are not made light heartedly; they want to focus on as much information as they can get their hands on even after detailed development packs are provided to them.

The Property agent that presented the opportunity had done preliminary work and got an 'opinion'... Based on the information provided at face value, the opportunity looked great however we had no experience investing in properties in Cape Town's CBD and decided to do our own investigative work that revealed that all information presented by the agent was incorrect (AE2).

Without being prompted and seeing the questionnaire's static nature, two respondents referred to "knowledge" of a location as a very specific element in their framework.

AE2: "Choose the correct site – research it & research again;"

Local knowledge of the location is fundamental in the decision to invest. In jurisdictions that are beyond our 'on the ground knowledge', we prefer to invest alongside other developers that understand the area well.

This principle applies in any business. An anecdotal example is how South African retailers have failed dismally in East Africa. local knowledge was disregarded (AE2).

However, the researcher believes that all four respondents are Level 2 thinkers/decision makers (Kahneman, 2011). Each respondent went into some detail on why they are specific when decisions are taken to invest or develop a piece of real estate, with very limiting or no responses to impulsive decision making.



AE2 is very specific in negative elements that reared their heads in the development phases and how these elements were remedied at the time: “Dealing with City Council & plan approval bodies...”, “Time is money”, “... Business risk....”.

OE1: “Serviced stands not moving quickly enough...”, “Cashflows not working on rental stock...”.

CE3: “Government entities’ failure to provide an environment conducive for investment...”.

It becomes apparent that the main shortcoming as described above is how local government impacts the development sphere; the impact these institutions have on the development sphere is very tangible. The local government has an immediate effect on every phase of project rollout and future management thereof. It is within the best interests of the developer to facilitate good relationships with officials to achieve better results.

CE3: “To gain support we try to meet and engage the leaders of these municipalities...”.

Although private and public institutions have great impact on developers and the development sphere, it invariably ends up in a sphere where the influence is held by a single department or individual.



needed direction to site personnel & shows that a level of interest is taken in what's happening on the site (AE2).

The proponent of human influence is large, with numerous roles filled in each phase of the development process. OE1 referred to bankers making financial or investment decisions, council officials with processes and procedures, tenants, agents and professional teams. In this sphere and with the amount of human touch it is near impossible to be passed over by a poor decision made by one human.

#### **4.4 CONCLUSION**

Chapter 4 presented the themes and identified categories that emerged from the interview data. The relevance of the emergent themes, namely Behavioural Bias, Decision Making, Shortcomings and Human Influence, was debated and explained. The information generated in Chapter 2 of the paper was used to enhance and provide more substance to this process.

To this end, deeper insight could be gained regarding a few of the main elements that affect the delivery of real estate development projects and the perceived risk thereof. In answering the initial research questions:

- *What is the main risk variable in running a successful real estate business and to what extent does the human element behind the real estate development affect the chances of a real estate project being a success or a failure?*
- *What is the impact of decision making to risk in the South African property development sphere?*

It can be identified that bias and the influence garnered by humans in each phase of the development process is a very prominent risk variable that needs to be managed and, in many cases, controlled to ultimately avoid negative impacts on the developers' businesses. Additionally bias from decision makers, be it local government or national government has significant impacts on businesses and that protocol development creates more headaches than it creates a platform for growth to developers.

The correlation between decision making theory and effective decision making in the real estate development field could be analysed to provide an indicator of what negative effects poor decisions have on developers' businesses at large, which will create a greater understanding of meta-theory and/or future modelling to eliminate behavioural biases from decisions in the field of real estate development. The potential advances in the technology sphere will most surely evolve into something that could assist in governing how decisions are consistently made to yield the greatest result, but the human element will remain for many years to come.

## **CHAPTER 5: FINDINGS AND CONCLUSION**

In this final chapter, the salient points that can be deduced from the literature review and interview analysis in Chapter 4 will be summarised and the research proposition in Chapter 1 compared against the main findings of the research paper.

Recommendations for potential areas of further study, which were found to be outside the scope of this research paper, will also be listed.

