An Examination of Maximization: A Context of Innovation

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To My Mother

And My Wife

Contents

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Abstract

Maximization is an indispensable construct to choice theorists. In the last two decades, an extensive body of maximization research has developed. However, fundamental questions surrounding the operational validity and conceptual clarity of the construct are evident. Research has begun to present profoundly and troublingly conflicting results. One cause of this is a lack contextual considerations. Therefore, this research, adopting a context of innovation, sets out to tackle these fundamental operational and conceptual questions surrounding the construct.

RQ1, a two-week, two-time-point longitudinal survey (n=197) assessed maximization's operational validity in terms of temporal stability and discriminant validity from similar constructs. Measures of maximizing goal and maximizing strategy, components of maximization, were stable, as well as maintaining discriminant validity against other constructs, with maximizing goal and perfectionism the only exception to this. RQ2, a cross sectional survey (n=196) compared maximization with consumer innovativeness measures and demonstrated that maximization only correlated with cognitively associated constructs, and not the sensorial ones. RQ3, a protocol analysis, asked participants to talk aloud as they performed an innovation adoption decision task. The findings suggested maximization was stimulated by goals and was not a driving force in the decision process, rather it was a supporting function of other decision processes.

The findings of this thesis contribute to the maximization literature in 3 principle ways. Firstly, maximization's trait status (with some noted limitations) is strengthened in ways not previously done so (through temporal stability and discrimination from similar constructs). Secondly, by broadening maximization's nomological net, more can be understood about maximization, conceptually. Finally, the conceptualisation of maximization can now be developed with an understanding of the limited yet supporting influence of maximization on decision making process; one that relies on goals as paramount in allowing maximization manifestation. Contributions to the innovation literature are, too, available when reminded of the positive relationship between maximizing and consumer innovativeness.

Additional research is needed to further address the extent of maximization's existing operational integrity. In particular, assessing the stability of maximization across lengthier time frames and with larger samples will support the theory of a distinct maximizing trait; these efforts should be extended across domains to strengthen these claims further. Also, researchers should look to investigate the behavioural manifestation of maximization so as to understand the maximization process less ambiguously than is currently available.

Declaration

I declare that:

I am responsible for the work completed in this thesis. All verbatim extracts have been distinguished and the sources acknowledged. No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

Signature: Date: Thursday 26th September 2019

Jamal Nasri Alsaady

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1. Introduction

1.1 Scope of the Thesis

> "…or the man who is violently but equally hungry and thirsty, and stands at an equal distance from food and drink, and who therefore must remain where he is…and starve to death"
>
> — *Aristotle, On the Heavens*

Questions surrounding human choice and how we make decisions have long existed. Bobzien (1998) notes how philosophers have been challenged by the notion of choice long before even the time of Aristotle and Epictetus (p. 166). In the 16th century, mathematicians and statisticians attempted to mathematically tackle the philosophical problems of choice. For example, Blaise Pascal and Pierre de Fermat (Oppenheimer and Kelso, 2015) argued that agents should maximize their expected value. More recently, however, it has been economics (as a field) that has led conventional wisdom on choice and decision making, whereby humans choose under the *Economic Man* paradigm; a world view in which each human is perfectly rational. Humans make decisions using all available information with unlimited processing capabilities to pursue a choice that maximizes their utility. Oppenheimer and Kelso (2015), in their *Annual Review of Psychology* article, consider Von Neumann and Morgenstern's (1947) work on economic behaviour one of the major recent attempts to support expected utility theory for choice. This paradigm has since been replaced to one in which we understand humans as imperfect decision makers with bounds on their rationality when making decisions (Simonson, 2015) based on the seminal work of Simon (1955; 1956; 1959) that eventually and effectively laid the foundation for contemporary research on decision making (Simonson, 2015).

The theory of satisficing in particular (Simon, 1955; 1956; Schwartz, Ward, Monterosso, Lyubomirsky, White and Lehman, 2002) was pivotal in this shift towards the recognition of bounded rationality. Simon wrote:

"*…from the examination of the postulates of these economic models it appears probable that, however adaptive the behavior of organisms in learning and choice*

situations, this adaptiveness falls short of the ideal of "maximizing" postulated in economic theory. Evidently, organisms adapt well enough to "satisfice"; they do not, in general, "optimize" (Simon, 1956, p. 129).

Simon (Note: using mathematical proofs) made the original theoretical case for satisficing; one whereby humans are willing to accept choices that achieve some threshold of acceptable utility, even if it not an optimal solution. Maximizing, over satisficing, in operational terms is summarily the goal of wanting the best; paired with a strategy that involves extensive search of information about available options. That search for information then facilitates the selection of the optimal choice. It is a reflection of how the *Economic Man* should theoretically operate. Satisficers, conversely, will accept options that are not necessarily the best, but pass some minimum threshold of acceptance (or satisfaction) in order to make their decision.

Since Simon's work, a wide and rich body of research on decision making has been developed (e.g. Simonson, 2015). This includes the work of Schwartz et al. (2002), who made the operational case for maximizing; producing a scale that measures an individual's propensity to behave in an optimizing fashion, as an *Economic Man*, and the extent to which they pursue the best choice available. A substantial literature has emerged subsequent to Schwartz et al's (2002) scale development, which includes refinement and development of further scales. These maximizing scales score individuals on their likeness to the *Economic Man* model, with lower scoring individuals being categorised as satisficers. An array of findings are available that parade a rich representation of maximizing. For example, that maximizers (over satisficers) share a strong relationship with other personality traits, such as *Need for Cognition* (Schwartz et al., 2002); behaviourally, maximizers take longer in their decision processes (Polman, 2010); emotionally, maximizers experience more negative affect during their decision processes (Dar-Nimrod, Rawn, Lehman and Schwartz, 2009). More broadly, research indicates maximizers are more prone to attention deficit disorders (Schepman, Weyandt, Schlect and Swentosky, 2012).

However, there are mounting issues with this body of research on two fronts. Firstly, research presents conflicting findings (see *2.3.1 Contentions and Issues*), for example, some research finds maximizers to be objectively better decision makers (Iyengar, Wells, and Schwartz, 2006) but other research finds them objectively inferior

decision makers (Weaver, Daniloski, Schwarz and Cottone, 2015). Secondly, and importantly, key scholars (e.g. Misuraca and Fasolo, 2018) are also calling for a halt to publications until there is agreed consensus in the community on the most basic components of the construct. Recent literature is lucent on the need to address this confusion, with Schwartz himself re-entering the debate with a seminal synthesis article in which he and his colleague endeavour to collate and organise the literature, before providing a proposal to move forward (Cheek and Schwartz, 2016). Nevertheless, confusions have persisted:

"*Concerning the conceptual clarity, the proliferation over time of several maximizing scales, instead of making the concept simpler, has made the construct of maximizing more and more confused."* (Misuraca and Fasolo, 2018, pp. 157).

Cheek and Schwartz (2016) also point to the extent of confusion and disagreement that merits serious reconsideration of the construct of maximization:

"*Recently…almost a dozen new measures of maximization have been published in the fourteen years since Schwartz et al.'s initial research. Each new measure carries with it a distinct conceptualization — implicit or explicit — of what it means to maximize, which has produced a befuddling literature with many competing views of maximization*." (pp. 127).

This state, I will argue, stems from specific, often overlooked, areas of concern. These can be summarised as follows:

Scale development involves addressing basic psychometric requirements (Paunonen, 1998). Many of the scales available in the maximization literature fail to address two of these key requirements. Firstly, research needs to demonstrate that maximization scores (and hence, maximization tendencies and behaviour) are stable across time, bolstering its claim to trait status. Secondly, that maximization as a construct is significantly distinct from other constructs with which it shares theoretical similarities, an often-ignored consideration in maximization scale development, and a question that becomes important given the lack of conceptual clarity currently.

Beyond the issue of measurement, it is also unclear how maximization, however measured, actually functions. In Ding and Li's (2018) review paper on the psychological origins of maximization, one of their suggestions for future research is:

"*exploring the black box of cognitive processing*"

associated with maximization (p. 792) as construct defining developments and discussions such as the motivational force of the *Maximizing Goal* are absent and often left to a more abstract interpretation by researchers. Additionally, the strategy of alternative search that is often discussed is also unclear. As of yet, little research is available to empirically show that trait maximizers, for example, do indeed consider more options (Iyengar et al., 2006). This effort would bolster the integrity and clarity of the construct.

The need for context has also been stressed in maximization research (Cheek and Schwartz, 2016) as recent findings have begun to suggest that an individual's maximizing tendency varies depending on context (Carrillat, Ladik and Legoux, 2011), which could explain some of the differing research findings and underlines the importance of addressing all of the above issues.

Collectively, these issues are communicated as a general confusion, which if left unchecked, will almost certainly result in an ever-increasing conflicted body of literature. The need and importance of addressing and tackling these questions is highlighted when considering the reach of maximizing research. In addition to marketing, maximization scales have been used in a variety of disciplines including behavioural finance (Pan and Statman, 2012), clinical psychology (Schepman, Weyandt, Schlect and Swentosky, 2012), organizational behaviour (Polman, 2010), and recruitment (Liu, Keeling, and Papamichail, 2015). Allowing scale development and maximization literature more broadly to move forward without scientifically supported meaningful consensus means that this body of research will only cause more confusion. Indeed, it potentially stands to invalidate itself.

Principally as a result of the emerging findings of the importance of context, this thesis adopts a context of innovation within which to examine maximization. Innovation as a context has the following advantages, 1) a strong body of research to draw upon (c.f. Bartels and Reinders, 2011); 2) a context that removes many environmental contaminants, a problem raised by Simon (1955); and 3) the possibility to contribute to the innovation adoption literature that is in need of findings on

decision-making. This is expanded upon further in this thesis (see *2.2.2 Contextualizing Maximization, Introducing Innovation*).

1.2 Objectives of the Thesis

This thesis will *not* develop a new scale to add to the confusion. This thesis will *not* deliver a final and definitive account of maximization, as this is beyond the scope of this research. Nevertheless, in tackling what are deemed to be some of the most significant issues in the field as outlined above, this thesis aims to contribute findings towards a clearer understanding as to what maximization is. The concerns raised and addressed in this thesis, as raised in the literature, can broadly be categorised into the conceptual clarity and operational validity of the maximization construct. These categorised concerns convert into three main questions:

- *Research Question 1 - Is maximizing a valid construct as it is currently studied?*
    - A number of scales have been offered to scholars and practitioners to utilise when attempting to measure maximization (Misuraca and Fasolo, 2018). However, certain key psychometric inspections that are necessary when validating new scales (c.f. Rossiter, 2002; Paunonen, 1998) have left serious operational and conceptual doubts surrounding maximization. Firstly, maximization has yet to be convincingly demonstrated as a trait given the lack of effort to ensure its (temporal) stability across time. Secondly, maximization has yet to be made distinct from similar psychological traits, such as the *Need To Evaluate* (Petty, 1996). These questions challenge maximization's claim as a distinct psychological construct and put at risk much of the research reliant on such a claim.

- *Research Question 2 - What relationship, if any, does maximization share with an innovation adoption?*
    - The relationship between trait maximization and innovation adoption has not yet been explored to measurable degree. Considering that both of these bodies of work stand to benefit from each other's application, this question becomes of interest and importance. The context of innovation, not yet applied to maximization research, may provide

insights surrounding its muddied conceptualisation. Equally, the body of literature on innovation adoption still actively pursues findings related to the decision making of innovation adoption (c.f. Bartels and Reinders, 2011). This question becomes of further interest in ensuring that what follows in this thesis can be further understood. As maximization is examined using a context of innovation, understanding the nature of that relationship will help to guide discussions and conclusions from succeeding questions.

- *Research Question 3 - Where and how may maximization operate within an innovation decision-process?*
    - Conceptually, it is unclear how maximization actually operates. Specifically, it is unclear where in a decision process maximization would appear, and in what (motivating) capacity. Furthermore, it is also unclear how the goal and strategy of maximization operate. Not only does this create contention amongst scale developers, but more importantly, it makes it difficult to understand, interpret, and synthesize maximization findings. In addressing this question, existing claims about maximization (such as maximizers taking longer in decision processes) can be better understood, whilst future research can be more appropriately enhanced.

1.3 Structure of the Thesis

This thesis is structured into several chapters that each build towards a final discussion as to what has been contributed to the field, and to the body of research on maximization.

Chapter 2. Literature Review presents an overview of the maximization literature and the innovation context, with the gaps and issues in the maximizing literature being summarised towards the end. Maximization is introduced, with its history and importance touched upon, before a summary of the research is presented in tables (See *2.3 Contemporary Research on Maximization*). Then, contentions are presented before a more detailed review of the maximization literature is discussed. Following this, the summarizing of issues raised gives rise to three main research questions which are mentioned above (see *1.2 Objectives of the Thesis*).

Chapter 3. Methodology opens with the philosophy of science adopted for this thesis where different paradigms are discussed before one is eventually selected. Following this, the chapter continues by outlining the methodological considerations for the forthcoming research questions. Methods and techniques, as well as sampling, are all discussed in quantitative and qualitative terms to provide the basis for a methodological approach to be adopted for each question. Following this, each question is then addressed.

Chapter 4. Research Question 1 outlines the procedures, designs, analysis, and discussion for the first research question, namely *Is maximizing a valid construct as it is currently studied?* Following this *Chapter 5. Research Question 2* outlines the procedures, designs, analysis, and discussion for the second research question, namely, *What relationship, if any, does maximization share with an innovation adoption?* Similarly, *Chapter 6. Research Question 3 - Where and how may maximization operate within an innovation decision-process?* also outlines the procedures, designs, analysis, and discussion for the third research question.

Chapter 7. Discussion and Contributions summarises this thesis and key contributions. The findings are discussed, presenting theoretical and managerial implications for each research question, before an overall contribution is argued. Finally, *Chapter 8. Conclusions, Limitations, and Further Research* discusses the limitations in light of what could have improved the research. Further research is also suggested before a conclusion is given.

1.4 Conceptualisations: Traits & States, Goals & Strategies

This thesis will consider the concepts of traits, states, goals, and strategies. Therefore, some initial clarifications and conceptualisations of the approach taken in this research are presented below. However, as has been mentioned, and as will become further apparent, these early definitions of maximization are ones that are tentative and presented for introductory purposes – indeed, it is a focal element of this research to better understand the construct of maximization. A high-level description of maximization is presented below before a more thorough one is presented in *2.8 Moving Forward: Adopting a Definition*.

Maximization is often referred to as an individual difference, that is, a trait (e.g. Schwartz et al., 2002; Dalal, Diab, Zhu and Hwang, 2015), it is also often discussed as a goal (e.g. Diab, Gillespie and Highhouse, 2008) and strategy (e.g. Turner, Rim, Betz and Nygren, 2012). More complexly, maximization has also been examined and theorised as a state (e.g. Ma and Roese, 2014). Especially because this thesis centres on tackling and clarifying the conceptualisation of maximization, it becomes paramount that from the offset, the nuances between these decision phenomena are clear. Further, maximization has been referred to as a goal – that is, broadly, one of wanting the best whilst also being referred to as a strategy – that is, one in which alternative search between choices takes place until some minimum threshold is identified and selected.

Yet, traits, states, goals, and strategies are, in their own right, distinct concepts. Bodies of literature exist to tackle traits exclusively; for example, within the field of personality psychology, "the big five" are often discussed (e.g. Judge, Rodell, Klinger, Simon, and Crawford, 2013). States are also often discussed as unique concepts in which an individual's environment alters, temporarily, their baseline condition so that they incline more towards a particular state of being (c.f. Cervone and Pervin, 2013). Goals are the desired states that people try to move towards (or undesirable ones they look to avoid) and themselves are layered (hierarchical), complex, and composed of several elements (c.f. Baumgartner and Pieters, 2008) whereas strategies are the less abstract cognitive processes, tools, and mechanisms that individuals use to navigate the choices put before them in support of and pursuit towards the goals they have, the states they are in, and the personalities they have. In many ways, the befuddled understanding of maximization comes from an uncoordinated attempt to marry these diverse and complex bodies of research into a synthesised effort at a wholesome definition. In more detail;

Traits: Referring back to Allport and Odbert's (1936) classic work, traits, such as *Trustful* and *Cunning* differ from states such as *Angry* and *Aroused*. Individuals possess traits with varying degrees of significance and generality. Traits may be cardinal;

"*a disposition that is so pervasive and outstanding in a person's life that virtually every act is traceable to its influence*"

Traits may be central, which:

"*express dispositions that cover a more limited range of situations than is true for cardinal traits*"

Traits may be secondary dispositions, which are:

"*traits that are the least conspicuous, generalized, and consistent*." (Cervone and Pervin, 2013, p. 238).

In this way, there exists a hierarchy of traits. However, the line between traits and states can be a blurred one. Anxiety is one such example whereby a construct may exhibit both state and trait like features, with individuals differing in their general disposition to feeling anxiety, as well as certain situations or states affecting the experienced anxiety (Spielberger, 1971).

States: However, states are the emotions and moods of an individual at a particular, delimited point in time (Cervone and Pervin, 2013, p. 247). This dichotomy is sometimes referred to as a situational vs. dispositional one (Kakmar, Carlson and Bratton, 2008). A state is a temporary and situational but can still impact the way in which individuals behave. Internally represented states are also reflective of goals.

Goals: Baumgartner and Pieters (2008) provide a comprehensive synthesis of research on goals. In this approach, goals are:

"*internal representations of desirable states that people try to attain and undesirable states that they try to avoid*." (p. 368).

A goal is a desirable end-state to move toward or an undesirable end-state to move away from (Baron, 2000). Goals are also different from other motivated constructs such as needs because they tend to be domain-specific and concrete. Goals become relevant when consumers (or individuals in general) need to sacrifice something to get what they want, such as sacrificing money for products. Goals are also hierarchal, from low to higher ordered goals and are accessible to the conscious awareness, although they need not be salient during behaviour that is in pursuit of a goal. Similar to traits, hierarchies exist in goal structures as well.

Strategies: In order to achieve goals, however, individuals must rely on strategies in which to make decisions that move them in the direction of their goals. Strategies are the tools that individuals employ and the approaches that they follow to assist them in making a decision (Bettman, Luce and Payne, 1998).

Given these definitions, it is worthwhile considering how these concepts interact. In the interest of a parsimonious marrying of these concepts, we may think of **traits** as higher ordered goals and values, the most abstract goal constructs that hold senior motivating decision power (a valid conceptualisation that has been successfully advocated by the likes of Pieters and Baumgartner [1995]). **Goals**, then, exist beneath these traits as a means in which to attain and fulfil these higher order goals (traits). For example, an individual may be high in trait agreeableness, a high-ordered goal inclined towards social harmony and cooperation (Cervone and Pervin, 2013). Therefore, lower ordered goals may be ones characterised as a goal of making people happy (in pursuit of social harmony). In pursuit of this goal, then, this individual may take actions and make choices that achieve this goal. Yet the selection of any action requires some form of **strategy** to select it; indeed they will need to make a selection from list of possible actions and behaviours that will impact their attainment of that goal. They may employ a strategy that gives them the quickest option, a strategy that ensures the maximal choice outcome, or one that contains both of these criteria. However, in some situations and in some states, this individual may not make choices with these goals in mind; as an example, in a situation in which they learn of upsetting personal news, they may be less likely to move towards goals that make others happy, and employ strategies to make choices of actions that make them happy, given their **state**. Predicting such choice pathways is challenging and "it depends" is often accompanied to any attempts to comprehensively answer these questions. Clearly, then, an attempt to synthesise these concepts into a single theory that accounts for all of them, such as maximization, is likely to lead to confusions, as it has. Moving forward, therefore, we may broadly think of maximization within decision-making in the following way:

Once we have **chosen** (motivated by super-ordinate goals and basic values) **to choose** (take some action to achieve those goals and desired end states), we may then **choose** (Setting the standards of the decision) **how we choose** (The strategy for information search and processing).

Appendix C: Supplement Reading on Decision Making expands on these ideas, discussing the works of key scholars (Bettman et al., 1998; 2008; Pieters and Baumgartner, 2008; Rokeach, 1979) in the field and on topics of goals and strategies in more detail.

2. Literature Review

"*Man is a rational animal –*
so at least I have been told.
Throughout a long life I have looked diligently for
evidence in favour of this statement, but so far I have not
had the good fortune to come across it…"

— Bertrand Russell, Unpopular Essays

2.1 Introduction

The following chapter outlines an introduction to maximization, choice and decision-making at large, and maximization in focus. Specifically:

2.2 What is Maximization introduces maximization as a construct. A brief history of how the construct has developed and its current applications are also discussed. The importance of maximization as a construct becomes stressed once it is made clear the impact maximization research has had in the decision-making field. A context of innovation, in which to examine maximization, is presented along with a brief research introduction on innovation adoption.

2.3 Contemporary Research on Maximization provides a collection of the contemporary research on maximization whilst also introducing the major issues surrounding maximization research. In particular, it is argued that the construct's validity and conceptual clarity are areas of serious concern. The literature of maximization is then explored in *2.4 Maximization as a Goa*l, *2.5 Maximization as a Strategy*, *2.6 Maximization as Goal and Strategy,* and *2.7 Maximization: Other Conceptualisations and Discussion*.

2.4 Maximization as a Goal explores the maximization literature from the perspective of the goal research conducted. The concept of maximization as a goal is discussed with additional literature on goals introduced to support and synthesize the discussion. *2.5 Maximization as a Strategy* explores the maximization literature from the perspective of the maximization (strategy) research conducted. Research on maximization as a process is shown to be somewhat lacking, reiterating the issues of conceptual clarity but also highlighting the similarities with other constructs, namely

decision-making styles. *2.6 Maximization as Goal and Strategy* presents the research on maximization, which considers maximization as a blend of the two. *2.7 Maximization: Other Conceptualisations and Discussions* introduces and touches on some of the other contributions and discussions on the maximization literature, such as decision difficulty, self vs. other maximization, and alternative approaches to examining maximization.

2.8 Moving forward: Adopting a Definition summarises the discussion thus far, adopts a definition with which to move forward and also sets the direction for that forward movement. *2.9 Emerging Issues* summarises and refines the key issues arising out of the literature review and outlines the avenues of the research questions that lie ahead; specifically, addressing maximization's validity in terms of discrimination and temporal stability, maximization's conceptual clarity with respect to the goal and strategy, and maximization's behavioural outputs.

2.2 What is Maximization?

In decision-making, maximization is the *goal* of wanting the best and is achieved through a *strategy* of search between available options (Simon, 1955; Schwartz et al., 2002). Most broadly, maximization can also be thought of as an individual difference; the extent to which an individual seeks to maximize their choice value – the goal of wanting to get the best - and to what extent they seek out alternative options and information about those alternative options before processing that information to support their decision making – the strategy they use to achieve this goal.

At this point, a more detailed and literature-sourced definition may be desired; it will become clear later on, however, why adopting and adhering to rigid definition at this stage would be problematic. Suffice it to say, for the time being, defining maximization as a goal of wanting the best and engaging in some strategy of alternative search will serve. More widely, maximization is an attempt to explain and contribute to larger choice phenomena (Ma and Roese, 2014; Weaver et al., 2015). By this it is meant that the phenomenon of choice is a complex and abstract one, one that is interpreted and studied from different perspectives. Maximization, both as a construct

and body of literature, seeks to explain and predict the individual differences in people's goals, strategies, and outcomes when making their choices.

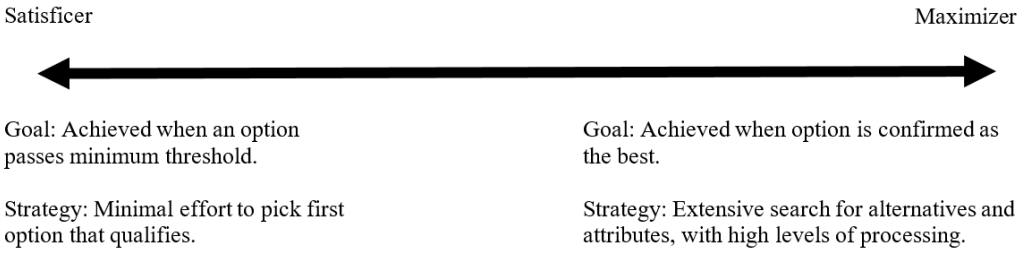

Figure 2.1: Visually Representing Maximization as a Spectrum

To further introduce maximization, we may initially think of it as a theory that accounts for the goals, strategies, and outcomes involved with human choice (Cheek and Schwartz, 2016; Tuner et al., 2012; Dalal et al., 2015). As an analogy to summarise the extensive research on maximization (see *Table 2.1: Summary of Key Maximization Research Papers*), we may think of two individuals that represent opposing ends of a maximizing spectrum: Sam exists on one end of the spectrum of maximization and can be considered a satisficer whilst Max exists at the other end of the spectrum and can be considered a maximizer. A satisficer is different to a maximizer; their goals when making a decision are achieved once some minimum threshold (or minimal standard) is met. Consequently, they are also characterised by their reduced effort in searching for information and alternatives. *Figure 2.1: Visually Representing Maximization as a Spectrum* presents this.

Every individual exists at a different point on this spectrum. Sam (the satisficers) accept lower standards for themselves in the majority of their choices in life, they are unwilling to expel any more than the bare minimum of cognitive effort to make these decisions, and generally do not find this difficult. Max (the maximizers), alternatively, strive to make choices that they deem the best available and in order to achieve this, they search through every possible option and assess every possible piece of information, trying to without error. Max finds making a decision extremely

difficult. Sam is almost always happier for this (the less effortful choice made) than is Max. The "Maximization Paradox", coined by Dar-Nimrod et al. (2009), is a convenient summary piece on maximization. The "Maximization Paradox" posits that maximizers (over satisficers) sacrifice more resources to attain more options that ultimately reduce their satisfaction.

However, this does not begin to adequately represent maximization as it is currently studied. There exist serious conceptual and operational confusions as to what maximization is beneath the surface. Several key gaps, including conceptual ambiguity and operational validity have ensured that almost two decades later, there is still fierce contention surrounding maximization (Misuraca and Fasolo, 2018) and what is meant by it.

2.2.1 History and Importance of the concept of Maximization and Satisficing

I would argue, with little contention I imagine, that Herbert Simon's (1955; 1956; 1959) work on bounded rationality has laid the foundations for the ground-breaking changes in how we think about choice; it has been the paradigm shifting force (Kuhn, 1970) that has shaped contemporary thought on choice. The notion of bounded rationality is one that acknowledges the cognitive and processing limitations on an individual's ability to arrive at an optimal choice. In this way, individuals often satisfice and do not attain their maximal or optimal choice. Simon (1955, p. 99) was not shy about his intentions when exploring and developing this paradigm, either, when he said:

"Broadly stated, the task is to replace the global rationality of economic man with a kind of rational behavior that is compatible with the access to information and the computational capacities that are actually possessed by organisms, including man, in the kinds of environments in which such organisms exist."

Tversky and Kahneman (1986), often considered pioneers in the fields of decision-making in economics and psychology, paid homage to Simon's breakthroughs in their seminal contributions when they commented:

"*Indeed, prospect theory is an attempt to articulate some of the principles of perception and judgement that limit the rationality of choice".* (p. 273).

This is not an exception; numerous examples of this praise can be found in other seminal works including Richard Thaler's (1980) *Toward a Positive Theory of Choice* and Paul Slovic's (1991) *The Construction of Preference*. The inaugural article of the new *Journal of Marketing Behaviour* was authored by another giant in this field, Itamar Simonson (2015), in which he stated that contemporary decision making:

"*has evolved in all likelihood following Simon's (e.g., 1965) path breaking work on bounded rationality and the growing recognition that normative decision models are often violated as descriptive frameworks"*. (p. 11).

Today, maximization's applications are both wide spread and rich, and have helped address a variety of decision making questions across entire fields (such as economics and psychology; c.f. Thaler, 2014), specific business contexts (e.g. recruitment and talent acquisition; Lui, Keeling, and Papapmichail, 2015), and even smaller management disciplines (consumer personality; c.f. Cheek and Schwartz, 2016). Further, the importance of maximization as a construct and area of study is both managerially and theoretically essential. Maximization has famously shown and explained, as one example, how increasing the number of choices that people are given causes a negative effect on their satisfaction (Iyengar et al., 2006). This has a range of marketing implications (e.g. retail space management, brand extensions, etc.). Moreover, research in maximization has also helped in understanding decision-making in broader business settings, such as organizational decision-making (Simon, 1979).

More philosophically, and outside the scope of this thesis, this maximization paradox of increased freedom (through more choice) impeding human actualization and satisfaction has important implications that extend beyond the marketplace all together. Salecl (2011) discusses in great detail how our limited and flawed information processing capabilities, paired with an environment of information overload and abundant choice, raises important questions surrounding what it means to be human. Life domains such as family, work, and personal actualization are all included in her philosophic approach to understanding the human condition, done so, importantly, by expanding on the seminal contributions and discoveries by Simon (1955; 1956) – although not directly mentioned. These discussions, as mentioned, go beyond the scope of this thesis, and are mentioned simply to highlight the magnitude of satisficing and maximizing theory.

2.2.2 Contextualising Maximization, Introducing Innovation

Cheek and Schwartz (2016) recently urged the study of "Domain-Specific" maximization, echoing other recent calls for action to substantially shift the way maximization is studied (Misuraca and Fasolo, 2018). Indeed, and as will become clear further on, some of the contention surrounding maximization stems the inability to reconcile conflicting findings from different contexts. As of yet, little conscious effort has been made to study maximization as such. Conscious in that context is not a focal element of the study, as whilst there are varying contexts in which maximization is explored exist (such as food products with Iyengar et al., 2006; leisure and entertainment with Ma and Roese, 2014), rarely is an effort made to consider the role of the context as a focal element when studying maximization[1]. Work by Carrillat et al. (2011) has shown how an individual's maximizing tendency in specific contexts could be influenced based on the decision-making context. Therefore, the need to examine maximization in context is imperative (Cheek and Schwartz, 2016; Misuraca and Fasolo, 2018), and a context should be adopted when studying maximization so as to establish the bounds of the claims made.

One such context that has been explored in depth (within its own domain, not maximization's) is that of innovation. The innovation literature has long been building theories and frameworks that address how people choose to adopt innovations. With innovation adoption, established knowledge banks from which individuals can establish criteria and form full evaluations are not easily available (Moreau, Lehmann, and Markman, 2001). Comparatively, maximization hinges on the extent to which individuals search through both internal and external knowledge bases (Parker, Bruine de Bruin, and Fischhoff 2007; Cheek and Schwartz, 2016) when looking to make a decision. In innovation adoption, wide varieties of options are not available (Rogers, 2003), yet maximizers seek to expand their choice set when presented with a choice task (Schwartz et al., 2002). Further, with innovation adoption, individuals cannot rank alternatives against criterion because 1) alternatives are comparatively limited as mentioned – certainly with radical innovations (Feiereisen, Wong and Broderick, 2008) and 2) criterion for evaluating those alternatives are less defined and may be absent entirely (Moore, 2014). Conversely, maximizers seek to consider more attributes and

[1] In *2.7.2.5 Maximization in Other Disciplines*, a discussion on how the environment and context of a decision may impact it, under the umbrella known as ecological rationality, is had. This discussion is highlighted as a talking point under different schools and their scholars, who, unlike the ones focused on in this thesis, consider "ecological" factors in their studies.

evaluate more extensively (Dalal et al., 2015; Dar-Nimrod et al., 2009; Schwartz et al., 2002). In many ways, the context of innovation seems a dreadful scenario for maximizers.

However, using innovation adoption as a context in which to examine maximization is worthwhile for three reasons. Firstly, and most fundamentally, it provides a well-established and well researched context in which to examine maximization. The domain of innovation adoption research is perpetually developed and revised by a strong and active research community (c.f. Bartels and Reinders, 2011). As such, wealth of insights are available with which to further contextualize maximization findings.

Secondly, the nature of the context may contribute beyond simply providing a strong context in which to examine maximization. By virtue of the lack of available knowledge (internal and external), options available to select from, and established social norms to benchmark against, this context may remove the "noise" that other contexts suffer from and allow maximization to be observed more explicitly. Simon (1955) commented on how ease of information access allows all to maximize without effort; the counter to this is to provide an environment in which information acquisition is especially effortful so as to observe a "purer" form of maximization. This of course is mainly anecdotal and only somewhat plausible; nevertheless, the possibility is an added bonus in what is essentially "adopting a context". Moreover, maximization has yet to be examined in contexts of innovations, further adding to the body of maximizing literature.

Finally, using the context of innovation also serves to benefit the innovation adoption literature body. Scholars generally agree that innovations fail in the marketplace over 80% of the time (e.g. Schneider and Hall, 2011; Veryzer, 1998; Yang and Aldrich, 2012). The financial strain of failed innovations can be titanic; funds poured into R&D, promotions, and other strategic activities are inherently expensive (von Braun, 1990) whilst non-financial opportunity costs such as time and effort can too drain a company's resources. Scholars have researched ways in which consumer decision making, a known major factor in innovation adoption failure (Aggarwal, Cha and Wilemon, 1998; Veryzer, 1998), can be used to improve innovation adoption. Though not the primary focus of this thesis, employing the context of innovation to

study maximization may also result in insights that contribute to the field of innovation research. Importantly, most innovations fail during the introduction phase (Yang and Aldrich, 2012) when little is still known about the innovation. Innovation adoption (on the part of the individual consumer) has been predominantly studied through individual traits (e.g. Manning, Bearden and Madden, 1995), choice goals, (e.g. Midgley and Dowling, 1978), and choice strategies (e.g. Rogers, 2003; Aggarwal et al., 1998). Conveniently, the study of maximization unites each of these domains in efforts to exist as a sole construct. In this regard, maximization may hold important insights into the decision-making and adoption of innovation.

With this noted, a brief introduction into innovation adoption can now serve to prepare the reader for the forthcoming discussions of innovation adoption in the latter chapters. The vast majority of contemporary works on innovation decision making (c.f. Bartels and Reinders, 2011; Rogers, 2003) rely on Everett Rogers' *Diffusion of Innovations* (2003). Rogers' (1962; 2003) work was vital in beginning the development of the field of research concerned with understanding how innovations become adopted by societies. Further, his work has also served to better understand how individuals decide to adopt innovations. Originally released in 1962, *Diffusion of Innovations* provides both social and psychological frameworks with which to understand the process of innovation adoption. The individual model of adoption, deemed the *Innovation-Decision-Process*, maps out how an individual comes to adopt or reject an innovation. According to Rogers (2003) individuals that engage in a decision to adopt an innovation do so having certain conditions met such as felt needs and their level of innovativeness. If these conditions are not met to a sufficient degree, it is unlikely that an individual will begin to consider whether or not to adopt an innovation. Moving on, before the decision to adopt is made, individuals must iterate through *Knowledge* and *Persuasion* stages where they seek out and acquire various types of information before then evaluating and processing that information, respectively. Once completed to a sufficient degree, the individual makes a *Decision* to adopt or not. This summarises the process of the decision to adopt, with the figure (*Figure 2.2: Rogers'[2003] Innovation Decision Process*) below visually representing this.

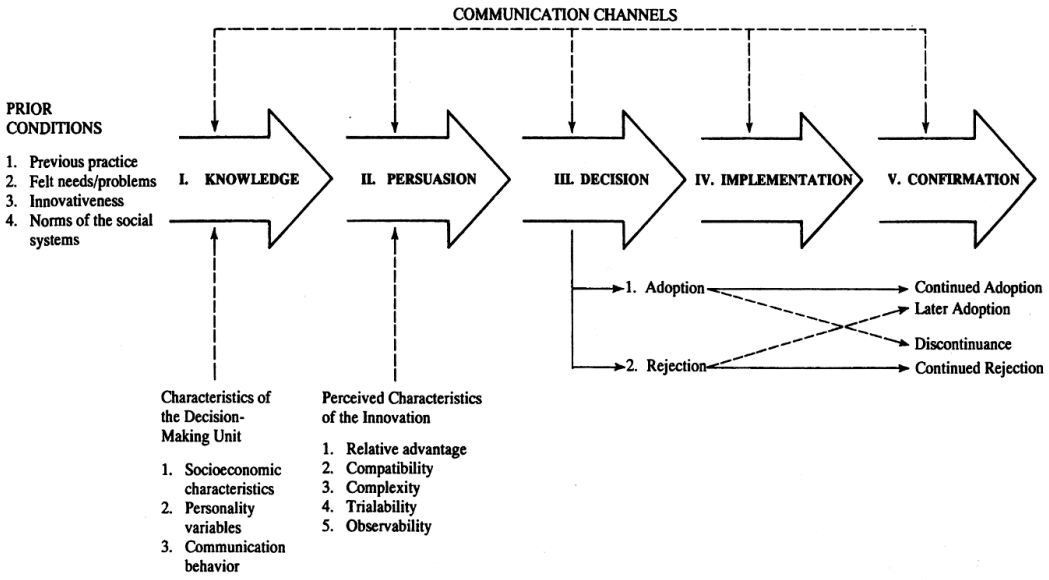

Figure 2.2: Rogers' (2003) Innovation Decision Process

However, the research on maximization extends beyond decision processes and involves other important aspects of how individuals differ in their traits when making choices. This trait approach to maximization is also paralleled in innovation adoption literature; the individual difference in the innovation literature is known as *Consumer Innovativeness*. This trait has become a popular operationalisation of an individual's innovation adoption behaviour. The literature on innovation has generally agreed that measuring *Consumer Innovativeness* (e.g. Venkatraman and Price, 1990; Baumgartner and Steenkamp, 1996; Midgley and Dowling, 1978; Hirschman, 1980; Bartels and Reinders, 2011) is an appropriate way of predicting innovation adoption. That is, the higher an individual's *Consumer Innovativeness*, the greater the likelihood that they adopt an innovation. Considering we are examining maximization's conceptualisation, itself an individual trait, it aligns well to use a trait-theory approach when understanding innovation adoption. The question, however, as to what *Consumer Innovativeness* actually is, as with maximization, is difficult to define.

In his synthesis article, Roehrich (2004) made the important point:

"There is no consensus in the definition of innovativeness. From 'inherent novelty seeking,'; which may have consequences other than new product buying behavior, to 'predisposition to buy new products,' which defines the concept by its

main consequence, through 'independence in innovative decisions,' which could not be empirically validated, various authors have given different views of the concept. There is no consensus either on the roots of innovativeness. Of the need for stimulation, novelty seeking, independence in judgment and the need for uniqueness, which are true antecedents of innovativeness?" (p. 673).

Research on *Consumer Innovativeness* is usually situated within one of three varying levels of abstraction. The three levels of *Consumer Innovativeness* are, starting from the highest level of abstraction, *Innate Innovativeness* (also referred to as *Global Innovativeness*), *Domain-Specific Innovativeness*, and *Behavioural Innovativeness* (also referred to as *Actualised Innovativeness*). This is a popular framework to adopt (Bartels and Reinders, 2011) when studying *Consumer Innovativeness*. This is presented visually in *Figure 2.3: Visually Presenting the Different Innovativeness Approaches.* Further:

Innate Innovativeness is:

"*the degree to which an individual makes innovation decisions independently of the communicated experience of others*" (Midgely and Dowling, 1978, p. 235).