### **5.1. INTRODUCTION**

The initial premise of the dissertation was brought on by witnessing businesses failing, especially those in the real estate developer's realm. It was posited that these failures needed to be analysed from a micro-, macro- and socioeconomic standpoint. Noticing the predictability of such a study, the source of these failures, decision-making and developer bias was sought as a topic. The nature of decision-making theory was addressed as the method of study and that normative, descriptive and prescriptive models attempt to indicate how decisions are made, this research then improvised by attempting to create a clear path of making better decisions.

In Chapter 2, the aim was three-pronged; firstly, to open the debate on which decision frameworks used by developers to make decisions, successful or not; secondly, to analyse existing literature on decision making theories, drawing conclusions on how these decisions impact real estate developers, and thirdly, identify a predictive decision-making model that could be used to reduce the noise in decision making, or removing humans' bias in its entirety.

The research methodology described in Chapter 3 prepared qualitative data from structured interviews with developers operating within the context of the developing nation of South Africa.

Chapter 4 analysed the data and further juxtaposed the data points to create themes to which the researcher aimed to compare theory collected in Chapter 2 to the actual real-world experiences of developers.

## 5.2 CONTRIBUTION TO KNOWLEDGE

The research contributes to the body of knowledge by shedding light on the ways real estate developers make decisions, the roles they and their employees play in the development process, the behaviours obtained from heuristics and biases that real estate developers tend to have.

At the time of this study, it was found that research in decision-making theory, although fairly old in theoretical study, has not moved much in terms of adding to the body of knowledge since the 1980s. Instead of behaviours and outcomes, the root causes and reasons for behaviour are studied (Carr, 1993).

This research study identified three ways in which the study contributes to the body of knowledge:

*1. Real estate developer bias in decision making.* It was found that all developers that formed part of the study had some form of bias. Two prominent forms of bias were overconfidence bias, where a person overestimates the reliability of their judgements, or anchoring bias, where the overreliance of an initial piece of information is used to make subsequent judgements.

Knowledge of these forms of bias and the predisposition of developers to these, must be acknowledged and will assist developers in developing clearer metrics to rule these out of their decision-making matrices.

*2. System preference in making decisions.* The study on Level 1 and Level 2 thinking/systems, as defined by Kahneman (2011), is one of the very few theoretical studies done to analyse the practical traits of decision making. In Chapter 2 of this research proposal, it is surmised that the more systematically a real estate developer makes Level 2 decisions utilising information in the best way possible to make decisions, the more comfortable over time they will become by making intuitive decisions at Level 1.

However, the data collected in this research study present differently. All respondents indicated that Level 2 thinking must be followed due to the intricacies of real estate development decisions and the elimination of false or incorrect data.

3. *The call for simplistic data rich decision-making analysis tools.* This dissertation is premised with numerous mentions of making decisions easier, the call for elimination of bias and the referral of building models, not financial or economic, but behavioural, to enhance decision making solutions for real estate developers.

### **5.3 REVISITING THE RESEARCH PROBLEM**

The role humans play, our behaviour and our understanding of heuristics that affect the successes and failures in this sector are largely the reason for catastrophic meltdowns in the global economy.

Developers' understanding of real estate fundamentals could be limited by these biases affecting the outcomes of successful development modelling. It is clear in the data received from the questionnaires that these biases, behaviours and rules of thumb have significant impacts on the outcomes real estate developers wish to have and the results they do get in practice.

The data reveals that real estate developers strive for optimal results by making systematic, information-rich decisions and moving away from over reliance on impulses and "owned" knowledge.

### **5.4 REVISITING THE RESEARCH QUESTIONS**

*What is the main risk variable in running a successful real estate business and to what extent does the human element behind the real estate development affect the chances of a real estate project being successful or a failure?*

The main factors in determining success in the real estate business are multifaceted. The Lussier Model indicates that five metrics can be used as most important in predicting real estate success or failure: capital, industry experience, planning, professional advice and age of owner. The biggest difference between successful and failed businesses was years of experience (Lussier, 2005). By grouping these five variables into one globally accepted metric it can be argued that a board of directors in an entity plays a critical role in successes or failures.

However, these metrics do not allow for bias due to exposure to historic decisions made and the understanding of information gathered over time. The longer a real

estate developer is exposed to these two, the bigger the overconfidence and anchoring bias grows, leading to the Lussier Model being flawed in its premise of being largely exposed to the human element behind decision making.

It must then be concluded that a quantitative model should be developed that reduces the risk of human interaction by resorting to factual one-dimensional inputs, where a complex and rich vein of data exists, to include history, economic trends, political and technological advances to extrapolate if a decision is worth being made.

## **5.5 REVISITING THE RESEARCH PROPOSITION**

The proposition that human behaviour has a critical role to play in explaining success and failure in real estate developments was found to be consistent with the information collected from the research study. Given that the respondents all have a development tenure of longer than 10 years, their lived experiences or world views were very consistent when it came to choosing one key influence to their businesses.

All respondents indicated that human influence is the single biggest risk factor in their businesses. Exposure to employees, professionals within the real estate development process, competitors and information are all connected to the singular biggest risk for a developer to mitigate – human influence.

By providing analysis on decision theory, the conclusion is drawn that human influence in initial decisions needs to be carefully managed, even removed, for objective decisions to be made by a developer.

## **5.6 RESEARCH IMPLICATIONS**

The findings in this study provide academic literature to support decision makers within the real-estate development field to assist in making better quality decisions by eliminating certain elements that bias decision making in this field.

It provides a backbone for academic researchers to search for behaviour analysis and the outcomes thereof and moreover gives the broad outline for the development of metatheory to develop a decision-making model for the real estate development industry. The development of such a model can have a widespread impact on not only success for real estate developers but could also provide better insight for financial

institutions' credit committees to make better and more evidence-based decisions when it comes to the analysis of real estate developers.

Furthermore, the information gathered from respondents could assist new entrants into the real estate development field to avoid poor decisions made in haste, remove cognitive bias and solve their own shortcomings.

## **5.7 REFLECTIONS AND POSSIBLE SUGGESTIONS**

From observations made during data collection – by way of reading books, journal articles, gathering general opinions of subject matter experts and viewing behaviour patterns of various role players within the real estate development sphere – it was deemed necessary to add some reflections to this research paper that could lead to enhancing academic literature, the continuation of this topic and early adoption of metatheory.

### *1. The development of a bias experiment*

Senior executives should be made aware of the biases involved in everyday decision making; this could lead to better decision making but most importantly ensure the flow of information from a bottom-up perspective. For example, many businesses are built where CEOs are the funnel of information to lower tiers of employment. This is potentially the correct way of doing business but does not detract from bias.

#### *Experiment:*

Arrange for a CEO read a factual data set, but include obvious errors, correct the nature of the errors, keeping them loosely based on the truth and circulate to mid-level management and finally give the correct version to employees that have no decision-making capacity in the business.

Now, measure for bias in the message shared by the CEO with the rest of the business, testing if the other two levels of employees will challenge such a decision. Do a similar test with the mid-level management. Then change the example to a bottom-up approach to gauge the level of information shared and senior executive responses to the information.

This model would simply prove that bias exists in opinion and could enhance institutional knowledge and information flow in businesses.

The enhancement of the proposed combination of Monte Carlo modelling and artificial intelligence, a meta-theory model called for by Joseph McFall (2015), could be developed to compute for bias by storing and providing logarithmic answers to a predisposed set of questions. We now know that developers act in a homogenous way when it comes to the development processes, following them to the proverbial "T". The question then becomes what system can be provided to developers in the real estate field to make more accurate decisions, more quickly avoiding the cost of excessive analysis.

The researcher proposes a model entrenched in the Monte Carlo modelling framework, using 15 areas identified by Lussier (2005) with the aim of forming a predictive model. The researcher goes further to add that recent advances in Artificial Intelligence technology must be included over time, which will solve for ethical, historical institutionalised knowledge to solving problems.

## *2. The betterment of decision making in the banking/lending environment, by integrating such models*

The banking/lending environment plays a critical part in the real estate development process. Including such active management or credit decision making tools into the business could be used as a supplementing tool to better predict initial decisions made by credit committees and enhance the delegation frameworks placed on individuals in the development framework of these institutions.