More recently, it has been defined as a "predisposition to buy new and different products and brands rather than remain with previous choices and consumer patterns'' (Steenkamp, Ter Hofstede and Wedel, 1999). Midgely and Dowling (1978) were amongst the first to interpret innovativeness in this manner, that of a generalizable personality trait. Hirschman (1980) built on this when she furthered that innovativeness as a personality trait reflected an innate tendency to seek out new experiences or information.

Domain-Specific Innovativeness:

"*captures an individual's predisposition toward a product class and reflects the tendency to learn about and adopt new products within a specific domain of interest*" (Bartels and Reinders, 2011, p. 604).

Put otherwise, it is an individual's innovation adoption behaviour within a particular domain. For example, one may be highly innovative with respect to

computer technologies and adopt, almost immediately, the newest processing technologies, graphics cards, cooling systems, and storage systems, but might be quite delayed in their adoption of innovations within another field, say cameras. Goldsmith and Hofacker (1991) began the discussion around consumers exhibiting innovation adoption in specific domains and created a scale to accompany their definition.

Behavioural Innovativeness is, strictly speaking, the:

"*the degree to which an individual's purchase or use of an innovation precedes that of other consumers*" (Bartels and Reinders, 2011, p. 605).

This is the definition that most closely aligned with Rogers' initial discussion of innovation adoption that stated a consumer's innovativeness was:

"defined as the degree to which a responding unit is relatively earlier in adopting an innovation than other units in the system" (Rogers, 1976, p. 295).

However, it is also been conceptualised as the ownership of new products (Im, Bayus and Mason 2003; Im, Mason and Houston, 2007), the purchase of new products (Goldsmith et al., 1995), the trial of new products (Steenkamp and Gielens, 2003), the usage of new products (Cotte and Wood, 2004), as well as an exploratory buying behaviour (Baumgartner and Steenkamp, 1996).

Further, a cross-sectional inventory measure has also proved popular and a powerful predictor (e.g. Rogers and Shoemaker, 1971; Rogers, 2003; Im et al., 2007). The figure below (*Figure 2.3: Visually Presenting the Different Innovativeness Approaches*) visually presents this hierarchy of innovativeness traits.

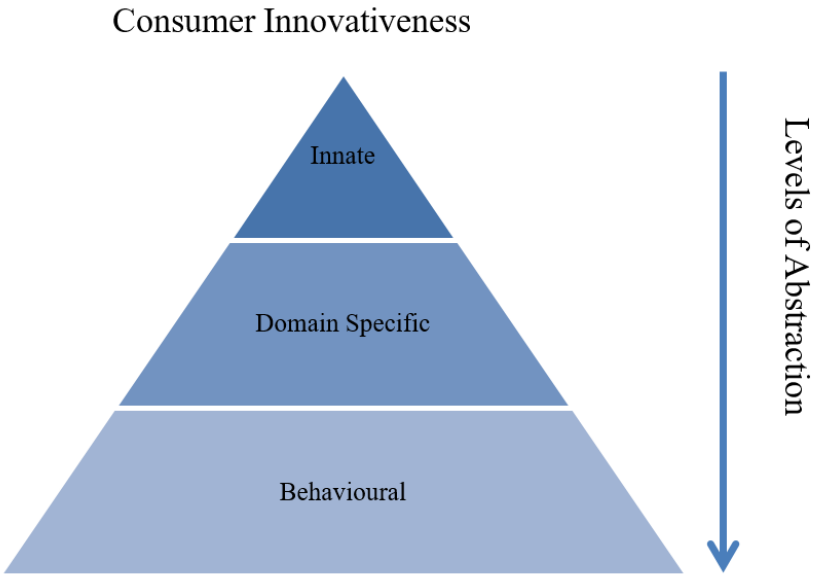

Figure 2.3: Visually Presenting the Different Innovativeness Approaches

To summarise, *Consumer Innovativeness* is considered an appropriate measure for innovation adoption (i.e. a means of predicting an innovation's commercial success). *Consumer Innovativeness* has been defined and operationalised along 3 distinct levels: *Innate, Domain-Specific, and Behavioural*.

2.3 Contemporary Research on Maximization

A summary of some of the major contributions to maximization research are outlined below:

Maximizers…(over satisficers)	Citation
Are more at risk of depression	Schwartz et al. (2002)
Are more at risk of attention deficit/hyperactivity disorder	Schepman, Weyandt, Schlect and Swentosky (2012)
Are more present-focused	Besharat et al. (2014) Carrillat, Ladik and Legoux (2011)
Are more likely to ruminate about the past	Paivandy, Bullock, Reardon and Kelly (2008)
Engage in more comparison of options	Schwartz et al. (2002)
Consider more options	Chowdury, Ratneshwar and Mohanty (2009); Dar-Nimrod, Rawn, Lehman and Schwartz (2009)
Spend more time and effort in the decision process	Misuraca and Teuscher (2013) Polman (2010) Schwartz et al. (2002)
Try to minimize future regret	Schwartz et al. (2002)
Sacrifice more resources to gain access to more choices	Dar-Nimrod et al. (2009)
Are more likely to engage in counterfactual thinking	Leach and Patall (2013) Schwartz et al. (2002)
Rely on external criteria, over personally relevant information	Iyengar et al. (2006)
Experience more negative affect and stress during the decision process	Dar-Nimrod et al. (2009)
Are more sensitive to effects of social comparison	Schwartz et al. (2002)
Are more likely to use social comparison information over other information to judge quality of choice	Polman (2010)
More likely to change their choice patterns depending on if public or private	Lin (2015)

Value relative superiority over absolute superiority	Weaver et al. (2015)
Are more likely to be younger	Purvis, Hower and Iyer (2011) Tanius, Wood, Hanoch and Rice (2009)
Are more perfectionistic	Bergman, Nyland and Burns (2007) Chang, Lin, Herringshaw, Sanna, Fabian, Perera, and Marchenko (2011) Schwartz et al. (2002)
Are less optimistic	Schwartz et al. (2002)
Are greedier	Seuntjens, Zeelenberg, van de Ven, and Breugelmans (2015)
Are more neurotic	Purvis et al. (2011) Schwartz et al. (2002)
Are less open	Purvis et al. (2011)
Are less happy	Larsen and McKibban (2008) Schwartz et al. (2002)
Are more prone to regret	Schwartz et al. (2002) Besharat, Ladik and Carrillat (2014)
Have lower life satisfaction	Dahling and Thomas (2012) Schwartz et al. (2002)
Are more prone to procrastination	Osiurak, Faure, Rabeyron, Morange, Dumet, Tapiero and Finkel (2015)
Are less well-adjusted	Chang et al. (2011)
Have lower self-esteem	Osiurak et al. (2015) Schwartz et al. (2002)
Are less satisfied with their decisions	Iyengar, Wells and Schwartz (2006)
Are less happy about their own choices when other peoples' choices are better, even when their choice is was better than expected	Huang and Zeelenberg (2012)
Achieve objectively better outcomes	Iyengar et al. (2006)
Achieve more positive and more negative outcomes	Polman (2010) Parker et al. (2007)

Table 2.1: Summary of Key Maximization Research Papers

Whilst less contention can be found in this selection of research, it can more easily be found in the scale-development arm of the research, of which there is an equally impressive body of work. It is likely that the recent confusion and contention in maximization research has arisen from the scale development arm of the research given their need to be specific and definitive in their conceptualisations of maximization. The contentions surrounding maximization, then, are fundamental and often surround the meaning and conception of maximization. Summarised below (*Table 2.2: Summary of Main Maximization Scale Papers and Research*) are the key scales developed that have attempted to operationalise maximization.

Year	Journal	Authors	Defining Maximization	Scale Name (Abbreviation)
2002	Journal of Personality and Social Psychology	Schwartz, Ward, Monterosso, Lyubomirsky, White, Lehman	"Maximizers desire the best possible result; satisficers desire a result that is good enough to meet some criterion" (p. 1184).	Maximization Scale (MS)
2008	Judgement and Decision Making	Nenkov, Morrin, Ward, Schwartz, Hulland	Relies on Schwartz et al. (2002) and adds "tendency to optimize when making decisions may manifest" as a dispositional variable...as an individual difference. Whereas some people consistently try to choose the "best," others tend to "satisfice" and settle for options that are simply good enough" (p. 371)	Short Form Maximization Scale (MS-S)
2008	Judgement and Decision Making	Diab, Gillespie, Highhouse	"maximizing involves spending more resources to find a better option than the best one found so far." (p. 364) and "a general tendency to pursue the identification of the optimal alternative" (p. 365)"	Maximizing Tendency Scale (MTS)
2010	Judgement and Decision Making	Lai	"decision makers hope to find the best possible solution by systematically comparing available alternatives based on well-defined preferences." (p. 164)	Modified Maximization Scale (MMS)
2012	Judgement and Decision Making	Turner, Rim, Betz, Nygren	Uses Schwartz et al. (2002) but goes on to say "a "maximizer," who attempts to find the absolute best solution, versus a "satisficer," who is comfortable with a satisfactory, or "good enough," solution."	Maximization Inventory (MI)
2012	Judgement and Decision Making	Weinhardt, Morse, Chimeli, Fisher	Interchanges with Diab et al. (2008) and Schwartz et al. (2002) but states "However, as we have discussed the definition of what is maximizing is elusive." (p. 656)	Revised Maximizing Tendency Scale (MTS-R)
2012	Judgement and Decision Making	Weinhardt, Morse, Chimeli, Fisher		Revised Short From Maximization Scale

				(MS-S-R
2013	Journal of Social Psychology	Mikkelson, Pauley	"optimization of choices (that is, maximization, or making the best choice possible" (p. 467)	Relational Maximization Scale (RMS)
2014	Personality and Individual Differences	Richardson, Ye, Ege, Suh, Rice	Builds on Schwartz et al. (2002) adding "Maximization is a decision-making approach with the goal of obtaining the best available choice in a given situation."	Refined Maximization Scale (MS-R)
2015	Journal of Behavioural Decision Making	Dalal, Diab, Zhu, Hwang	Relies on Schwartz et al. (2002) and adds "to define maximizers as individuals who are unwilling to reduce their standards when making decisions" (p. 438)	7-Item Maximizing Tendency Scale (MTS-7)
2015	Personality and Individual Differences	Misuraca, Faraci, Gangemi, Carmeci, Miceli	Essentially deconstructs maximization into several constructs reflected in the different subscales including fearful maximizing, resolute maximizing, more ambitious satisficing, less ambitious satisficing, parsimonious minimizing, indolent minimizing	Decision Making Tendency Inventory (DMTI)

Table 2.2: Summary of Main Maximization Scale Papers and Research

2.3.1 Contentions and Issues

Research has recently begun to present conflicting and conflating findings regarding maximization. For example, maximizers have been shown to make both objectively better decisions (Iyengar et al., 2006) but also favour objectively inferior scenarios (Weaver et al., 2015). Maximizers (over satisficers) are both quicker decision makers (Dalal et al., 2015) and slower decision makers (Chowdhury, Ratneshwar, and Mohanty, 2009; Schwartz et al., 2002). Maximizers think more so of the future and try to minimize future regret (Schwartz et al., 2002) yet are also more present focused (Besharat et al., 2014; Carrillat, Ladik and Legoux, 2011). Further, if this confusion and conflation was not a true reflection of the current state, it would be challenging to ignore the key scholars in the field frequently calling for consensus before moving forwards (e.g. Dalal et al., 2015; Cheek and Schwartz, 2016; Misuraca and Fasolo, 2018). The areas of contention in the literature can be summarised and categorised as under maximization's construct validity and conceptual clarity.

To begin, it is unclear whether maximization is actually a unique and independent construct. Maximization shares strong overlaps, both conceptually and operationally (Schwartz et al., 2002), with other constructs such as *Perfectionism* (Sproles and Kendall, 1986), *Need To Evaluate* (Jarvis and Petty, 1996) and *Market Mavenism* (Feick and Price, 1987). These overlaps are discussed in more detail further on (*4.2.2 RQ1 Measures*). Moreover, maximization has also long been assumed to be stable (a trait), yet little research supports the claim that maximization, as it is currently operationalised, is stable across time.

Further, it is also important to note the conceptual ambiguity surrounding maximization. Maximization (either as a goal, strategy, or both) remains conceptually contended. Numerous definitions and conceptualisations exist (see *Table 2.2: Summary of Main Maximization Scale Papers and Research*). As a goal, maximization has lacked a strong literature-supported theorisation; for example the *Maximizing Goal* is not defined hierarchically as a high-ordered goal (e.g. a value) or as a low-ordered goal (e.g. a decision goal) as is often done with goals (e.g. Bettman et al., 1998; Baumgartner and Pieters, 2008). The more nuanced questions such as how the goal is constructed and what defines the best, are too often undiscussed. As a strategy, there is little to source in terms of how the process of maximizing during a decision actually takes place. Dalal et al. (2015) briefly touches on the differences between systematic and random search patterns, but aside from this, little is known as to how maximization operates. Other decision processes are detailed in terms of

how information is prioritised and processed, for example (c.f. Bettman et al., 2008). It still remains unclear how these components of maximization (goal and strategy) interact, and what relationship, if any, exists in manifesting maximization (i.e. the behaviours)

With these areas of concern summarised, it may be worth reiterating their importance for the field's advancement. MacInnis (2011), in her popular article on how to develop theoretical contributions in marketing, stated that:

"*Constructs are abstract, hypothetical concepts that are defined in a sufficiently precise manner (often along some dimension) to be operationalised or measured*" (p. 141).

As was summarised, maximization's integrity along operational and conceptual dimensions is questionable. Therefore, without these issues addressed and tackled, existing and future research risks their science being invalidated as they fail to attain the minimum construct definition requirements.

Moving Ahead: With these issues overviewed, it is worth also examining maximization in further detail to not only delve deeper into the maximization literature, but to also better understand some of the contentions. It is worth noting that whilst maximization is a single construct, the approach to examining maximization is often divided between a goal-based approach and a strategy-based approach (Cheek and Schwartz, 2016); the segmentation of the discussion below reflects this and is done in order to help organise the discussions. Further, other elements of maximization research, such as the role of outcomes, also appear and are presented as part of the wider body of maximization literature.

2.4 Maximization as a Goal

Researchers that interpret and define maximization as predominantly, if not exclusively, a goal include Diab et al. (2008), Weinhardt et al. (2012), and Dalal et al. (2015). Put simply, the trait of maximization here is the extent to which an individual sets high standards for their decisions and/or desires the best.

2.4.1 Maximizing Goal Conceptualisation

Recall that, conceptually, maximization is the goal of wanting the best (and/or having high standards). Beyond this, however, little is done to understand these maximizing goals. For instance, how are high standards defined or how do you define the best, and is there a difference between high standards and the best? Surely one of the implications of bounded rationality (see Kahneman, 2003) is that inconsistency exists both between and within

individuals. The "best" for one individual may be different for another individual and, more abstractly, the same individual may evaluate the same option as both "the best" and "the worst", depending on how a situation is framed (Kahneman and Tversky, 1979). Furthermore, what does a goal within this framework actually symbolise? Goals in decision making occupy a wide range of positions and roles (Bettman, 1979).

Broadly speaking, standards are divided into absolute and relative standards (Easterlin, 1974; Zhou and Soman, 2003). This important distinction is often overlooked when examining maximizers, as the ideological prescription seems to be that as maximizers strive for the best in an absolutist sense (to optimise under the rational man paradigm). That is, maximizers should pursue the absolute or objective best (Iyengar et al., 2006). Yet, with all that is known about the irrationality of maximizers (e.g. post-choice dissonance and greater attention on relative positions; see *Table 2.1: Summary of Key Maximization Research Papers*), one would presuppose this assumption would have been challenged much more so.

To address this, Weaver, Daniloksi, Schwarz, and Cottone (2015) recently concluded that maximizers were more concerned with relative maximization than objective maximization. Even when made overtly aware, relative standing proved to be of more importance and value to maximizers than objectively superior standing. For example, having preference for an arbitrary scenario in which you are 5/10 when others are 4/10 *over* a scenario in which you are 6/10 when others are 7/10. It is more important, apparently, that maximizers are better than others, over being better than their potential self. Huang and Zeelenberg (2012) found something similar, namely that maximizers less happy with their choices when others had done better, even when the maximizers' choices outperformed their own expectations. These pivotal conclusions reveal an added layer of complexity to the maximizing self:

"Is maximizers' interest in positional standing a conscious and explicit part of the maximizer identity - a conscious way of thinking about the self – or instead is driven by a more implicit motivation of which they are not consciously aware?" (Weaver et al., 2015, p. 376).

This effort also contributes to the often-ignored question as to what actually constitutes "the best" for maximizers and also supports the findings by Schwartz et al. (2002)

that maximizers rely on social comparison much more so than satisficers. Findings from Iyengar et al. (2006) would suggest otherwise, however, as according to their research, maximizers make objectively better (more rational) decisions.

This example serves to highlight the confusion surrounding the conceptualisation of the *Maximizing Goal*. Fundamentally, a clearer conceptual understanding of the *Maximizing Goal* is needed. Understanding the type of goal that maximization is will likely support this and a wealth of literature is available on this topic. As an example, Baumgartner and Pieters (2008) detail a framework in which they explore and tackle the abstract nature of goals including the 1) content, 2) desirability, 3) importance, 4) feasibility, and 5) abstractedness of goals (see *Appendix C: Supplement Reading on Decision Making* for additional discussion on this). The content of the *Maximizing-Goal* is somewhat concrete – wanting the best or having high standards. However, understanding how that content is constructed (i.e. what makes something the best) is less clear. The desirability is questionable as little evidence demonstrates the motivational power of maximization (e.g. Weaver et al., 2015), whilst the importance, feasibility, and abstractedness of the goals are also discussed ambiguously when inquired about. Baumgartner and Pieters also outline the organization of goals in network terms (i.e. semantic and associative networks) as well as in hierarchical terms. Additionally, Pieters, Baumgartner and Allen (1995) present 3 levels of a goal hierarchy – the "why" motivational level; the "what" identification level; and the "how" operational level. Indeed, understanding where in a hierarchy maximization is situated will likely provide a starting point with which to move forward in developing a more coherent and agreeable conceptualisation.

2.5 Maximization as a Strategy

Recall that conceptually, maximization is also a strategy; one wherein increased information search and processing take place to locate the best alternative. Using *Maximizing Strategy* as the defining feature of *Maximization* may merit further consideration if we consider more recent investigation as to what *Maximizing Strategy* may entail. Importantly, Luan and Li (2017) concluded that both maximizers and satisficers focus on the value of the decision (the high standards; the *Maximizing Goal*), but that satisficers also focused on the feasibility of the choice (effort required in pursuing the choice) whereas maximizers did not. Abstractedly, this may be inferring that in fact, everyone is a maximizer in that everyone

focuses on the standards of the decision and wants to "get the best" – the *Maximizing Goal*; this may explain what Schwartz et al. (2002) were insinuating when they said:

"*A satisficer simply encounters and evaluates options until one is encountered that exceeds the acceptability threshold…A satisficer thus often moves in the direction of maximization without ever having it as a deliberate goal*" (p. 1178).

To add to this, and in reference to the above-mentioned comment on Simon's work (*2.2.2 Contextualising Maximization, Introducing Innovation*), instead of *increasing ease of access* as discounting *Maximizing Strategy* as a defining feature of *Maximization*, it may be what *actually* distinguishes maximizers and satisficers; i.e. the initial assessment of the feasibility of the making the decision. Put otherwise, in situations where information is easily accessed, both maximizers and satisficers would expand choice sets and process more information, *however*, satisficers would do so having already made the assessment that the effort to do so was negligible whereas maximizers would engage regardless. Hence, satisficers assess and consider the feasibility of the decision and maximizers do not.