## **5.8 CONCLUSION**

In conclusion and in summary of the findings of this research paper, it was found that all developers largely follow the same metrics of development processes without fail, in some cases adapting these to their specific business models and lessons learnt over time. All real estate developers interviewed suffer from some element of bias, either overconfidence, anchoring or confirmation.

It was also found that the foundation of decision-making theory is solid and provides in principle an academic or theoretic framework of how decisions are made (descriptive) or should be made (normative). However, it was found that these models should be adapted as presupposed by the prescriptive analysis theory, where various theories need to be combined to provide a “new” model of thinking or one that can assist thinking or decision making as described by (Slovic et al., 1990). Here, the importance of work done by Daniel Kahneman (2011) came to the fore; Level 1 and Level 2 thinking was presupposed against decision making theory to account for how developers use decision theory to make decisions.

Level 1 thinking refers to immediate responses to what is seen, where a reactive decision is made to the information at hand. On the other hand, Level 2 thinking surmises that decisions are made systematically, utilising information in the best way possible to make decisions (Kahneman, 2011).

Work done by Paul Meehl in 1954 starts giving direction to modelling of decisions, and this paper eventually gives direction to what developers should account for when making decisions. In analysing the data recovered from the questionnaire it became clear that developers rarely make decisions on a whim; the complex nature of the real estate world has forced developers to adjust to System 2 thinking, where detailed analysis needs to be conducted to make effective decisions. This was no revelation at first, but when combined with bias it quickly became evident that no matter how solid or structured the developers’ decision-making processes are, they still make poor decisions due to the predisposed idea of something that may have happened historically.

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## APPENIDX A: ETHICS CLEARANCE

### EBE Faculty: Assessment of Ethics in Research Projects

Any person planning to undertake research in the Faculty of Engineering and the Built Environment at the University of Cape Town is required to complete this form before collecting or analysing data. For more info regarding the procedure of completing the form please log onto <http://www.ebe.uct.ac.za/research/ethics/>. When completed it should be submitted to the supervisor (where applicable) and from there to the Head of Department. If any of the questions below have been answered YES, and the applicant is NOT a fourth-year student, the Head should forward this form for approval by the Faculty EIR committee: submit to Ms Zulpha Geyer ([Zulpha.Geyer@uct.ac.za](mailto:Zulpha.Geyer@uct.ac.za); Chem Eng Building, Ph 021 650 4791). Students must include a copy of the completed form with the thesis when it is submitted for examination.

Name of Principal Researcher/Student: Paul Nel Department: EBE

If a student: Degree: Msc Property Studies Supervisor: Prof François Viruly

If a Research Contract indicate source of funding/sponsorship: N/A

Research Project Title: The role humans play in real estate development decision making

#### Overview of ethics issues in your research project:

<b>Question 1: Is there a possibility that your research could cause harm to a third party (i.e. a person not involved in your project)?</b>	YES	NO
<b>Question 2: Is your research making use of human subjects as sources of data?</b> If your answer is YES, please complete Addendum 2.	YES	NO
<b>Question 3: Does your research involve the participation of or provision of services to communities?</b> If your answer is YES, please complete Addendum 3.	YES	NO
<b>Question 4: If your research is sponsored, is there any potential for conflicts of interest?</b> If your answer is YES, please complete Addendum 4.	YES	NO

If you have answered YES to any of the above questions, please append a copy of your research proposal, as well as any interview schedules or questionnaires (Addendum 1) and please complete further addenda as appropriate.

#### I hereby undertake to carry out my research in such a way that:

- there is no apparent legal objection to the nature or the method of research.
- the research will not compromise staff or students or the other responsibilities of the University.
- the stated objective will be achieved, and the findings will have a high degree of validity.
- limitations and alternative interpretations will be considered.