Further, the context of the decision itself (Dalal et al., 2015), such as high-stakes decisions, influences the number of sought alternatives. Even satisficers (by a lower-standard definition) would seek additional alternatives and information in high-stake decisions, such as buying a house or choosing where to go on holiday. However, if the behaviour of *Maximizing Strategy* is context-bound, it becomes difficult to include as part of any trait definition of maximization.

2.5.1 Maximizing Strategy Conceptualisation

Maximizing Strategy as the defining (and not resulting) trait of maximization becomes questionable when reminded of Simon's (1955) important point on ease of information acquisition. As information becomes easier to access, individuals seek to expand their choice sets regardless of how high their standards may be because the cognitive cost is low. Intuitively, if this cost is negligible, then "alternative search" becomes a poor differentiator between maximizers and satisficers; it may be situation or contextual factors dictating the search behaviour and not the individual differences within individuals. Cheek and Schwartz (2016) have recently urged the study of domain-specific maximization to partly address this point. It is more than plausible to argue that the cost of acquiring additional information in today's information age is negligible given search engines and consumer reports; with the

immediate counter to this being that the cost of processing such large volumes of information perhaps rebalances the cost scales.

Therefore, it may be argued that *Maximizing Strategy* is actually a broader term for the way maximizers and satisficers *generally* make decisions, something similar to a decision-making style. Moreover, this approach to research suggests that perhaps *Maximizing Strategy* is the dominant feature of maximization. For example:

"A consumer decision-making style is defined as a patterned, mental, cognitive orientation towards shopping and purchasing, which constantly dominates the consumer's choices. [...] these traits are ever-present, predictable, central driving forces in decision-making." (Sproles and Kendall, 1986, p. 79).

Even if choosing to restrict the *Maximizing Strategy* approach to a preference for a strategy style, it could be further interpreted as what Scott and Bruce (1995, p. 820) also referred to as rational decision making:

"*characterized by a thorough search for and logical evaluation of alternatives*".

Dar-Nimrod (2009) seem to prefer the term "Choice-Making Orientation" when describing maximization and do so repeatedly, further suggesting that perhaps *Maximizing Strategy* is the correct trait interpretation of maximization. If maximization, therefore, should more appropriately be considered a decision-style (one that also has an associated decision goal of maximizing the outcome), then more would need to be done to understand how this strategy actually operates. As of yet, little is known, conceptually, of maximizing beyond the notion of increased alternative search.

Dalal et al. (2015) do attempt to clarify what the *Maximizing Strategy* may be in process terms. They found that "alternative search" (measured on previously established scales) did not correlate with a strategic search for information, and that *Decision Difficulty*, a lesser discussed and convincing component of maximization, was actually more indicative of random search. To expand on this idea, it seems that perhaps individuals that face decision difficulty do so as a result of the *nature* of their alternative search (strategic vs. random) as opposed to the actual activity of alternative search. There is literature that echoes this theme, too. For example, experts and novices (in specified knowledge domains) process information and make decisions demonstrably differently (Moreau et al., 2001). Intuitively it follows that experts can process information from their field more efficiently (strategy and speed) than

novices can, making a choice easier. Dalal et al. (2015) also found strong evidence to support their hypothesis that maximizers evaluate information more strategically [2] than satisficers. Firstly, they found that maximizers scored higher on strategic search behaviours than satisficers. To complement this, they also found that maximizers took significantly less time to make their decision than satisficers, as a result of their more strategic and efficient process. This is further supported by another observation that maximizers were less likely to change their initial choices (even when presented with the option for additional options), compared to satisficers, suggesting that maximizers are:

"unlikely to find an alternative that would be better than their initial choice" (p. 445).

However, much more would be needed in order to be provide a platform in which to gain consensus on maximization's (as a strategy at least) conceptualisation.

For example, Bettman et al. (2008) posit that there are 4 characteristics of any decision strategies. These are: 1) the amount of information processed; 2) the selectivity in information processing (i.e. disproportionality between options and attributes); 3) the pattern of processing (e.g. all attributes of one option vs. one attribute across all options); 4) compensatory nature (e.g. can one high value compensate for another low value, or are all attributes/options independent). Specific decision strategies such as 1) Weighted Added - where each attribute is given subjective weighting and then multiplied by a subjective score, before collectively resulting in an average score; 2) Lexicographic – where the alternative with the highest rated value for most important attribute is chosen; or 3) Elimination by Aspects (Tversky, 1972) – where alternatives that do not meet a minimum threshold for most important attribute are eliminated before repeating the process for the second most important attribute - all detail these characteristics as part of the developing the conceptualisation of the decision strategy. However, *Maximizing Strategy* falls short of any in depth discussions with these characteristics. It is generally accepted that maximization is associated with a higher amount of information processed (e.g. Chowdhury et al., 2009; Dar-Nimrod, et al; 2009), but beyond this little is known. See *Appendix C: Supplement Reading on Decision Making* for additional discussion on this.

[2] Strategic search was measured using intradimensional transition and interdimensional transition between information. The closer an individual followed either transition approach, the more strategic they were deemed. Consequently, more constant swapping between search strategies was interpreted as random search

In fairness, some studies, such as Chowdhury et al. (2009) and Dar-Nimrod et al. (2009) employ maximizing scales in their efforts to behaviourally observe maximization. However, often maximizing is operationalised through the Schwartz et al. (2002) scale which is subject to significant critique. Nenkov et al. (2008) developed their short form maximizing scale as a result of the reliability and validity issues that they highlight in the Schwartz et al. (2002) scale, in addition to problems with the factor structure that resulted. Diab et al. (2008) simultaneously developed a scale to replace the Schwartz et al. (2002) scale, but, conversely, on the basis of the dimensionality of the scale. Diab et al. (2008) argued that maximization should be conceptualised as a unidimensional trait, and that therefore, the Schwartz et al. (2002) was inappropriate. Weinhardt et al. (2012) then revised both of these newly developed scales (Diab et al., 2008; Nenkov et al., 2008) on the grounds that psychometric criterion had still not been met to a sufficient degree. Needless to say, the original Schwartz et al. (2002) scale is a poor tool to use when examining maximization and, on this basis, studies that utilise this scale as part of their behavioural studies are treated sceptically.

2.6 Maximization as Goal and Strategy

Diab et al. (2008) began a trend of challenging maximization's validity with their critique of Schwartz et al. (2002) when they stated:

"*Also, despite the poor internal consistency for a 13-item scale, the Maximization Scale correlates with a number of attitudes and traits. What, therefore, is this scale measuring?*" (p. 367). They further add that maximization is "*the general tendency to pursue the identification of the optimal alternative*" (p. 365)

and is what maximization was intended as by Simon. Cleverly, they condition their definition with parts of the *Strategy* component. Maximization, according to them is not the pursuit of the optimal alternative but pursuit of the *identification* of that optimal. This small addition helps to incorporate the *Strategy* component of maximization that Simon outlined, but by maintaining conceptual and operational focus, a unidimensional approach, to the *Goal*.

Diab et al. (2008) also clarify the point that "high standards" and "the best" can be thought of as a continuum and not an interchange. Others began to build on this approach (e.g. Lai, 2010; Weinhardt et al., 2012) but it was Dalal et al. (2015) that eventually produced the most psychometrically powerful scale to measure maximization, or more specifically the goal of maximization. Further, Dalal et al. (2015) contributed a methodological critique of

the Schwartz et al. (2002) scale in that the newer maximization scales (i.e. MTS, MTS-7) were able to correlate with the *Strategy* component of Schwartz scale whilst the original MS (Schwartz et al., 2002) was not able to; this calling into question the validity of the Schwartz et al. (2002) scale even by its own definition of maximization as being *Goal* and *Strategy* based. Finally, Dalal et al. (2015) argue that the two other components of the Schwartz conceptualisation (*Strategy* and *Decision Difficulty*) should be considered as outcomes in the nomological net of the maximization construct.

2.6.1 Maximization Validity

Given the number of strong studies and numerous revisions for maximization scales (both for goal and strategy), it would be fair to assume measurement for maximization is psychometrically sound; and that these scales are not responsible for the maximization validity issues mentioned. However, it is unclear whether maximization as a construct is actually a unique and independent construct. This stems from the conceptual issues discussed above. A strong overlap can be found in the personality research conducted by Sproles and Kendall (1986) some 3 decades before the Schwartz et al. (2002) effort to introduce the maximization trait. In consumptions settings, for example:

"*A consumer decision-making style is defined as a patterned, mental, cognitive orientation towards shopping and purchasing, which constantly dominates the consumer's choices. [...] these traits are ever-present, predictable, central driving forces in decision-making. In essence we are speaking of a relatively enduring consumer personality, analogous to the more general concept of human personality in psychology*" (Sproles and Kendall, 1986, p. 79).

Furthermore, Sproles' (1983) earlier work explicitly cites Simon's (1955) originating work as the foundation on which he builds two of the original personality types, aptly labelled "Perfectionist/Maximizer" and "Good Enough/Satisficer". This begs the question as to whether a research stream has already attempted the operationalise maximization as a trait. Schwartz et al. (2002) have actually looked at maximization and *Perfectionism* in an attempt to develop the nomological net, showing that maximization shared a positive correlation with *Self-Oriented Perfectionism* (Hewitt and Flett, 1990; 1991). They also found that *Perfectionism* showed a positive, albeit statistically insignificant, correlation with happiness and did not have a negative correlation with self-esteem. This was sufficient to conclude a conceptual distinction between maximization and *Perfectionism*. However, the relationship

between maximization and *Perfectionism*, in particular, is still suspect as other research (e.g. Bergman et al., 2007) does little to convince one that maximization is conceptually and operationally different from it, especially given the contemporary debate as to what maximization is (c.f. Misuraca and Fasolo, 2018). There are other constructs, such as *Need To Evaluate* (Jarvis and Petty, 1996) and *Market Mavenism* (Feick and Price, 1987), that also strike similar with maximization and that have yet to be distanced.

Still within the realm of operational validity, there is also concern regarding the state vs. trait debate of maximization. Maximization is often assumed to be a trait, a stable individual difference (e.g. Weinhardt, et al., 2012; Cheek and Schwartz, 2016). However, the recent studies by some (e.g. Ma and Roese, 2014), have called into question whether maximization is a stable individual difference, for example by priming it as a mind-set. Most often, the distinction between traits and states been have focused on a single attribute - that of temporal stability. That is, a trait is stable across time whilst a state fluctuates across time. Whilst some scholars, such as Allen and Potkay (1981) and Fridhandler (1986), have argued that temporal stability is not a sufficient basis for the distinction, many in the psychology community accept this. For example, McAdams (1996, 2001) argues that, widely, personality psychology should examine individuals in terms of a three-tiered framework. The three separate but overlapping levels of analysis include personality traits, personal concerns, and life stories. Personality traits, it is specified, are concerned with temporally and situationally invariant personal dispositions that differentiate individuals and lead to consistencies in behaviour across situations and over time. Cheek and Schwartz (2016) made clear the need to examine *Domain-Specific Maximization*, yet the ignored the need to assess maximization temporal stability. Additionally, the assumption that maximization is a trait is rooted in its temporal stability within individuals over time. This assumption is often based on the Schwartz et al. (2002) claim citing unpublished raw data to support it. It is uncommon in the literature to see scale development papers test for long-term temporal stability and so questions surrounding the long-term temporal stability of the trait (however it is measured), and by association its trait status, are in question.

Finally, and more broadly, it is worth mentioning that a significant portion of the early maximization research relies exclusively or heavily on student samples (Schwartz et al., 2002; Iyengar et al., 2002; Diab et al., 2008; Chowdhury et al., 2009; Dar Nimrod et al., 2009; Purvis et al., 2011; Turner et al., 2012). Student samples are problematic in that they

are not as representative of the general population and therefore, scales and claims made using them become less reliable (Goodwin, 2010).

2.7 Maximization: Other Conceptualisations and Discussions

2.7.1 Maximization as Decision Difficulty

There is another approach to maximization research. The debate for *Decision Difficulty* as a defining component in the maximization definition is very much alive. Kim and Miller (2017) recently argued that only when decision difficulty was:

"*conceptualized as a defining component of maximization*" (p. 516)

did maximizers exhibit the greater drop in positivity than did in satisficers. Central to their argument was that in the absence of a decision difficulty component, maximization did not play a significant role in predicting a positivity drop, whilst perceived *Decision Difficulty* alone still did. The immediate criticism here is that their argument for *Decision Difficulty* to be included is predicated on an outcome as indicative of maximization as an origin; an interpretation which lacks adherence to Simon's original work. Interestingly, Kim and Miller (2017) do not cite or reference Simon at all and in fact themselves state:

"*Throughout this paper, we illustrate that maximizers, as originally defined (*e.g. *Nenkov et al., 2008; Rim, Turner, Betz & Nygren, 2011; Schwartz et al., 2002; Turner, Rim, Betz & Nygren, 2012) ...*" (p. 516). They continue to state "*If, by definition, maximizing is measure by the degree to which a person experiences decision difficulty, then it would not be surprising that maximizers report high levels of decision difficulty*" (p. 517).

Further, *Decision Difficulty* may be conflated with another much older decision-making construct, that of indecisiveness. Indecisive individuals are:

"*individuals who seem to have difficulty in making all sorts of life decisions, whether they are of great or little significance…one who cannot make a vocational choice even after all the conditions for doing so, such as choice supply, incentive to make a choice, and the freedom to choose, are provided*" (Crites, 1969, pp. 305-306).

Once again, the validity of the maximization construct is called into question, specifically with respect to the distinctiveness of it relative to similar constructs. However, the critique of defining maximization as *Decision Difficulty* now concludes on more pragmatic grounds, namely that with the inclusion of outcomes in a construct's definition, it

hampers the construct's validity outright (Cheek and Schwartz, 2016) and therefore should not be considered further; this approach has consequently received little attention in this thesis.

2.7.2 Other Discussions in Maximization Literature

2.7.2.1 Self Vs. Others

Another recent development that attempted to define the possible bounds of maximization comes from Luan, Fu, and Li (2018). They found that maximizers chose to maximize for themselves as well as for others, whilst satisficers satisficed for themselves, but maximized for others. Whilst this research opens an interesting avenue for further research, it does so with a less than ideal methodological approach. "Effort", which was made synonymous with alternative search, was operationalised as physical and not cognitive – selecting between choices of attending a far cinema (high effort) vs multiple close cinemas to select from (low effort). In this instance, it is apparent that the conceptualisation (or lack thereof) of maximization is responsible for findings that are uneasily aligned and systematised.

2.7.2.2 Opposing Forces

Another area of concern that received little attention is that of whether maximization and satisficing are actually opposing forces. Turner et al. (2012) developed a scale in which one of the sub-scales was satisficing, although not explicitly dichotomising maximizing and satisficing. Misuraca et al. (2015) developed a scale in which maximizing and satisficing where separate, suggesting that in fact they were two separate constructs. Depending on the definitions employed, it may be plausible to make a case that one can be both a maximizer and a satisficer. For example, one may want the best (the goal; high) but put little effort into their search (the strategy; low). Weaver et al. (2015) showed that maximizers maintained temporal stability in their pursuit of positional superiority whilst satisficers' diminished over time, inferring that perhaps maximizing and satisficing are distinct and separate constructs and not opposing ends of the same continuum as one remained consistent whilst the other diminished. Referencing Simon's original work, van Witteloostuijn (1988, p. 289) argues:

"*that there is no real contradiction between choice theoretic 'maximizing' notions and behaviourist 'satisficing' principles*".

Recently, this area has been investigated, notably by Misuraca et al. (2015): 6 subscales (2 maximizing, 2 satisficing, 2 minimizing) presents maximizing as partly fear-

oriented and partly resolute-oriented. The fearful-maximizing component negatively correlated with well-being indices (such as self-esteem, optimism, life satisfaction), and positively associated with depression and regret. However, the other maximizing component, resolute-maximizing, was positively associated with conscientiousness, while it was not related to well-being indices or regret. Both scale correlations supported the findings of Schwartz et al. (2002) and what they factored as *Decision Difficulty*. This discussion also serves to highlight the issues surrounding both the validity and conceptual clarity of maximization.

2.7.2.3 Approaches

Another noteworthy observation in the literature is of a more epistemological nature. Recall that the focus of Simon's work was actually satisficing, the counter of the rational-man paradigm that he had dubbed "maximizer". Yet, rarely is this phenomenon studied from the perspective of satisficers. One of the few attempts to understand maximization from the perspective of satisficing, something that alone deserves praise, was the recent contribution from Luan and Li (2017). They approached the phenomenon of satisficing as a result of compromise between feasibility and desirability – or between effort and value. It seems that Luan and Li share my concern when they argued:

"*…few studies have focused on satisficing. In most studies, satisficing was only considered the counterpart of maximizing.*" (p. 110).

As mentioned, Luan and Li (2017) concluded that both maximizers and satisficers focus on the value of the decision (the high standards), but that satisficers also focused on the feasibility of the choice (effort required in pursuing the choice).

Finally, and in line with approaches to maximization research, it is worthwhile noting the contexts in which maximization is examined. Some approach maximization from the angle of personality and trait differences (e.g. Schwartz et al., 2002; Weinhardt et al., 2012), others from the angle of choice set and choice architecture (e.g. Iyengar et al., 2000), and some from a hybrid of all (e.g. Dalal et al). For example, the over-arching theme of Schwartz (2004) is that more choice is not necessarily a good thing – Iyengar and Lepper (2000) echo this by suggesting maximization as a determinant to explain increasing choice options as detrimental. Dalal et al. (2015) and Diab et al. (2008) approach maximization from a trait theory and scale development perspective, which likely explains their insistence on conceptual and operational clarity, rather than generating insights on outcomes and

behaviours. Maximizing has also been approached from behavioural perspectives, as is evident in Ma and Roese (2014) and their priming efforts. They found that when primed with activities that sought to activate a maximizing mind-set, individuals sought to optimise in their choices more so than a control group. These epistemological and approach-based considerations do not necessarily contribute the contention in the field, but they are interesting side notes to further serve highlighting the breadth of maximization research.

2.7.2.4 Ecological Rationality

Given the thesis makes a conscious effort to acknowledge context, that is the environmental factors at play, it is worth acknowledging the contributions of ecological rationality:

"The study of ecological rationality investigates in which environments a given strategy is better than other strategies (better—not best—because in large worlds the optimal strategy is unknown)" (Gigerenzer and Gaissmaier, 2011)

This appreciation ties into the important commentary that Simon (1956) made on what he termed, the structure of the environment. Indeed, the context or environment in which a decision is made influences the ultimate decision made (e.g. Ma and Roese, 2014). These discussions do not often occupy as central a position in much of the scale development research discussed in this thesis but merits discussion here.

Hogarth has made meaningful contributions to this discussion, also. One example, using the take-the-best heuristic, which shares theoretical overlaps with maximization, shows how environmental features were able to lead to relatively higher accuracy in decision tasks, compared to other models. The features included the (higher) dispersion of validities of the attributes (i.e. non-compensatoriness condition – see the Bettman discussion in *Appendix C: Supplement Reading on Decision Making* for more on this) and the existence of options that dominate other options, including the conditions of simple and cumulative dominance (Hogarth and Karelaia, 2005; Baucells, Carrasco, and Hogarth, 2008)

Another contributor to ecological rationality, is Peter Todd. Todd (Todd and Miller, 1999), has shown how satisficing (i.e. accepting some option that exceeds some minimum aspiration level) is ecologically rational when the distribution of available options, as well as the costs and benefits, are all unknown. In this way, the context of innovation may allow for what is deemed ecologically rational choices (even if they may seem irrational under other

paradigms) under the constraints laid out by Todd[3]. Furthermore, it is worth noting a position that Todd (2001) made clear which this research has pointed towards in earlier discussions (see *2.2.2 Contextualising Maximization, Introducing Innovation*) but not yet made explicit; that is that the term environment (or for this research, context) should not be considered identical with the physical environment alone.