- the findings could be subject to peer review and publicly available.
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

Signed by:

Principal Researcher/Student Paul Nel	Signed by candidate	2/07/2020
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This application is approved by:

Supervisor (if applicable)	Signed by candidate	01/09/2020
HOD (or delegated nominee): Final authority for all assessments with NO to all questions and for all undergraduate research.	Dr. Frank K. Ametefe  Signed by candidate	09/04/2021
Chair : Faculty EIR Committee For applicants other than undergraduate students who have answered YES to any of the above questions.	Dr. Frank K. Ametefe  Signed by candidate	09/04/2021

## **ADDENDUM 1:**

Please append a copy of the research proposal here, as well as any interview schedules or questionnaires:

**A1: Research Proposal**

**A2: Consent form**

- i. Company
- ii. Individual

**A3: Questionnaire**

## **ADDENDUM 2: To be completed if you answered YES to Question 2**

It is assumed that you have read the UCT Code for Research involving Human Subjects (available at <http://web.uct.ac.za/depts/educate/download/uctcodeforresearchinvolvinghumansubjects.pdf>) in order to be able to answer the questions in this addendum.

2.1 Does the research discriminate against participation by individuals, or differentiate between participants, on the grounds of gender, race or ethnic group, age range, religion, income, handicap, illness or any similar classification?	NO	NO
2.2 Does the research require the participation of socially or physically vulnerable people (children, aged, disabled, etc) or legally restricted groups?	YES	NO
2.3 Will you not be able to secure the informed consent of all participants in the research? (In the case of children, will you not be able to obtain the consent of their guardians or parents?)	YES	NO
2.4 Will any confidential data be collected or will identifiable records of individuals be kept?	YES	NO
2.5 In reporting on this research is there any possibility that you will not be able to keep the identities of the individuals involved anonymous?	YES	NO
2.6 Are there any foreseeable risks of physical, psychological or social harm to participants	YES	NO
2.7 Does the research include making payments or giving gifts to any participants	YES	NO

If you have answered YES to any of these questions, please describe below how you plan to address these issues.

**ADDENDUM 3: To be completed if you answered YES to Question 3:**

3.1 Is the community expected to make decisions for, during or based on the research	YES	NO
3.2 At the end of the research will any economic or social process be terminated or left unsupported, or equipment or facilities used in the research be recovered from the participants or community?	YES	NO
3.3 Will any service be provided at a level below the generally accepted standards?	YES	NO

If you have answered YES to any of these questions, please describe below how you plan to address these issues.

**ADDENDUM 4: To be completed if you answered YES to Question 4**

4.1 Is there any existing or potential conflict of interest between a research sponsor, academic supervisor, other researchers or participants?	YES		NO
4.2 Will information that reveals the identity of participants be supplied to a research sponsor, other than with the permission of the individuals?	YES		NO
4.3 Does the proposed research potentially conflict with the research of any other individual or group within the University?	YES		NO

If you have answered YES to any of these questions, please describe below how you plan to address these issues.

## **APPENDIX B:** Original questionnaire confidentiality agreement and version of completed questionnaire

### **Participant Consent Form**

This template is designed primarily for those doing qualitative interviews with adults from non-vulnerable populations and dealing with non-sensitive topics.

The form would be different in the case of focus groups or quantitative research. If conducting research with vulnerable populations and / or sensitive topics please see Research Ethics Committee website for further details.

The points listed on the template below are for illustration only. You may alter the wording to suit your project as you see fit.

A consent form is not simply about a person giving you permission to involve them in research, it is an agreement between the researcher and the research participant outlining the roles and responsibilities they are taking towards one another throughout the whole of the research process.

The researcher should retain one copy of the consent form signed by both themselves and the participant. The participant should also be given a copy of the consent form as a record of what they have signed up to.

Even if a person has signed a consent form consent should still be re-established at the point of doing the interview

## Template

[Title of project]

### Consent to take part in research

I..... voluntarily agree to participate in this research study. I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.

I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.

I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.

I understand that participation involves...[outline briefly in simple terms what participation in your research will involve].

I understand that I will not benefit directly from participating in this research.

I agree to my interview being audio-recorded.

I understand that all information I provide for this study will be treated confidentially. I understand that in any report on the results of this research my identity will remain anonymous. This will be done by changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.