2.7.2.5 Maximization in other disciplines

Whilst this research draws on research from consumer and marketing disciplines, it also acknowledges other fields and disciplines that have contributed to this broad area of research. Previously, in *2.2.1 History and Importance of the concept of Maximization and Satisficing*, I commented on the wide range of research on satisficing and maximizing concepts and, after the thorough discussion above in this chapter, this comment can be expanded upon. This recent discussion, notedly, was predominantly focused on the management sciences and social and personality psychology disciplines. However, disciplines such as operational research, behavioural economics, and cognitive psychology have all made significant contributions to satisficing and maximizing.

Operational research (OR) explores a variety of problem–solving skills aimed at helping individuals and organizations make more rational decisions as well as improving efficiency. This field includes topics such as optimization methods, decision theory, stochastic models, simulation, game theory, queueing systems, inventory and reliability, among others (e.g. Winston, 2004). From an OR perspective:

"Optimizing is the science of the ultimate; satisficing is the art of the feasible." (Eilon, 1972)

Behavioural OR, especially, leverages on the contributions from Simon when exploring ways in which individuals and organisations can make better decisions (e.g. White, 2016). However, the field of (behavioural) operations research too faces similar problems raised in this thesis surrounding the definition and conceptualisation of such behavioural and decision phenomena; White (2016) recently commented

[3] It may seem counterintuitive that some action is deemed rational by some and irrational by others; yet this is not uncommon as arguments over what is "rational" continue today. Katsikopoulos (2014) addresses this point, and more, in his paper *Bounded Rationality: The Two Cultures* in which he clearly and comprehensively outlines the different interpretations, applications, and conceptualisations of "Rationality" as it is studies in different (and sometimes competing) disciplines.

"There may be some uncertainty as to the precise definition of Behavioural OR, even though there are now a growing number of articles that are incorporating behavioural issues in their studies" (p. 827)

Nevertheless, within the operational research field, important contributions have been made and debates had. The OR discipline, for example, has suggested from early on that maximization is an ideal state, and that "feasible" solutions are the ones more often pursued (c.f. Checkland, 1985 and associated works in the Soft OR movement and soft systems methodologies).

Cognitive psychology is another field that has also contributed to these discussions. Cognitive psychology is the study of mental processes such as memory, perceptions, and creativity. Cognitive psychology looks to integrate multiple cognitive features and mechanisms towards an understanding of a complex cognitive system.

Gigerenzer, a seminal figure in the field, is probably most well-known for his work on fast and frugal decision-making. This involves the application of ecologically rational heuristics, examples of which include the recognition heuristic. These heuristics are 'fast and frugal' as they are effective under conditions of bounded rationality—when time, knowledge, and individual's computational power are limited (Goldstein and Gigerenzer, 2002). He may also be regarded by some as one of Herbert Simon's friends and colleagues. In fact, within the decision science community, there is an interesting story known by some where Gigerenzer recalls an exchange he had with Herbert Simon some years ago in which Simon express his desire to sue people that were deliberately misrepresenting the essence of maximizing and satisficing and distorting its actual meaning (Max Planck Institute for Human Development, 2018). Gigerenzer (2018) has remained active in these discussions, most recently starting to warn people of "bias bias" – the tendency to see biases when there are not, perhaps a variation on confirmation bias.

More on the contributions of cognitive psychology and fast and frugal decision-making may be found in Gigerenzer and Goldstein (1996). They evaluated the performance of different decision strategies. However, rather than focusing on deviations or violations of normative rules, Gigerenzer and Goldstein produced a measure of the efficacy of simple mental strategies. The category of model that Gigerenzer and Goldstein tested were termed fast and frugal heuristics. Frugality, representing the use of just one piece of information for

their decisions; and fast, representing the lack of any form of integration of different components of the information prescribed by other normative procedures. In doing so, they powerfully demonstrate that decision-making "in the wild" does indeed deviate from these normative models.

Further, questions have been raised as to the theoretical and practical value of "nudging", questions that explore the assumptions of irrationality and lack of agency (Gigerenzer, 2016), for example. This is one example of where divergence exists between different schools (in this case the behavioural economics schools) and their interpretation of different behavioural phenomena.

With that noted, behavioural economics is the field of study which, at the highest level of description, seeks to marry the broad fields of economics and psychology towards a comprehensive understanding of decision making. It too seeks to explore how contemporary decision making varies from classical economic theory and rational choice. Key scholars in this field include Richard Thaler, Daniel Kahneman, and Amos Tversky. Behavioural economists generally accept that we make almost all of our decisions using heuristics (Tversky and Kahneman, 1974), that framing plays a vital role in understanding how we navigate decision tasks and situations, and that market inefficiencies exist, partly as a result of non-rational behaviours by individuals.

A seminal theory that blossomed out of the behavioural economics school was that of prospect theory (Kahneman and Tversky, 1979). Summarily, prospect theory demonstrates that, when faced with a risky choice that results in possible gains, individuals are risk-averse, showing preference for options/solutions that result in a lower expected utility but with a higher certainty. Conversely, when faced with a risky choice that results in possible losses, individuals are risk-seeking, showing preference for options/solutions that result in a lower expected utility so far as it maintains the potential to avoid losses. This contribution subsequently resulted in Kahneman's 2002 Nobel Prize in economics.

Furthermore, behavioural economics approaches the notion of satisficing and maximization from the perspective of dispelling positions of rational choice and instead demonstrating, explaining, and categorising the irrational choice behaviours that exist, although some behavioural economists disagree on the utility of past economic models (e.g. Maialeh, 2019). Some of these disagreements stem from an ontological and epistemological

source, in that positivist critics consider behavioural research unable to establish economic theory in that it does not provide generalisable findings strong enough to dispel the axioms related to rational behaviour; I would disagree with this as these axioms have been broken numerous times and to a meaningful degree (c.f. Oppenheimer and Kelso, 2015)

Finally, whilst an effort was made to best categorise these different disciplines, the reader should remain cognizant of the blurred lines between these. Fields of personality, social, and cognitive psychology, behavioural economics, operations research, and more, have each leveraged on the others' contribution to the broad area of decision making in pursuit of better understanding how humans make choices. In the opening lines of this thesis, I referenced the long philosophic tradition associated with notions of choice; I maintain that exploring, understanding, and moving towards the truth on these topics is an effort that cannot be bound by any single discipline. Rather, appreciating the contributions and varied perspectives brought from different schools is what I consider most fruitful (see *3.2.3 Adopting Critical Realism and Incorporating Mixed Methods and Triangulation* for a philosophic and epistemological justification for this broadly).

2.8 Moving Forward: Adopting a Definition

A definition and conceptualisation of maximization would be necessary in order to move ahead, regardless of the contentions surrounding this. Nevertheless, given the thorough review of the literature, a definition is possible. To begin by stating the major assumptions, maximization is conceptually distinct and stable – it is a valid individual trait (although this becomes the first research question to be addressed).

Conceptually, this constitutes two distinct components that are often correlated, but still substantively different, a *Maximizing Goal* and a *Maximizing Strategy*. Based on what Simon (1955; 1956) originally laid out, seems the most appropriate means in which to move forward in examining maximization. Moreover, and more recently, this approach is starting to become encouraged (Cheek and Schwartz, 2016). The goal encompasses motivational extent of "choosing the best" and is not defined beyond this (i.e. by clarifying how the best may be qualified). The strategy encompasses the extent of "seeking out alternatives and comparing them" and is not defined beyond this (i.e. specific processes/strategies). The relationship between these two can be outlined by Simon's (1956, p. 130) original work where he distinguished between goals and means. The alternative search (the strategy) is the

means by which one attains the best (the goal). More focused, the operationalisations laid out by Dalal et al. (2015) for *Maximizing Goal* and by Turner et al. (2012) for *Maximizing Strategy* will be drawn upon when needed. These approaches not only source Simon's original work, but also provide psychometrically superior results using their developed scales. As a final justification, these two approaches also come highly recommended by Cheek and Schwartz (2016) in their recent review of the literature. *Figure 2.4: Visually Representing Maximization Conceptualisation and Definition* summarises the position of the research.

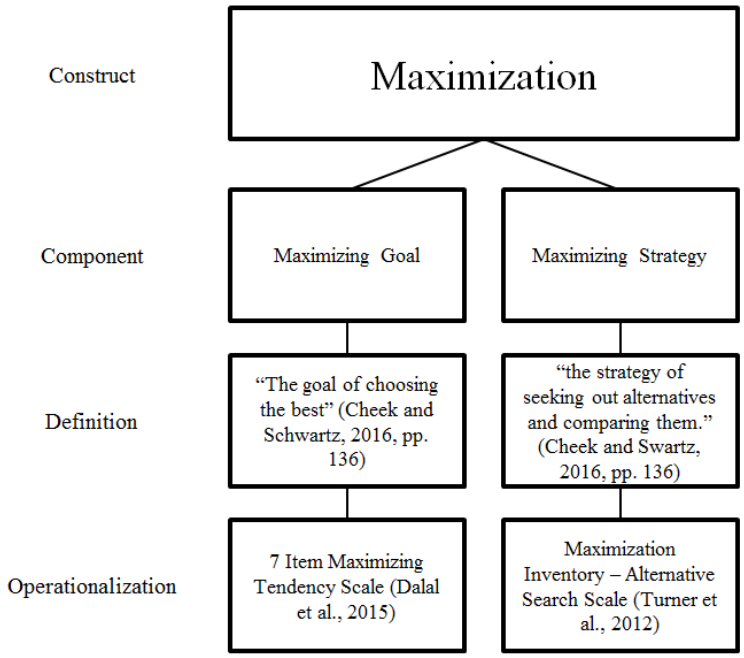

Figure 2.4: Visually Representing Maximization Conceptualisation and Definition

It is worth noting how the definitions of the *Maximizing Goal* and *Maximizing Strategy* scales compares, even if these definitions are not the ones adopted.

Dalal et al. (2015, p. 438) "*define maximizers as individuals who are unwilling to reduce their standards when making decisions*". Turner et al. (2012) defines a maximizer as one "*who attempts to find the absolute best solution, versus a 'satisficer', who is comfortable with a satisfactory, or 'good enough', solution.*"

Once more, it is important to highlight the subtle yet key difference in their approaches to conceptualising maximization. The *Maximizing Goal* conceptualisation is one

that is oriented towards the standard of the choice, whereas the *Maximizing Strategy* conceptualisation is on that is oriented towards the strategy of identifying that choice.

2.9 Emerging Issues

Recent critiques and reviews by Cheek and Schwartz (2016) and Misuraca and Fasolo (2018) should signal that consensus on the construct of maximization is still being debated. Questions surrounding maximization's validity and conceptualisation (as a goal and strategy) are at the root of these issues. MacInnis (2011), in her popular article on how to develop theoretical contributions in marketing, stated:

"*Constructs are abstract, hypothetical concepts that are defined in a sufficiently precise manner (often along some dimension) to be operationalized or measured*" (p. 141).

Maximization, whilst abstract, is not, I would argue, defined precisely or operationalised to a sufficient degree. Therefore, this thesis will attempt to address these issues as a means of contributing to the field.

2.9.1 Issue 1: Maximization's Validity

For maximization, many of the contentions and confusions have arisen from the operational studies of maximization (e.g. Nenkov et al., 2008; Diab et al., 2008; Lai, 2010) that struggle to take the abstract notion of maximizing and define it in this "precise manner". Maximization requires an operationally sound definition, one that is exclusive and exhaustive (Misuraca and Fasolo, 2018; Ding and Li, 2018); a definition in which maximization is not questioned in its uniqueness (i.e. distinct from other constructs) and is stable (i.e. that it maintains a trait status). Cervone and Pervin summarised this aptly when they stated:

"*Trait terms, then, have two connotations: consistency and distinctiveness*" (2013, p. 232).

Both of these connotations must be examined. It is not difficult to recall the paradigm-shifting work by Simon (1955; 1956; 1959). It is reasonable, then, to assume that some tangent branch of research has in fact already explored maximization in trait format already. It has already been noted how different terms, conceptualisations, and operationalizations of Simon's work have been attempted and it is further plausible that maximizing-like traits exist outside of the trait-maximizing domain. Onwards, the concern regarding the state vs. trait debate is directed more towards the scale-enthusiasts. Maximization is often assumed to be a trait, a stable individual difference (e.g. Weinhardt, et al., 2012; Cheek and Schwartz, 2016).

However, the recent findings by some (e.g. Ma and Roese, 2014), have called into question whether maximization is a stable individual difference. The trait feature must be unopposed if contemporary literature on maximizing as a trait is to retain its claim credibility moving forward.

Research Question 1: Is maximizing a valid construct as it is currently studied?

2.9.2 Issue 2: Maximization's Context

Any study of maximization should consider context as an important factor (Cheek and Schwartz, 2016). As both an effort to adhere to Schwartz' recommendation to consider context *and* as an effort to develop additional insights of maximization, context should be examined, too. As has already been discussed, this thesis adopts innovation as the context in which to study maximization. However, selecting a context alone will not suffice in addressing the issues that stem from a lack of context when examining maximization, as argued by Cheek and Schwartz (2016). Rather, some effort must be directed towards explicitly observing the relationship between maximization and the context it is examined in so as to fully contextualize the findings. In doing so, not only are any findings generated of interest to maximization literature, but the examination of the relationship between the phenomenon (maximization) and its context (innovation adoption) will ensure that succeeding discussions in this thesis are bolstered due to contextual awareness.

Innovation adoption, as a context for examining maximization is advantageous in that it removes many of the contextual features associated with other decision scenarios. Innovation adoption, recall, is by its nature an environment in which both internal (such as existing knowledge structures) and external information (such as social norms) about choices is limited.

Research Question 2: What relationship, if any, does maximization share with an innovation adoption?

2.9.3 Issue 3: Maximization's Operation

It important to understand how maximization operates, not only as a means of addressing the conceptual ambiguity, but as a means of supporting the previous studies of this thesis. Firstly, the uncertainty of how maximization operates as well as the relationships between goals and strategies in maximization research need to be explored for purposes of theoretical clarity but also to restrict the avenues of maximization research that consider these two elements in competing ways. Scholars have long agreed on the importance of both

behavioural strategies and cognitive goals as related but distinct constructs in achieving goals (e.g. Norem, 1989; Emmons, 1986; Cantor, 1990), yet the maximization body of literature has struggled to reconcile this proposition. Whilst not explicitly distinguishing between the goal and the strategy of maximizing, Simon (1955, p. 100) does stress the importance of understanding the "decisional processes" involved. Secondly, understanding how maximization operates also serves to address the issue of the assumed behaviour, albeit with less rigor. By attempting to observe maximization in action, a parallel observation of behaviours can also be made to address whether maximization can be measured beyond the current self-reporting standard that is often used to infer that participant's behaviour.

Cheek and Schwartz (2016, p. 136) recently made the case that satisficers may have higher standards than maximizers when they argued:

"*... a satisficer could have higher standards than a maximizer. Suppose the satisficer wants to get at least $500,000 for the house whereas the maximizer wants the highest (i.e. best) offer. The best offer that comes in is for $475,000. The maximizer sells the house and the satisficer takes it off the market*".

Such an argument should demonstrate that lack of conceptual clarity in the literature of even the most basic elements of the maximization construct. It should also be self-evident whilst this particular question is of such importance in developing maximization's conceptualisation. Goals, especially when associated with traits, are challenging to conceptualise. An individual's repertoire of goals changes in many ways over time; some changes are simple and other complex; some changes are constrained and some unrestrained (Carver and Scheier, 1981).

Further, *Maximizing Goal* will likely be challenging to observe in process-terms. Whilst certain frameworks and methodologies certainly exist to explore such constructs (Gutman, 1982), understanding the mechanics of how the goal operates becomes increasingly difficult as *Maximizing Goal* ascends any hierarchy (as it becomes further abstracted). *Maximizing Strategy*, however, will likely be easier to observe in process-terms and more likely the focus of the study; decision strategies are often laid out in process-like terms, such as Elimination by Aspects (Tversky, 1972). *Maximizing Strategy* as a process, is unknown. Dalal et al. (2015) briefly touched on this when they commented on the randomness of the search patterns between maximizers and satisficers, but stopped short of any in-depth

analysis of maximization's process. However, contemporary research has still called for further investigation as to how maximization operates (Ding and Li, 2018).

Research Question 3: Where and how may maximization operate within an innovation decision-process?

3. Methodology

3.1 Introduction

This chapter includes a discussion on the epistemological stance adopted, as well as a discussion on the methodologies implemented for the forthcoming studies. *3.2 Philosophy of Science* provides the epistemological considerations for this thesis, also in part supporting the adoption of a Critical Realist approach, with a discussion on a mixed methods approach also presented as permissible under the Critical Realist paradigm. Then *3.3 Quantitative Methodologies* and *3.4 Qualitative Methodologies* provide an overview of the different quantitative and qualitative methodologies implemented as part of a larger discussion, prior to dedicated chapter for each research question. *3.5 Sampling* outlines an overview of sampling as well as which approaches are appropriate for use, before sampling approaches are selected. Finally, *3.6 Conclusions* summarises the chapter.

3.2 Philosophy of Science

Marco Polo describes a bridge, stone by stone.
"But which is the stone that supports the bridge?" Kublai Khan asks.
"The bridge is not supported by one stone or another," Marco answers,
"but by the line of the arch that they form."
Kublai Khan remains silent, reflecting. Then he adds:
"Why do you speak to me of the stones? It is only the arch that matters to me."
Polo answers: "Without stones there is no arch."
Italo Calvino, Invisible Cities (1997)

3.2.1 Introduction to Philosophy of Science

This quotation highlights the challenge of this thesis' attempt to contribute something of substance to the world. Khan ultimately wants to know how the collective structure is supported – "it is only the arch that matters to me". Polo quite diplomatically argues that it is the perspective of the observer that decides this. He argues that no one stone can explain the arch "The bridge is not supported by one stone or another" whilst simultaneously also making the point that "Without stones, there is no arch". Which perspective, or rather philosophy, should be embraced to answer the questions put forth by this thesis?

This research does, after all, ask questions as to the individual within a group (the stone within the arch); In pursuit of what constitutes the reality of an individual (maximizers) operating within a social process and arena (a diffusion of innovation), a question of scope and perspective arises. Should these questions be tackled from the perspective of the individual, or from the perspective of the society? Do we understand the question of maximization's role within the adoption of innovation as psychologically driven, or sociologically driven? There are many social predictors and consequences of maximization, after all (Schwartz et al., 2002; Iyengar et al., 2006, Cheek and Schwartz, 2016).

Circa 1910 the intellectual fight over this particular perspective (i.e. society vs. the individual) was being fought in France under the sociological holist's approach, championed French sociologist Emile Durkheim, against the methodological individualists' approach, advocated for by German sociologist Max Weber (Miller, 1978; Kuhn, 1970). These two scholars and their works in particular were fundamental in the development of this chapter. Further, it is worth noting that both Durkheim and Weber believed that a scientific study of society could help people come to grips with the development of big-business monopolies and industrialism, suggesting that their contributions to social science philosophy are compatible with the business research being conducted in this dissertation.

To close here, before moving on the philosophy of science discussion it is worth overviewing Durkheim and Weber's positions. Durkheim argued that any explanation of a social fact, as he termed, that is reduced to an individual fact is inherently wrong – it must be rejected. Put otherwise, any conclusions on how the diffusion of innovation operates based on the explanations individual behaviours (e.g. maximizing) are unfounded. Weber, alternatively, argued that we should abandon any social concept that that cannot be predicted or explained by the probabilities and chances of individuals behaving in a certain way. If we cannot explain the diffusion of innovations across a society by virtue of the individuals (maximizers) in that society, then does that phenomenon truly exist to begin with? Using the story of Polo and Khan, Durkheim would have likely argued that the arch (the construction) can only be understood in its entirety and that "the bridge is not supported by one stone or another". Weber would have likely made the point that "without stones, there is no arch".

3.2.2 Debating and Adopting a Philosophy of Science.

A Philosophy of Science is a difficult concept to fittingly and accurately convey in a short space. Broadly speaking, individuals engaging in almost any form of critical thinking

have some prescribed belief system about the world that shapes not only their perceptions of what they are thinking about, but how they actually come to those conclusions. Within the world of social science, these belief systems, or paradigms (Kuhn, 1970) are hotly contested. These competing paradigms stem from different views about what is real (ontology), what we can know to be real (epistemology), and the ways in which we can discover what is real (methodology). Before exploring each paradigm, some definitions may help. Ontology concerns the nature of reality (Creswell, 2009) in order to study the "things" that exist in reality and, more metaphysically, "what" exists within that reality (Lawson, Latsis, and Martins, 2007). It is the world view and assumptions that researchers operate within when in pursuit of a justified true belief (Schwandt, 2007). Epistemology examines the relationship between researcher and that that is being researched (Creswell, 2009). It is the process of thought that leads to accumulation and validation of searched truths (Bernal, 2002). Methodology constitutes the process by which a researcher seeks out knowledge. It is the principles of inquiry and dictates how inquiry should proceed (Schwandt, 2007 p. 190). Put more simply it is the process of research (Creswell, 2009). Kuper and Kuper (2003) propose that the core value of social science research is to observe, reflect and describe social activities and behaviours; a philosophy of science supports this.

There are many approaches to organise this discussion including Lincoln, Lynham, and Guba's (2011) approach in which there are 5 distinct paradigms: Positivism, Postpositivism, Critical Theory, Constructivism, and Participatory. Saunders, Lewis, and Thornhill (2012) prefer to branch research philosophies by either a positivist or interpretivist camp and then details the differences and branches within each camp. Another strong framework is that of Habermas (1968). He proposed three different general cognitive areas in which humans generate knowledge: the *ladder of materialistic inquiry*, the *circle of constructive inquiry* and the *global eye of critical/ecological inquiry*; these form similar foundations of the naturalist, constructivist, and critical realist paradigm, respectively. Indeed, there are many approaches and interpretations across all levels within the paradigms, further insisting upon a comprehensive review.

Nonetheless, I consider the approach laid out by the likes of Moses and Knutsen (2007) to be the most coherent in structuring this discussion. In a top-down fashion, the major paradigms in which people assign themselves are Naturalism, Critical Realism, and Constructivism. Within each paradigm there are further divisions, for example within

Naturalism there are the hard-line positivists, post-positivists, as well as faction that no longer have the voice they once had, such as logical positivism. Each faction within their paradigm share some similarities but these tend to be quite broad.

3.2.2.1 The Naturalist Paradigm

Ontologically, naturalists are objectivists in that they claim to observe an observable and objective reality. This position asserts that social phenomena and their meanings exist independent of social actors (individuals). Moreover, it implies that social phenomena have an existence that is independent from individuals and society. Epistemologically, naturalists are positivist in that they believe the purpose of theory is to develop testable hypothesises. Only phenomena, and by association, knowledge validated by the senses can authentically be warranted as true knowledge. This knowledge, therefore, is received through the gathering of facts that provide the basis for laws that reflect social phenomena. Further, science must be value free. Methodologically, naturalists favour the quantitative toolkit, with the strongest advocates in favour of experimentation to support their claims. Also referred to as the positivist paradigm (Moses and Knutsen, 2007), this world view is favoured by researchers that view the researcher as independent, unbiased, and impersonal. Theory and research design rely on a deductive and deterministic approach that is concerned with cause and effect relationships, observed through quantitative methods that provide empirically validated generalizable claims about the world and the natural laws that govern it (Moses and Knutsen, 2007; Bryman, 2008; Creswell, 2009; Denzin and Lincoln, 2011; Malhotra, Birks and Wills, 2012).

The post-positivist branch in the naturalist paradigm steams from 19th-century writers, such as Comte, Mill, Durkheim, Newton, and Locke (Smith, 1983). This approach adheres to the ontological position of naturalism (i.e. objectivism) but epistemologically are less rigid in that they believe they may only attain probabilistic models of that reality, and never a true representation of it. The prevalence and popularity of different naturalist schools of thought fluctuates, with some eventually being obscured all together, such as logical positivism[4].

[4] "The logical positivism of the Vienna circle of the 1920s and 1930s married the epistemological empiricism and reductionism of Mach, Pearson and Duhem with the logical innovations of Frege, Russell and Wittgenstein. The positivist vision of science pivoted on a monistic theory of scientific development and a deductivist theory of scientific structure." (Bhaskar in Archer et al., 1998, p. x). Its early prevalence would not last with Karl Popper (2002, pp. 99) taking responsibility for its eventual 'death'; "Everybody knows nowadays that logical positivism is dead… "Who has done it?"… I fear that I must admit responsibility. Yet I did not do it on purpose: my sole intention was to point out what seemed to me a number of fundamental mistakes".

3.2.2.2 The Constructivist Paradigm

Ontologically, constructivists adopt a world view that argues social phenomena and their associated meanings are defined and ever developed by the social actors that are entangled in them. It further implies that as these phenomena are produced through social interaction, and that they, as a result of an ever-changing society, are too ever-changing. Any account of reality is one bound by time and place, to be appreciated and restrained to its own context, rather than any attempt to generalize it to the world. Epistemologically, constructivists are interpretivist in that they appreciate the differences between people and objects, between the natural world and the social world. The subjective meaning needed to understand how social actors interact in the natural and social world(s) requires the use of an interpretivist mind-set. Methodologically, therefore, it follows that constructivists utilise a qualitative toolkit in pursuit of their truths. Also referred to as the constructionist paradigm, researchers of this mind-set observe a subjective reality, one wherein the researcher is interacting, inescapably biased, and personal with the subject. Theory and research design rely on an inductive and evolving approach that acknowledges the bounds of its own context. Understanding and perceptions take precedence in developing democratised findings that reflect the lived experiences of individuals and societies that are communicated through qualitative methodologies such as ethnographies and case studies. (Moses and Knutsen, 2007; Bryman, 2008; Creswell, 2009; Denzin and Lincoln, 2011)

Like the naturalism paradigm, constructivists have branches too. For example, Critical Theory was a product of the Frankfurt school in the 1930's. A Western Marxist philosophy, it is a:

"*reflective theory that gives agents a kind of knowledge inherently productive of enlightenment and emancipation*" (Geuss, 1981, pp. 2).

To demonstrate a constructivist approach to research, we may look to Lantz and Booth (1998). They argued the socially constructed perception of breast cancer patients. US data had shown a sharp increase in the number of incidents since 1980 which had led some to classify it as an epidemic. Using qualitative content analysis to examine several popular magazines, they noted how the articles draw attention to lifestyles of the (then) modern woman. Increased alcohol and dietary changes, delayed childbirth, and increased emphasis

towards career were all discussed as possible causes. This led Lantz and Booth (1998) to argue that we, as a society:

"*ascribe blame to individual behaviours by listing a wide array of individual risk factors (many of which are not behaviours or 'traditional' women), and then offering prudent prescriptions for prevention. Women are portrayed as victims of an insidious disease, but also as victims of their own behaviours, many of which are related to the control of their own fertility…These articles suggest that non-traditional women experience pathological repercussions within their bodies and, in turn, may be responsible for our current epidemic of breast cancer.*" (pp. 915-918).

The concluded blaming of sufferers of breast cancer suggests that the epidemic is not only construed as a social fact, but is being ascribed with specific meaning of female repression.

Another branch, pragmatists, however, take the approach that they may select a position on the methodological, ontological, and epistemological continua so far as that position supports action (Kelemen and Rumens, 2008). Saunders et al. (2009) do not include pragmatism as either an ontological or epistemological perspective, but rather as laying outside a coherent paradigm. This approach, relative to other social sciences, is perhaps of more attraction to scholars of management and business as it advocates action, results, and a "what works" approach (often a themed mantra of industry). For example, in Watson's (2011) *Journal of Management Studies article*, he emphasised the:

"*relevance to practice principles of pragmatism*" (p. 204) when investigating how things work in organizations. He continued "*I felt that there was no real alternative to this if I wanted to contribute in a worthwhile way to the social scientific understanding of how managers manage, how organizational change comes about, how micro politics operate, and how employment relationships are shaped and maintained*."

3.2.2.3 The Critical Realist Paradigm

Realism, most broadly, is an ontology that rejects an exclusive adoption of constructionist and objectivist positions. Rather, Bhaskar (1989, p. 4) argues that the realist ontology is one where the:

"*social world is reproduced and transformed in daily life*".

Bryman and Bell (2011, p. 17) noted that:

"unlike naive realists, critical realists recognize that there is a distinction between the objects that are the focus of their enquiries and the terms they use to describe, account for, and understand them. Secondly, by implication, critical realists unlike positivists are perfectly content to admit into their explanations theoretical terms that are not directly amenable to observation."

Therefore, ontologically, critical realists are realist in that they presume that "there are real objects that exist independently of our knowledge of their existence" (Schwandt, 2007, p. 256). Epistemologically, however, critical realists are constructivist in that they believe our knowledge of those real objects can never be direct but is instead mediated by our concepts and our language. David Rioch, (in Hall, 1992, p. 233) said:

"*What you see is what you intend to do about it*".

Fittingly, and methodologically, critical realists are not as dogmatically tied to either a quantitative or qualitative toolkit. Instead, because of their blended ontological and epistemological positions, they are willing to adopt either, so as to observe the world in as much as possible.

Critical realism in particular developed as a broad post-positivist alliance in the 1970s and 80s against the dogmas of logical positivism (under the naturalist paradigm) and the movement to a stronger adherence to the *linguist term* reacting against positivism emerging from post-structuralism (under the constructivist paradigm). Roy Bhaskar (1978) is often credited as the father of this philosophic movement. Bhaskar's critical realism argues (1978; 1989), that there is an objective reality present but as humans, we are involved in the process of knowing. The process of knowing modulates what is known and so what is knowable is limited in much the same way the human mind is limited. Put otherwise, we don't know what we don't know, and following, we cannot ever claim full certainty.

Notably, of the three paradigms discussed here, Critical Realism most closely aligns with Simon's (1955) themes of human beings limited by their capacity to achieve total optimality (or truth). Bhaskar would likely also argue that you cannot use one research method and expect it to disclose everything. Critical realism has also become popular in marketing research because it offers an alternative to the predominantly positivist paradigm in marketing (Easton 2002).

Further, Harre and Madden (1975) and Bhaskar (1978) argue that the only possible resolution to the problems underpinning the inconsistencies within positivism is that laws should not be and are not the ultimate object or interest for scientists. Rather scientists are more genuinely concerned with the mechanisms, causal structures, and powers that, under certain conditions, produce law *like* results. Unlike the positivist paradigm and their comparative rigidity, critical realism is a broader school in which consensus is not necessarily guaranteed – *and that is acceptable*. Individuals use different elements in different ways to different ends and this methodological fluidity stems from a much more stable and coherent ontology associated with the paradigm. Almost paradoxically, critical realists agree to disagree, and as they should for it is the nature of critical realists to profess a world view of varied perspectives.

If we return to the opposing stances of Weber and Durkheim, it may help to position critical realism's applications and arguments. In contention with Weber, Bhaskar (1989) argues that social structures are a necessary condition and always pre-exist any round of human agency. However, this agency, in turn, is necessary for the reproduction and transformation of social structures. Like Marco Polo's diplomatic stance, Bhaskar precedes the individual with the structure but acknowledges the important function of the individual when examining the structure. We begin to see a fundamental divergence from Durkheim when Bhaskar argues that concepts of the mind (as an emergent power of matter and reasons) are causally efficacious in producing actions. This is in direct opposition to the mantra of social facts explaining social facts.

3.2.3 Adopting Critical Realism and Incorporating Mixed Methods and Triangulation

Critical realism reflects the diplomatic and simultaneously appreciative stance that Marco Polo adopts when talking of competing perspectives. By virtue of its appreciation and understanding of the merit of both positions, it establishes itself as an important and rightly viable paradigm with which to examine the world.

As mentioned, critical realists are comfortable with both qualitative and quantitative approaches. Mixed methods research is:

"a design for collecting, analysing, and mixing both quantitative and qualitative data in a study to order to understand a research problem" (Clark, Creswell, Greene, and Shop; 2010, p. 364).

However, it is important not to assume the presumption of a methodological hierarchy in which quantitative methods a reign supreme over qualitative methods to a:

"largely auxiliary role in pursuit of the technocratic aim of accumulating knowledge of "what works" (Howe, 2004, pp. 53-54).

Denzin (1989) comments that this was what was the offspring of classical experimentalism and the triangulation movement of the 1970s. Rather, the methods employed are equally important and several benefits come about from employing a mixed methods designs. Mixed methods are complimentary in that they allow meanings and findings to be elaborated upon, confirmed by, and linked with each other. Importantly, they can also facilitate an initiation to questions that may be difficult to comprehensively answer with a sole method or set of methods (Saunders et al., 2009). In this way, they can help not only act as support to each other to triangulate understandings but expand the understanding.

Indeed, Flick (2007) argues that triangulation is an attempt to secure an in depth understanding of a phenomenon. It cannot capture an objective reality, as one does not exist, rather it helps to provide representations of the phenomena – it is not a form of validation, it is an alternative. Alternatively, Cohen and Manion (2000, p.254) define triangulation as an "attempt to map out, or explain more fully, the richness and complexity of human behavior [sic] by studying it from more than one standpoint.". Ellingson (2009), however, goes further and argues that such a narrow conception of triangulation does not do justice to the multi-method inquiry of phenomena. Rather, her endorsement for the postmodern form asserts that it is instead more indicative of the crystal. An additional dimension to the 2-D Triangular approach, crystals are an energetic and unruly discourse in which:

"symmetry and substance with an infinite variety of shapes, substances, transmutations…crystals grow, change, alter…crystals are prisms that reflect externalities and refract within themselves creating different colours, patterns, arrays, casting off in different directions" (Richardson, 2000, p. 934).

To organise this commentary on triangulation, we may look to Denzin (1978) who categorised four forms of triangulation. There is 1) data triangulation which involves the people, time, and space of the data collected; 2) investigator triangulation which involves the number and nature of researchers in the research activity; 3) theory triangulation which involves collating and bridging multiple theories towards interpreting and understanding

phenomena; and 4) methodological triangulation which involves the use of more than one method to gather data.

This research has already demonstrated theory triangulation, by way of the including competing views of the phenomenon as well as leveraging findings from different bodies of research. This research has also already acknowledged methodological triangulation through its selection, and eventual use, of mixed methods. Data triangulation, to be acknowledged later in this thesis in *6.3.4 Triangulating the Resources*, is not ignored either[5]. Aside from investigator triangulation, which for the purposes of a PhD thesis may raise some conflicts of interest, this thesis embraces the principles of triangulation. In this way, a mixed methods approach would seemingly align with the stances advocated by critical realism.

Mixed methods are not only varied in the methods and techniques that they use, but also the order in which they are used - Creswell (2007) refers to this as sequential mixed methods. In exploratory designs, for example, data collection begins with qualitative methods that help to build for the quantitative follow-up (Creswell, 2007, p.14). These designs are helpful when variables are unknown, when trying to develop new relationships, and when trying to develop new instruments. Explanatory designs, however, being with quantitative collection methods, followed by qualitative ones that build upon what is learnt (Creswell, 2007). These designs are particularly helpful in explaining relationships (Harrison, 2013). Cronholm and Hjalmarsson (2011) put these ideas to the test when they conducted 4 different studies using the two different ordered approaches. Their reported usage experience supported the positions of Creswell (2007) and Harrison (2013), aptly demonstrated when they concluded

"In summary, the tendency in our results shows that the researcher should commence with a qualitative approach when: the researcher has a low preknowledge of phenomenon to be studied, when the phenomenon is more abstract and when there is an uncertainty if the questions asked are the right questions. On the contrary, there is a tendency in our results that the researcher should start with a quantitative study when the researcher has a good

[5] Importantly, however, data triangulation is intended as triangulation of resources and findings within each research question, and not between them. Furthermore, data triangulation will be implemented in the qualitative study (and not quantitative) so as to best address the explanatory nature of the question. Furthermore, findings from different questions will not be forcefully integrated into other research questions and their respective discussions. However, if a discussion organically moves towards a direction in which findings from different discussions can be introduced, then this will be considered a bonus and addressed. Additionally, this effort is intended to enrich the data and analysis that follows.

pre-knowledge of the phenomenon or when the phenomenon is more concrete." Cronholm and Hjalmarsson (2011, p.94)

This, further, is another instance of where using a mixed methods approach would be most appropriate given the nature of the questions being raised in this thesis. Some (e.g. RQ1) require an explanatory approach reflected in quantitative methods, whilst other (e.g. RQ3) require an exploratory approached reflected in qualitative methods. This is expanded on in *3.3 Quantitative Methods* and *3.4 Qualitative Methods*

Finally, whilst a wealth of mixed method literature in successful business research exists (c.f. Harrison, 2013), some still defend the incompatibility thesis of mixed methods whereby, centrally, the claim of mixing methods and perspectives is somewhat disputed:

"*Compatibility between quantitative and qualitative methods is impossible due to incompatibility of the paradigms that underlie the methods*" (Teddlie and Tashakkori, 2003; pp. 14-15).

However, under the critical realism paradigm, this can be disputed and as a result, mixed methods is an ideal methodological approach for this thesis.

3.2.3.1 Other Epistemological Thoughts

Finally, efforts will be made address other epistemological issues pertinent to the design and nature of the research context. Something that is sometimes overlooked in contemporary innovation literature is the epistemological issue of what could be deemed "Pro-Innovation Bias". Today more than ever, efforts to promote innovation are heralded. People such as Elon Musk and Steve Jobs are the subject of movies, books; some would argue celebrity status bestowed upon them for their commercially innovative contributions. Leading business journals dedicate pages to articles looking to improve innovation adoption (e.g. *Journal of Consumer Research* and *Journal of Product Innovation Management*). Innovation has become a 'buzzword' for the boardroom, with few examples of managers or scholars stopping to question whether or not innovations are good. Even the discussion of innovation constituting social progress is flawed, not because of the assumed advancement that innovations provide, but rather the assumption of inherent positivity associated with progress.

3.3 Quantitative Approaches

3.3.1 Introduction to Quantitative Approaches

RQ1 (*Is maximizing a valid construct as it is currently studied?*) and RQ2 (*What relationship, if any, does maximization share with an innovation adoption*?) are exploratory in nature. That is, they seek to understand the relationships between certain variables in a causal or associative manner. Therefore, a quantitative approach should be adopted (Malhotra, Nunan and Birks, 2017) for these questions. Therefore, the following section overviews quantitative methods so as to adopt methodologies for the questions.