I understand that disguised extracts from my interview may be quoted in...[list all forum in which you plan to use the data from the interview: dissertation, conference presentation, published papers etc.].

I understand that if I inform the researcher that myself or someone else is at risk of harm they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my permission.

I understand that signed consent forms and original audio recordings will be retained in [specify location, security arrangements and who has access to data] until [specific relevant period – for students this will be until the exam board confirms the results of their dissertation].

I understand that a transcript of my interview in which all identifying information has been removed will be retained for [specific relevant period – for students this will be two years from the date of the exam board].

I understand that under freedom of information legalisation I am entitled to access the information I have provided at any time while it is in storage as specified above.

I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Names, degrees, affiliations and contact details of researchers (and academic supervisors when relevant).

*Signature of research participant*

.....  
Signature of research participant

.....  
Date

*Signature of researcher*

I believe the participant is giving informed consent to participate in this study

.....  
Signature of researcher

.....

Date

## Interview with AE2

Interviewees will all be given their own specific code OE1, AE2, CE3 to ensure anonymity.

## Questionnaire

### The roles humans play in Real Estate development decision making.

1. Please describe your view on steps in property development (e.g. identification, sourcing, feasibility, construction and closing to name a few)

Property development (ideally) requires a combination of specialist skills, entrepreneurship, tenacity (ability to ride out market downturns & financial crises), market understanding, financial wherewithal (and/or ability to generate finance), appetite for risk, understanding of the property cycle & plain good luck.

Steps in property development:

1. **Identifying a suitable opportunity**/idea (inception stage). This is often the easiest step as developers are seldom short of ideas, but many are curtailed by lack of or access to funds, etc.
2. Liaison with **professionals** (initially the architect to do high-level massing sketches & numbers) & refine the concept. It helps here to have experience in dealing with professionals as occasionally big egos get in the way & certain professionals are not team-players which could be detrimental to a project.
3. Project **preliminary feasibility & cost estimate** (preferably modelled by a QS and/or Accountant with market knowledge of current trends, rentals, demand, construction & development costs and experience). This step is often relatively theoretical and contains an element of assumption & estimates (hopefully good ones). These studies often help to define the concept & also determine the optimal use of the site. They also should ensure optimisation of net profit or rental return. Feasibility studies are essential tools in support of finance applications or to attract equity partners, end purchasers, etc.
4. Ensure **availability of site** for purchase/suitability for development – ensure that the purchase price fits the viability (else negotiate it down until it does). Knowledge of property values & trends in the area & access to reputable property valuers, property brokers, land surveyors & town planners is a must. Market research using tools such as Lightstone Report, WinDeed, etc are valuable to assist in making informed decision & suitable offers.
5. **Finance raising** (no finance = no project, unless a PPP is suitable, or a land availability transaction is proposed). Traditionally an element of equity is needed to supplement the debt raised (i.e. equity = developer's skin in the game). Finance raising can be challenging & success is often a function of prevailing lending appetites, prevailing borrowing interest rates (senior, mezzanine, or private equity).
6. Assembly of **professional team**, contract negotiation, design flesh-out, documentation, etc. It helps to carry the same (or largely similar) professional team from one project to the next as styles & expectations from both client & professionals are known & allow smoother liaison.
7. **Construction process** – appointment of suitable main contractor (if not owner-building) & subcontractor & specialist trades. An understanding of construction and its risks (e.g. cost overruns, Health & Safety regulations, liaison hassles with City Council & plan-approving bodies) is important.
8. **Marketing** of units for let or sale of development on completion (explore turnkey). In-house expertise is a bonus, although this role is traditionally outsourced to estate agents / property brokers.

**9. Management of completed property** (if developed to hold, not sell) – includes property management, maintenance, security (including lease vetting, data capture, liaison with law enforcement, access control), rental collection, leasing / tenant procurement (listing, marketing, screening, liaison, lease preparation, occupation management). Property management to include deposit management, rental collection & distribution, default management, monthly reporting, utility account management, ad hoc inspection management, maintenance management, lease renewals, & termination management. In need, legal aspects require involvement such as handover of defaulting tenants & liaison with attorneys & Rental Tribunal, etc.