3.3.2 Quantitative Methods

Theory (almost always) forms the basis for a causal enquiry and acts as a starting point for questions surrounding relationships. It is, for this reason that any method selected must facilitate the integration of existing theory on innovation adoption and maximization (MacInnis, 2011). Another important factor to consider when selecting a method is feasibility. Considering the scope of the questions asked, the nature of the research project (a PhD thesis), and the time and finances in which to complete it (both limited), any method selected should incorporate these considerations in an advantageous manner. Finally, any method selected should also, ideally, be best suited to answer the particular question at hand, that of relationships between variables. The key methodological techniques to be reviewed are survey research and experiments.

3.3.2.1 Experimental Methods

Experiments are considered the gold-standard technique within the naturalist's methodological toolbox (Moses and Knutsen, 2007) and so deserve some attention in selecting a technique. It best embodies many of the fundamental ontological and epistemological positions of the naturalists; that does not, however, prevent constructivists from making use of experiments, though – such is the richness and versatility that they provide. The ability to link cause and effect through treatment manipulation, while controlling for alternative effects, directly addresses the ontological principles of the naturalist. As a result, experimental research is best used for explanatory research and when trying to examine cause and effect relationships (Shadish et al., 2002). Put briefly, an experiment involves comparing (usually) two different groups of people against some variable across (usually) two time points (Saunders et al., 2009). One group, however, are administered a treatment in between measures with the intent to affect a change. For example, we may choose to compare happiness at different times of the day, say the morning

and evening. One group, the control group, are measured as they are in the morning and evening; The other group, the treatment group, are also measured, but are administered a "treatment" in between their two measurements – some stimuli that researchers hypothesise will have an effect on the variable being measured. For example, if we measured the control group's happiness in the morning and then again in the evening, how do the changes in that group (if any) compare with the changes of the treatment group that happen to be given a £500 voucher in the evening? Group B, almost certainly, would be the happier of the two groups at the second measurement, and would have also likely had a spike in their own happiness from when they were originally measured the earlier in the day.

The two most common, and vital, variables in experimental research are the independent and dependent ones. The **independent variable** (the voucher) is the one that is altered and manipulated to observe changes in the other. **The dependent variable** (happiness) is the one in which a change in measurement is observed (Shadish et al., 2002; Saunders et al., 2009). There are, however, other variables. Mediator and moderator variables are two of these, sometimes difficult to distinguish, and so it an additional comment may be helpful:

"*Whereas moderator variables specify when certain effects will hold, mediators speak to how or why such effects occur*" (Baron and Kenny, 1986, pp. 1176).

Mediating variables, for example, are those located in between the independent and dependent variable that help explain the relationship between the two variables. For example, a pleasant surprise, such as a £500 voucher, activates the pleasure centres in our brain and is associated with release of dopamine, which elevates mood and hence, we are likely to be happier. So, the release and presence of dopamine is the mediating variable between the surprise and the level of happiness. **Moderating variables** are somewhat different; these are variable that when introduced changes the nature of the relationship between an independent variable and dependent variable, usually the strength of the relationship. For example, choice restriction of the number or nature of vendors may moderate the effect and even direction of the gift card's effect on happiness. If vouchers are restricted to certain vendors, then an individual's personal attraction to these vendors this will likely to affect the strength and possibly even direction of the relationship. **Control variables** are observable and measurable variables that need to be kept constant or "controlled for" because they may affect the impact of the independent variable on the

dependent one. Occupation or income, for example, would do so; a student receiving a £500 gift card will likely have a much higher level of happiness compared to a tenured professor on the basis that the professor likely has much more money than the student and so the gift card only marginally improves their happiness relative to the student.

There are several approaches to experimentation, including traditional or two group designs, factorial designs, hybrid designs, or quasi-experimental designs (Bhattacherjee, 2012). Cook and Campbell (1979) were early discussants on quasi-experimentation and have contributed meaningfully to the development and application of this approach. Quasi-Experiments differ from Traditional (or True) experiments in that they do not mandate the random assignment of their participants. In some instances, this is an important factor when trying to certain answer questions, and so whilst it may seem that Quasi-experiments break this covenant, it is instead that they adapt to answer difficult questions. Further, techniques such as matched pairings, where one control treatment participant is matched up with a treatment participant on the basis of factors such as age, gender, education, etc., help to minimise the differences caused by non-random assortment (Saunders et al., 2009). Further, and once an experimental approach is selected, experimental designs can understandably increase in complexity. There can be several groups, several times of measurements, and other design elements that seek to understand questions of cause and effect. We may measure the original two groups mentioned, but also a third group that were given a £1,000 voucher; we may also measure them not only today, but in a week, a month, and so on.

One major design consideration is that of between group and within group designs. Between-group (or between-subjects) design involves two groups of people that are *different* – that is a participant will belong to either the control group *or* the treatment group. Within-group designs involved the same participants, and so in essence there is only group that is compared against itself prior to the treatment and after the treatment (Shadish et al., 2002). In this example, the people in the treatment group (before the voucher was given) would be compared against themselves (a second time after the treatment of receiving the voucher). Whilst within-group designs have the benefit of needing fewer participants, some of the problems that come with it include carry-over effects which can distort the validity of the findings.

One of the major strengths of, and arguably exclusive to, the experimental method is the internal validity it retains (Saunders et al., 2009). Laboratory experiments, conducted in

artificial but highly controlled environments can garner even higher internal validity, but at the expense of external validity. Field experiments, however, sacrifice some internal validity by collecting data in real world environments, which in turn helps to provide greater external validity, and by association their ability to generalise. Some experimental designs exist somewhere happy medium between these two. Online experiments, for example, allow the researcher to gain access to cost-efficient samples that are quickly available but that sacrifice internal validity as a result of less researcher control than a lab; consequently, the external validity gained from the less artificial environment, also comes at the expense of this researcher control. Nevertheless, web-based and online experiments are especially advantageous in situations where parameters demand quick and cost-efficient samples, such as those of this research. Indeed, online experimentation and study has been used in several studies successfully, even within the body of maximization research (e.g. Ma and Roese, 2014).

However, the negative effects of the experimenter should not be overlooked in affecting findings. Non-interactional effects such as observer, interpreter, and intentional effects may unintentionally skew results and invalidate the data. Interactional effects such as biosocial, psychosocial, situational, modelling, and expectancy effects can too generate misleading data (Rosenthal, 2005).

3.3.2.2 Surveys and Statistical Methods

Surveys have been conducted as early as the time of the Pharaohs. As a formal research method, however, it was pioneered in the 1930-40s by sociologist Paul Lazarsfeld (Bhattacherjee, 2012). With its versatility, the survey method can be used for descriptive, explanatory, and exploratory types of research. Survey research, often synonymous with the "statistical method", very often involves the use of questionnaires (series of questions administered to participants) or structured interviews on several cases. Several cases can mean as few as 30 (Hair, Black, Babin, and Anderson, 2014) but usually varies by subject domain. Survey research is also popular in business and management sciences (Saunders et al., 2009), with questions often deductive in nature.

The bare-bones process of surveying involves defining a population, selecting a sample, developing and administering a questionnaire, and collecting and analysing data (Rasinski, 2005). Some have even gone as far to assert that surveys are at the heart of social science research (Wagenaar, 2005, p. 720).

There are also social, cognitive, and linguistic elements at play when designing questionnaires, however. If sensitive questions are asked face-to-face, what effect may this have on the accuracy of the results? Framing a question can too have an impact on the accuracy of the answers given (Rasinski, 2005). Another important aspect of survey design is questionnaire design. Researchers designing questionnaires must ensure appropriate language so as to not mislead, confuse, or coax a participant in their answers. Further, the researcher must decide whether questions should be open or closed, which again affects the type and nature of the data collected. Questions, or rather questionnaires, are not however the only application of surveys. Structured observations, for example, are popular in organization and methods research (Saunders et al., 2009).

There are three *general* types of survey design: 1) cross-sectional 2) longitudinal (or panel) and 3) hybrids (incl. experimental) (Visser et al., 2000). Cross sectional surveys are those that are issued at one point in time and collects data at one particular point in time from a specified population (Wagenaar, 2005; Saunders et al., 2009). Longitudinal surveys are those whereby the same respondents are interviewed or measured multiple times at different time points. Hybrids are any design that blends multiple panels with multiple time points whilst experimental survey designs involve data that is collected under different conditions from individuals (Visser et al., 2000).

Surveys can be administered face-to-face, online, over the phone, or by other means. Each approach has its benefits and drawbacks. Mailed questionnaires, for example, may be considered an outdated and ineffective means of targeting a young population, but may be ideal for an older population that still prefer it over online questionnaires. Over-the-phone and face-to-face are much more time consuming, compared to say online questionnaires and surveys, but they provide the researcher with important insights that may not be reported or observable through the internet, such as confusion, hesitation, or certain emotional responses. Whilst each medium or format presents its own set of advantages and disadvantages, the parameters of this research make some options more attractive than others. The nature of this research requires access to a diverse sample base, in a quick and cost-efficient manner. In many ways, online platforms best address these requirements, yet with a cautious note of measures that should be considered to best mediate and counteract some of these drawbacks (this is addressed further in *3.3.3.2 Managing the limitations*)

Some notable strengths of survey research include their ability to measure a wide variety of unobservable data (Bhattacherjee, 2012). The standardisation and systemisation elements of surveys facilitate replication, which in turn begets approval from advocates of the scientific method (Rasinski, 2005). A unique benefit of surveys is that they allow for the collection of standardised data from a sizeable population, which helps to improve external validity (generalisability). Further, surveys are often cheaper, more convenient, and less time-consuming for the researcher and less intrusive for participants than other methods. They may also be the only way of reaching certain populations (for religious, geographical, legal, etc. reasons).

A notable weakness of surveys is that they are subject to a number of biases, such as non-response bias, sampling bias, social desirability bias, and recall bias. For face-to-face or telephone surveys, training is required for those administering the survey questions, which can add to the costs.

3.3.3 Method Selection for RQ1 and RQ2

RQ1 and RQ2: Surveys

Ultimately, surveys have proven the most suitable choice to tackle RQ1 and RQ2. These questions are both concerned with understanding whether a relationship *exists* as opposed to hypothesising and explaining the relationships, something that an experiment would be more suitable to address. Once more, RQ1 (*Is maximizing a valid construct as it is currently studied?*) requires understanding if a relationship between variables exist for discriminant validity and temporal stability purposes whilst RQ2 (*What relationship, if any, does maximization share with an innovation adoption*?) is explicitly concerned with the nature of any relationships between maximizing and innovation adoption. Surveys, therefore, can help in tackling these questions by providing a medium in which to collect data on these variables without the requirement of the manipulation of them or some other stimuli (i.e. experiment) to understand the relationship. The measurement tools and scales deployed for the surveys in RQ1 and RQ2 can be found in *Appendix B: Measurement Scales Used in this Thesis*

Survey research affords thorough and efficient measurement of various constructs and has paved the way for well-developed multivariate causal analyses that have become so popular (Wagenaar, 2005); considering the operational issues surrounding the measurement instruments for maximization (goal and strategy), this becomes an attractive added benefit in

that additional checks can be made to ensure appropriate measurement. Additionally, this research adopts the Visser et al. (2000) definition of survey research as:

"*a specific type of field study that involves the collection of data from a sample of elements…drawn from a well-defined population…through the use of a questionnaire*" (p. 223).

A cross sectional, self-administered survey utilising a purposive-convenience sample is developed and defended below.

Surveys can be varied in their approaches. Surveys can be observation based, interviewer issued, or self-administered (Bryman, 2012; Saunders et al., 2009). Surveys essentially contain a series of questions or checks that are administered to a group of participants (or events) with the intention of measuring certain constructs and/or attitudes. Each approach has its own set of advantages and limitations, but with particular considerations of this research, self-administered are most suited. Whilst self-administered are administered with less control over the environment as well as, they are often less timely and less expensive

An important design element of surveys is the items that compose the surveys themselves. In more, the scales (or questions) that are used in a survey are what allow participants to submit the data that researchers use to answer their questions. Therefore, scale selection is often, and rightly so, an important feature in research design and justification. This research is contextualised within the domain of innovation and therefore any survey design elements that are content-based or contextual (e.g. scale contents) and not functional (e.g. survey platform) should be justifiable within that context. Scale selection, therefore, should not only reflect the questions being asked (e.g. maximization's uniqueness) but also the context in which they are being asked (e.g. innovation). In fact, it is for exactly this reason that a specific research question (*RQ2 What relationship, if any, does maximization share with an innovation adoption?*) is examined – so as to observe the context reflected in the scales that look to address the research questions. The justifications for the specific scales used in this thesis are provided in *4.2.2 RQ1 Measures, 5.2.2 RQ2 Measures* and in *Appendix A: Conceptualising and Measuring Innovation Adoption* in more detail

3.3.3.1 Limitations of Survey Research

When respondents answer a survey question, they have to understand to question in order to determine what to report on. Weaver and Schwarz (2008) argue that whilst researchers would hope that carefully retrieved opinions are reported, it is much more likely the case that on-the-spot opinions are formed. Behavioural responses such as "how often do you visit the supermarket" also often lack the accuracy researchers hope for, an instead estimation techniques are employed by participants to answer such questions. Other participant challenges in self-reported survey data collection are more linguistic and perceptive in nature. The literal and pragmatic meanings (Strack and Schwarz, 1992) of questions refer to what participants understand and what they interpret that to mean, respectively. The quality of data collected is at risk if participants do not know what is being asked of them (literal meaning) but is also at risk if consumer misinterpret what is being asked.

Also worth considering is the impact the numeric values of the rating scales have upon responses. Unipolar measures (e.g. 0 to 10) versus bipolar measures (e.g. -5 to 5) have shown to impact respondents interpretations of questions and their subsequent answers. Schwarz, Knäuper, Hippler, Noelle-Neumann, and Clark (1991) showed that when asking "How successful would you say you have been in life", 34% of respondents endorsed a value below the midpoint on a unipolar measure (0 to 11 scale) versus 13% on a bipolar measure (-5 to 5 scale). Further when participants engage with a survey, they take cues from their environment when answering. Certain cues are well documented and self-evident; For example, social conformity may bias results if the participant is surrounded by family, friends, strangers, or the researcher (e.g. van de Mortel, 2008) – this is in part why online surveys are helpful in alleviating such biases. However, even minute differences can cause participants to respond differently as became evident in Norenzayan and Schwarz (1999). By changing the letter head from "Institute of Personality Research" to "Institute of Social Research", they were able to observe how responses were anchored towards personality or socially constructed variables when asking participants to describe a murder case as part of a survey. Surveys also suffer from being unable to fully replicate the moments, experiences, and contexts in which they aim to report upon (Raskinski, 2005).

Finally, it is worth noting that online surveys have become hugely popular given their ability to address some of these limitations such as access, cost, and time. However, they are

not without their own unique limitations. Firstly, reliance on computer technologies, web-based data collection software (e.g. Qualtrics), and the internet all remove control from the researcher and can inhibit data collection. There is little to remedy this, and so piloting and pre-tests become of added importance in highlighting any issues that may arise. Also, online administered surveys are likely to be conducted outside of a consumption environment. When participants take online surveys, they may do so during transportation, at work, or most likely, at home. In all of these environments, the environment cannot be guaranteed as consumption oriented (as would be if physically administered in shopping centres). This presents a weakness that is results may be contextually influenced, tainting the validity of the results.

3.3.3.2 Managing the limitations

To attempt to mitigate the negative impact of the limitations, several steps could be taken during the design and execution phases of the surveys. To address contextual bias, the survey could be administered in an online setting in order to remove interpersonal contextual elements as well as put the respondent in the position of control when responding (i.e. no time/social pressures). This does incur the issue of an unguaranteed context of consumption, but it can be argued that online settings are also appropriate consumption environments, with many consumers normalised to purchase in online formats from their homes/work using the internet. Considering maximization is not restricted to consumption settings, this is less also concerning. Careful scenario setting can also help. The use of an online survey also tackles issues of cost and time. Software that is made free to University of Manchester (Qualtrics) and access to a large and affordable participant pool (e.g. paid panels) would be beneficial for these reasons. With respect to scale and item validity, scales can be adopted from already validated studies and that have been widely used.

3.4 Qualitative Approaches

3.4.1 Introduction to Qualitative Approaches

Research Question 3 (*Where and how may maximization operate within an innovation decision-process?*) is exploratory in nature as it seeks to derive a more detailed understanding of the maximization process. Therefore, a qualitative approach should be adopted (Malhotra et al., 2017) for this question. Further, as it is only this question that would require the use of a qualitative approach, this section is discussed with only this question in mind and with less broadness than the quantitative discussion.

3.4.2 Qualitative methods

One key comparative advantage that qualitative studies techniques have (over quantitative) is that they can be used to analyse the role of agency and hence to establish causal mechanisms (Munck and Verkuilen, 2005). Whilst RQ1 and RQ2 were concerned with relationships, RQ3 is concerned with causal mechanisms– that of how and where maximization (goal and strategy) operates in the *Innovation Decision-Process*.

"*It is necessary to go beyond statements about what the effect of a factor is and to consider how and why the effect operates*" (p. 392).

Therefore, the key qualitative methods that should be used to tackle this question are those that allow for a mechanistic and causal observation of the construct. The techniques need to explore cognitive processes in some capacity but also attempt to mitigate participant cognitive dissonance and bias when reporting on the process. Critical incident technique, laddering, and protocol analysis best satisfy these initial requirements and are discussed below in more detail.

3.4.2.1 Critical Incident Technique

The Critical incident technique consists of:

"*a set of procedures for collecting direct observations of human behaviour in such a way as to facilitate their potential usefulness in solving practical problems and developing broad psychological principles"* (Flanagan, 1954, p. 327).

To operate CIT, several specifications are needed, including: (1) defining the types of situations to be observed; (2) determining the situation's relevance to the general aim; (3) understanding the extent of the effect the incident has on the general aim; and (4) deciding who will be making the observation (Butterfield et al., 2005). Whilst not as popular within the marketing domain, CIT has been popular across other domains including education and nursing (e.g. Kemppainen, 2000). Within the field of Business Studies, it is most frequently used by industrial and organizational psychologists (Anderson and Wilson, 1997). Put otherwise, CIT essentially has participants exploring, post-hoc, key incidents or events of interest as reported by participants.

We can explore the example of a fighter pilot who ejects himself mid-flight during a training mission because of a faulty computer system that causes the jet to spiral out of control. Researchers interested in preventing something like this from happening again could

obviously check what caused the computer malfunctions using any recovered data or technical information, but they can also gain insights from the pilot. Using CIT, they may be able to uncover what electric checks the pilot conducted beforehand, what warning signs there may have been, or even if the pilot may have accidently caused the computer to malfunction himself. Researchers would have the pilot "relive aloud" the scenario and try to explore the situation and event as it unfolded with the intention to uncover insights and develop conclusions about the problem at hand.

This method would likely cause problems in addressing this research objective for several reasons. Firstly, rather than focusing on an actual decision process, CIT requires researchers to focus on specific incidents in depth. The example of the fighter pilot may be an event that lasts only a few minutes, but the decision to purchase an innovation would likely take much longer. It also requires the event to have taken place, and it becomes more challenging to locate a population that have adopted an innovation as they are by definition, new and unfamiliar.

Secondly, this method presupposes human consistency and reliability in retrieving knowledge from memory. It is fair to say that when Flanagan originally developed this method in the mid-1950s researchers were less aware of the flaws in human memory and recall, but with what is evident today, this method becomes less appealing. As a brief reminder, what is recoverable from memory is influenced by a number of factors including recency, availability, and accessibility meaning that any recall would likely be tainted (c.f. Mantonakis, Whittlesea, and Yoon, 2008).