2. What would you say are shortcomings in the property development process?

I interpret the word “shortcomings” as risks.

**Dealing with City Council & plan approval bodies** is bureaucratic, slow, tedious & often soul-destroying for property developers. Despite the best of intentions, a potentially viable project can be severely affected by slow approval processes & officials (who take their permitted allocated maximum length of time to assess their portion of the approval process, with little to no acceptance of interference to expedite the process). In certain cases, with slow turnaround times, certain developers are known to employ professionals (outside of their assembled team) to expedite plan approvals via the use of contacts in City Council. Delays are project killers.

**“Time is money”** – sitting on land (incurring holding costs if geared or opportunity cost if not) awaiting Council or other approvals before being able to start construction is a major frustration.

Other risks include **financial risk** (i.e. ensure that the net operating revenue from the project, with all vacancy & bad debt assumptions accounted for, adequately covers total debt serviceability with margins of comfort built in).

**Business risk:** ensure that the development’s projected cashflows justify the time effort, money investment into the project before you start. In many cases, circumstances change around property developers during the development process (e.g. global financial crisis, stricter credit criteria, etc) and it often is best, when crises strike, to see a part-completed project through to completion despite deteriorating circumstances – at least a completed project has the ability to generate an income stream & return on investment. An incomplete project is an opportunity for a forced (and in cases a severely discounted) sale, with consequent financial loss to many parties.

Setting **unrealistic objectives** for a project is a risk – sense, practicality & a modicum of conservatism needs to prevail.

The following can be (very) detrimental:

- Insufficient market analysis.
- Poor or insufficient project planning.
- Architect’s design prevailing over functionality & project feasibility.
- Developer’s interests conflicting with those of the Local Authorities.
- Unrealistic assumptions made by the developer, particularly relating to costs & projected programmes & deadlines/completion dates.
- Incorrect interpretation of property zoning, and highest & best use.
- Sloppy project administration, bad contracts & enforcement thereof, bad project management, poor cost reporting & unsupervised site management.
- Lack of putting proper procedures & governances in place.
- Poor marketing plans.

3. Would you agree that local knowledge of the location you chose to develop in contributes to the decision you make?

Absolutely, it's tantamount to development suicide if the suitability of the location is assumed and isn't well researched or inherent knowledge held or gathered of the location, neighbourhood, and proximity of subject site to amenities such as public transport, communal facilities (schools, churches, sports fields, etc). Property toolkits such as Lightstone Property Report are essential to assist with this market research as they show vital information such as recent property prices in the immediate vicinity (i.e. latest 20 actual Deeds Office transfers), municipal valuations, comparable sales, endorsements, title deed info, etc. Proper knowledge of property prices, sizes, rental or selling rates (per m2 or comparable sales) prevailing in the area is vital and 101 stuff.

4. What are some critical decisions that you need to make in property development?

In no specific order:

- Choose the correct site – research it & research again.
- Don't make hasty decisions – walk the site & feel it with your gut, sleep on it before deciding (a valuable lesson learnt from the late Marc Wainer (Redefine Properties), a skilled & highly respected & successful property entrepreneur).
- Choose a capable & trustworthy professional team.
- Ensure that your feasibility/viability study covers all costs (especially the large ones). Forgetting an element (e.g. not including lifts) could result in an apparently viable project quickly becoming unviable, even part way during a development when the mistake is discovered.
- Apply sensibility to your feasibility study – bad assumptions inevitably backfire during the development process.
- Don't overestimate income & underestimate construction/development costs – often the “blue sky”/ margin does not allow for a huge shrinking of the gap between the two.
- Apply a simple (or detailed) SWOT analysis – once done, weigh up if the strengths outdo the weaknesses.

5. Would you say that you rely on impulses, detailed reviews, or a combination of the two when making a development decision?

Absolutely a combination of the two, but mostly detailed reviews/market research/discussions with brokers you can trust (regarded as “eyes & ears” in the property marketplace). Only relying on gut / impulses is left to the extremely skilled & experienced (often non-institutional) developers or investors.

There is no substitute for research when it comes to property – it's often a long-term investment and one that is best not badly made as the financial consequences are potentially huge.

6. If possible, could you state which decisions quick (impulsive) or thought through (detailed review) was more successful?

Thought-through decisions are definitely better than the impulsive ones. Quick & impulsive decisions should only be made with very good knowledge of the location, neighbouring area, etc and then if the price is so good that the opportunity is too good to miss in an environment where many potential

buyers would be interested in the property. These are the exception though and I'm still leaning towards a well thought through decision making process.

7. What would you say are key deliverables in real estate developments?

I've essentially touched on these above, but if I was to summarise:

1. Site finding
2. Appraising the development potential
3. Doing a detailed due diligence on the transaction
4. Consummating a transaction (with seller, financier, professionals, etc)
5. Arranging the finance
6. Designing the project, planning & approvals
7. Constructing the asset
8. Ensuring a successful exit strategy via rental or sale.

Managing the above processes should assist a developer to create a successful, profitable & viable project.

8. What would you list as key risks from successful projects and how did you overcome them?

Refer my comments in point 2 above – I interpret potential shortcomings as key risks. In our case, these are overcome by experience, collective knowledge of in excess of 75 years of property-related expertise in the company, including a combination of skills derived from entrepreneurship, PQS, CA, Property Financier, Joint Ventures, Private Equity, Investment Management, Finance & Strategy, Venture Capital, Corporate Finance, SPV's, etc.

9. What negative elements were identified in these successful projects and how did you overcome them?

Poor choice of certain site personnel – overcome by replacing certain personnel with more trustworthy & experienced personnel, despite this being an additional financial burden on the project and affecting project profitability.

Insufficient on-site management supervision at times – overcome by enforcing quality control checks by the principal agent & structural engineer and regular site checks by the project QS, supplemented by sporadic (and unannounced) visits from senior management. This served to raise standards on site.

Confinements of the site (due to location) – overcome with strategic planning of sequencing & site storage of materials & only ordering materials as & when needed.

Occasional health & safety shortfalls – overcome by strict enforcement of protocols on site relating specifically to PPE, covid 19-protection & site safety.

10. How many risks were created by poor decision making? Please describe the risks.

Fortunately, not too many. Errors of judgement relating to employment of certain site personnel (with initial glorious & misleading CVs) required remedying sooner than was actually done. On one specific project, the strategy of trying to finish off a site with the incumbent team, despite apparent shortcomings, was an oversight in hindsight, but one that was adequately rectified in the end with supplementary personnel. Poor decision-making on site by contractors can be hidden on site – these can prove costly in the long-run as latent defects show themselves, but it's part of property development and developers aim to keep these situations to a minimum as far as possible.

11. How did you adjust your business after these poor decisions were made (lessons learnt, new processes etc)?

We have considered and implemented a change in strategy and, as an owner-builder, we are leaning more towards outsourcing more of the riskier elements (e.g. reinforced concrete structure). In certain cases, going forward, we have engaged with specialists at locked-in prices – this protects both quality & budget for those elements. We have found that this strategy has borne good results so far.

12. Would you say that humans influenced the outcome of these projects (successful or failed) to a degree?

Absolutely, it's all about human input at the end of the day – property development & construction, whilst the latter is highly mechanised at times, requires human skills, judgements, decision-making, gutfeel, etc to be successful.

13. What would these influences be?

Human influence from the professional team, senior management from the developer is paramount to quality control, strategic thinking & direction. Site personnel are trained to interpret drawings designed by other and to create a 3D situation out of a 2D drawing. They respond to direction given by the professionals & management but are required to take initiative & make (good) decisions based principally on their construction experience – we only employ experienced personnel. I make it a habit to reinforce the following saying to our site personnel: "If in doubt, ask – don't assume anything". I have found that strategic questions asked of the professionals or senior management provides much needed direction to site personnel & shows that a level of interest is taken in what's happening on the site. Communication (good) is paramount to the success of any project, be it checking that the site is working off the latest drawings, asking questions of the professionals to ensure that details are not missed which could cause problems in future.