Thirdly, CIT seemingly appeals to questions of behaviours and external events, but it is questionable in its efficiency at exploring internal cognitive processes and events. It is asking a lot of participants to be self-aware and cognisant of their internal processes when making a decision, let alone asking them to recall this and do so when they had not been asked to do so in the first place. Whilst data may be richer in other aspects, it is unlikely to generate insights about maximization within the decision-making process.

Finally, Flanagan (1954, p. 335) stated that CIT:

"does not consist of a single rigid set of rules governing such data collection. Rather it should be thought of as a flexible set of principles that must be modified and adapted to meet the specific situation at hand".

This, more so from a philosophic perspective, is problematic for this research. Whilst I have adopted the position of a critical realist and more than happy to employ an interpretive mind-set, this stance by Flanagan is too yielding. This is also this reason that I have chosen to define CIT from Flanagan's (1954) seminal and originating paper, as contemporary research using this method not only diverge on methodological processes, but even on the name used (e.g. Critical Incident Analysis by Gould, 1999; Critical Incident Exercise by Rutman, 1996; and Critical Incident Reflection by Francis, 1995). This, in addition to the nature of the data collected using this technique, positions CIT as a less suitable candidate for tackling this objective.

3.4.2.2 Laddering

Laddering is a qualitative data collection method that:

"*refers to an in-depth, one-on-one interviewing technique used to develop an understanding of how consumers translate the attributes of products into meaningful associations with respect to self"* (Reynolds and Gutman, 1988, p. 12*).*

It builds on the means-end theory (Gutman, 1982) which is predicated upon the belief that behaviour is driven by values. Using the attributes, consequences, and values of individuals and products, laddering has been used extensively within marketing to uncover deeply held drivers of consumer decision making (cf. Reynolds and Gutman, 1988). Laddering is also helpful in tapping into the higher-order knowledge structures we use to process information and solve problems (or complete tasks, such as product adoption).

Initially, this seems a promising method to help tackle the question as to where and how maximization (goal and strategy) may operate within the *Innovation Decision-Process*. It allows us to access data relating to the motivations of consumers as well as the information (at multiple levels of abstraction) they use to make decisions. Further, the development of laddering as a technique aligns with the adopted theory in this thesis, providing added philosophic alignment. There is also a wealth of literature to draw from on how to design studies specifically with marketing in mind. There are, however, drawbacks.

The fundamental problem with using laddering is that it operates by and is often typified by questions of "why is this important to you?" In probing and questioning participant values, there entails the probability of post-rationalisation and social conformity in the answers attained. As a result, once participants are asked to justify and explain

themselves, the data collected moves away from process orientated data and towards value driven data.

Also, laddering is not an appropriate method if there are no attributes projected upon the product (e.g. innovations). Even if there are identifiable attributes, laddering is still inappropriate if those attributes are meaningless or indistinctive. It is fair to assume that this is indeed the case the at least some of the time with innovations as there are fewer, if any, meaningful and identifiable attributes. Higher-order knowledge structures (Moreau et al., 2001) are even more challenging to access, suggesting that strong values, perceived and imagined consequences, and product attributes would be difficult to uncover.

Laddering is, for this question, a better choice than critical incident technique, but it is not without its drawbacks.

3.4.2.3 Protocol Analysis

Protocol Analysis has successfully been used in decision-making research that focuses on consumption. Rosen and Olshavsky (1984) studied brand choice selection whilst Biehal and Chakravarti (1982) examined how information presentation format impacted consumer memory and choice. Protocol Analysis, briefly put, involves participants "thinking aloud" when assigned a task. These tasks may vary in their design and their objectives – some have even been used to generate statistical inferences – but they generally conform to a set of shared practices. One example may be to ask a participant to calculate the how old they are to the nearest month and observe their computational skills. More interpretive questions may ask participants to choose an option from a selection of negative scenarios to inflict upon world (e.g. natural disaster, war, famine) and observe how they come to a choice. Often, research seeks to observe how participants approach not only their own choice, but also how and where that choice diverges from an ideal or correct solution.

One of the benefits of this method, in comparison with critical incident technique, is the recent move to establish a consensus around methodological rigour (Ericsson and Simon, 1980; Austin and Delaney, 1998). In actively debating the designs of different approaches, scholars have been able to agree upon certain standards when designing studies, collecting data, and analysing it. For example, the strong warnings against questions like "Why do you think that?" that elicit rationalisation of the verbal observations.

However, the standout advantage that protocol analysis provides over laddering and CIT is its ability to observe cognitive processes in real-time as they occur. By having participants "think aloud", protocol analysis greatly limits the ability of participants to post-rationalise and taint their response by other biases such as social conformity. Granted this is not absolute as is mentioned below (*3.4.3 Method for RQ3*), but it does provide the researcher with much more authentic and accurate evidence of the cognitive processes.

Nevertheless, there is the potential drawback of social conformity. Whilst, unlike in the laddering discussion, there is little, if any, opportunity to post-rationalise a particular avenue of thinking, the presence of the researcher may still induce some form of social conformity. When being asked to think aloud, participants are aware of the presence of the researcher and so may suppress or not elicit certain streams of thought. When dealing with innovations and choice, it may be the case that participants avoid legitimate, in fact vitally important, avenues involving social and financial risk. Without being privy to a more authentic process, understanding how maximization operates could be challenging if using protocol analysis.

Another drawback of Protocol Analysis is, as with most qualitative methods, the reliance on interpretation may inhibit findings and conclusions of the data. This thesis explicitly looks for maximization (goal and strategy) in the decision process, thus, arguably, researchers may start with an assumption that this phenomenon exists. It would be naïve to assume that a researcher would not fall prey to the numerous biases already discussed in trying to complete this project. There are methods to help mitigate this, such as employing reviewers, but ultimately the researcher must acknowledge some bias will likely permeate. However, it is also fair to say that compared to laddering, and to some extent CIT, Protocol analysis suffers less from this interpretive bias simply because it is 1) concerned with processes and functions, not experiences and subjective elements and 2) it utilises immediate and non-conversational responses that do not allow participants to rationalise, socially conform (as much), or be influenced by the researcher's own bias through probing and questioning.

Ultimately, protocol analysis is the most appropriate method to use when trying to tackle this objective. By removing potential post-rationalising biases by recording a real-time process, and by observing the process in action, protocol analysis, over laddering and critical incident technique, best allows for the objective to be tackled.

3.4.3 Method for RQ3

Interestingly, apart from the issues discussed above, Protocol Analysis (PA), as a method, aligns particularly strongly with this particular research question as Herbert Simon helped to spearhead and advocate the use of PA (see Ericsson and Simon, 1980). As Human Information Processing Theory began to emerge in the 1970's (cf. Anderson and Bower, 1973; Newell and Simon, 1972; Simon, 1979; Bettman, 1979), new methods of enquiry to human decision making began to blossom. PA in particular, as a method of data collection, was developed to further improve theory and understanding of decision-making processes and cognition in general. In their seminal *Psychological Review* article Ericsson and Simon (1980) detail how verbal reports (data), collected by the protocol analysis procedure (technique), can be used as data in answering questions pertaining to human information processing and task completion. PA has already been successfully utilised in marketing research concerning consumer decision making for many years (Bettman and Park, 1980; Hoeffler, 2003). Appropriately, it has even been endorsed as an appropriate method for developing literature on scale development and *Consumer Innovativeness* (Venkatraman and Price, 1990). By definition, protocol analysis is:

"a set of methods for obtaining reliable information about what people are thinking while they work on a task" (Austin and Delaney, 1998, p. 42). It *"involves having participants perform a task or set of tasks and verbalizing their thoughts ('talking aloud') while doing so."* (Trickett and Trafton, 2009, pp. 332).

One of the key assumptions made when utilizing PA is that participants essentially verbally "dump" the contents of their working memory (Ericsson and Simon, 1980). Under this assumption, the verbal stream that the participant provides can be interpreted as a cognitive process in use. Now is also an acceptable time to argue that in its originating form, Ericsson and Simon actually argue that it is *not* an interpretive or qualitative method. Rather, they make the argument that the "verbal dumps" that people present are in fact comparable to other observational data. Whilst this may be the case for the *nature* of the data, it does still require an interpretive lens to *analyse* this data.

Concurrent vs. Retrospective Verbalization: Concurrent verbalization occurs when information is verbalised by the participant at the time the participant is attending to it whereas retrospective verbalization requires the participant to recall cognitive processes from an earlier point in time. These two essential forms of verbal reports arise from a primary

distinction made in human information processing theory. That is that there is a distinction between the cognitive storage systems, frequently referred to as short-term memory and long-term memory. Defined by Ericsson and Simon (1980)

"If information is verbalised at the time the subject is attending to it, we will label the procedure concurrent verbalization" (short-term memory) and *"If a subject is asked about cognitive processes that occurred at an earlier point in time, we will label the procedure retrospective verbalization"* (Long-term memory).

In some ways, retrospective verbalization mirrors the Critical Incident Technique (CIT) (Flanagan 1954). The major difference between these verbalising techniques is that CIT centres around specific events or incidents to generate data, whilst retrospective verbalization is more general, preferring instead to observe a broader process picture as to what participants report on. For the same reasons used to critique CIT, retrospective verbalization runs the risk of post-rationalisation and bias in participant data.

In another adaptation of this retrospective verbalization, participants may be asked about their behaviours and thought processes that they think *would* occur had the situation been different (Reed and Johnsen, 1977; Nisbett and Wilson; 1977). This hypothesised verbalization builds on the participants' own report on their future behaviours and thoughts. However, because the participant does not actually engage in the behaviours and thought process with a researcher there to observe, it is more difficult to ascertain the process in its truest form as it relies on the participants to be highly self-aware of their processes and biases, as well as being unpressured to socially conform in line with the researcher. Given this, the use of concurrent verbalization to help execute the PA would be of more benefit for the purposes of this question, i.e. to observe processes in action to understand where specific psychological phenomenon appear and operate. Ideally, the added cognitive burden imposed by the instructions of verbalization, as well as the actual generation and production of the verbalizations would be negligible.

Types of recoding: Ericsson and Simon also outline how participants recode information. When information is reproduced in the form in which it was acquired from the central processor, they deem it direct (Level 1 verbalization). When there are 1 or more mediating processes, they term it intermediate recoding (Level 2 or Level 3 verbalizations).

Intermediate Recoding (Level 2 Verbalization) occurs when internal representations of the information is originally encoded in a non-verbal way such as images or abstract thoughts and has to be translated into a verbal code. This revolves around idiosyncratic referent points. An example may be trying to give directions around a house that is visually represented in a mental state but must be recoded into a verbal state.

Intermediate Scanning (Level 3 Verbalization) occurs when the task instruction for verbalization only requires a certain aspect/part of the content and it is necessary to postulate the additional processes that test if the received information matches the desired type. An example of this may be to point out hazards whilst driving a car.

Intermediate Inferences (Level 3 Verbalization) occur when the participant must verbalise their reasons and motivations which pre-requires them to observe their own internal processes or overt behaviours. For example, when participants are asked for verbal descriptions of their motor activities (i.e. where they are looking).

Particular and General Reports: For similar reasons addressed during the discussion on CIT, reaching depth or generating richer insights at particular points of the process is difficult with PA. Firstly, it would almost certainly require directed probing, which as will be mentioned shortly, entails its own set of problems. Secondly, as the data is collected during the process, trying to encourage further depth of reporting from one's own cognition would likely incur an added cognitive load. Further, after a series of tasks, memory for internal states and cognitive processes will be weakened and access to intermediate states becomes few/non-existent as cognitive processes recur (Ericsson and Simon, 1980). Finally, it seems that this limitation is inescapable as the nature of experimental questions such as "how did you do these tasks" are implicitly inviting of a general interpretation.

Directed vs. Specialising Probing: Another dimension of difference is the comprehensiveness of the topics that are reported. In pursuit of rich and fuller data sets, researcher may seek to probe. Sometimes, the probes contain contextual information when trying to induce greater completeness of the reports and this can impact the subjectivity in analysing the reports. All of this contributes to validity of the report too. Probes may be direct and vary in their level of directness, for example "did you use X as a sub goal" and "did you use any sub goals, and if so which?" Truly undirected probing would have this data elicited without any probe.

Expanding on the Limitations of Protocol Analysis: In addition to the mentioned limitations, PA has also been met with the usual resistance associated with introspective techniques by schools of behaviourism for the lack of actioned observation to corroborate what was self-reported. A broader critique had also been echoed decades before Ericsson and Simon's (1980) seminal article by Lashley (1923, pp. 352) who stated:

"Introspection may make the preliminary survey, but it must be followed by the chain and transit of objective measurement".

Although, arguably, this was a dominant attitude at that time, there were some that defended verbal data for behavioural analysis. Watson (1920), for example, recommended the use of verbal data to investigate solutions to clearly specified problems.

With that said, this argument against introspection likely stemmed from the limited number of methodological debates and developments for verbal reporting at the time (Ericsson and Simon, 1980; Austin and Delaney, 1998). This could have contributed to the lack of clear guidelines to qualify and legitimatise "introspection". I cannot fault this argument as I have already made my hesitation with a lack of methodological rigour known in the discussion of CIT above. Further, up until Ericsson and Simon (1980) explicitly outlined the procedure and addressed the critiques, little distinction was made between the numerous forms of verbalization (such as retrospective vs. concurrent). These criticisms have since been appeased to a certain degree because, in part, of Ericsson and Simon's (1980) unifying and clarifying method (Trickett and Trafton, 2009)

3.5 Sampling

3.5.1 Introduction to Sampling

To overview, it is easy to note that there are generally two types of sampling – that of probability sampling, and that of non-probability. Probability sampling techniques are those that have been selected using some form of randomness so that each participant has some known chance of being selected (Saunders et al., 2009; Bryman, 2012; Visser et al., 2000). A non-probability sample is one that has not been selected using randomness; instead certain participants have higher or lower chances of being selected. Within each of these types, there exist different techniques. For example, within probability sampling, a researcher may utilise simple random sampling or cluster sampling. Alternatively, if a non-probability sampling

type is adopted, they may choose to use volunteer or convenience sampling. *Table 3.1: Summarising the Literature on Probability Sampling Methods* summarises this.

Sampling Type	**Probability**			
Sampling Technique	Simple	Systematic	Stratified	Cluster
Variations of Technique	Multistage			

Sampling Type	**Non-Probability**				
Sampling Technique	Quota	Purposive	Volunteer		Convenience
Variations of Technique		Theoretical	Typical Case	Snowball	Self-Selection	Haphazard

Table 3.1: Summarising Literature on Probability Sampling Methods. Adapted from Saunders et al. (2009), Bryman (2012), Mitchell and Jolley (2001), and Visser et al. (2000)

3.5.2 Selecting a Sampling Approach

In an ideal situation for quantitative (i.e. probabilistic) sampling, a sampling frame would be identified, accessed, and drawn from to access participants at random (Saunders et al., 2009; Bryman, 2012). Two of the three studies (research questions) are quantitative and so this is an important consideration - this with the intention of providing the opportunity to make stronger generalization. At least according to Visser et al. (2000), obtaining a representative sample from a population is not as challenging as it is often made out to be.

However, in this instance, the size of the population considered (i.e. all consumers in a society) makes identification and access of a representative sampling frame difficult. Further, even if such a sampling frame was accessible (e.g. a nation census with contact information), recruiting from it becomes challenging for time, financial, and potentially ethical purposes. Therefore, as is not uncommon in quantitative studies, a non-probabilistic sampling technique will be considered. Further, any approach adopted can also be extended

the qualitative study as qualitative research relies on non-probabilistic sampling. Below is a discussion detailing the main variants of non-probabilistic sampling.

Convenience samples are the least preferable sampling technique, although often popular for the same reasons, as they recruit the most readily and easily available participants. No efforts are made to systematically select participants from a pool, which in turn debases any authority on the finding's ability to be to generalizable. A convenience sample, sometimes referred to as a haphazard sample, however, provides access to participants in situations where adequate sampling frames are unattainable (i.e. expensive or doesn't exist) or that recruiting participants is challenging (e.g. low response rates) (Visser et al., 2000; Galloway, 2005).

Purposive sampling, also referred to as a judgement sample, involves the researcher making some effort to represent at least some elements of the population being examined. For example, if studying purchases of male users of male hygiene products, the researcher may endeavour to predominately recruit 1) males, 2) of age to make purchasing decisions, and 3) that purchase to use (as oppose to say on behalf of others or for gifts). In this example, they may not have a geographically representative sample (i.e. perhaps behaviours varying in the north and south of the country), but their data and generalization will not be as biased had they asked adolescent males, women, or non-user buyers.

Quota sampling involves selecting members of various subgroups of the population to assemble a sample that accurately reflects known characteristics of the population (Visser et al., 2000). There are also commonalities between quota sampling and purposive sampling in that attempts are made to improve the generalisability of the sample's data. Quota sampling is generally applied to large sample sizes (i.e. 2,000 or more) and quite popular within the market research industry (Galloway, 2005). A quick example may follow as such: A population is 50% female and 75% Hindu. A sample size of 1,000 would necessitate that of the 1,000 participants recruited, 500 were female and that 750 were Hindu.

Quota sampling sometimes assumes that there is an even distribution amongst categories, too; hence the need for as many identifiable categories as possible to help generate a representative sample. There may be unusual aspects to the population, further stressing the importance of as much information about a population as possible. One historically common example of this would be anytime there is a major war. Directly after

there are disproportionately lower numbers of men (say 25% of total population) but it would be wrong to assume an even distribution or comparative distribution (say with women) against another category, say age, as the remaining males are usually adolescents or in old age, leaving a chasm of young to middle aged men. Another drawback of quota sampling is that is relies on accurate information to generate categories and assumes that these categories are representative of the population.

Snowball (volunteer) sampling is a sampling technique whereby already recruited participants are asked to suggest or provide other potential participants. Some consider it a variant of purposive sampling (Visser et al., 2000) whilst others consider it a type in its own right (Galloway, 2005). Snowball sampling is particularly useful when trying to identify participants with niche interests, abilities, insights, experiences, etc. The problem with snowball sampling, however, is that it violates the assumption of independence of observations. That is, that there is no relationship between observations by virtue of their recruitment. If recruited and interviewed, it is probable that a participant would suggest people more similar than dissimilar, which may skew findings.

Finally, self-selection (volunteer) samples are, as the name suggests, a sample in which the participants volunteer themselves to take part in a study. Galloway (2005) makes the point that bias arises out of this sampling technique because of participants underlying motivations for taking part. They may have had extremely positive or negative experience, which would bias any findings, or just their general interest in the topic may be enough to do so. On this I would argue that, in some capacity, all other forms of sampling involve an element of self-selection in them, anyway and that self-selection is not a type of sampling, but rather an element of it. It is rare that participants are forced to take part in studies, and more often than not volunteer or "self-select". Galloway (2005, p. 863) states:

"Self-selection can be implemented in a number of ways… questionnaires can simply be left in….waiting rooms and public libraries…publicizing through posters…internet-based surveys".

Whilst non-probabilistic sampling methods do pose certain disadvantages, they are still a more appropriate category to select from over probabilistic methods, given access, time, cost, and other logistical concerns of this thesis. Of the options available, a hybrid of the techniques not only allows a balancing of each's limitations, but also strengthens the

sample and the data used (Palinkas et al., 2015). Therefore, a blended approach to sampling, using elements of convenience (for access), purposive (for sample representation), and volunteer (for efficiency), all support a sampling approach to enhance the research. This, again, is not uncommon as research with student samples, for example, are too an example of a hybrid. Student samples contain elements of convenience sampling (as they are readily available and easily accessible), volunteer sample (as they are often required to sign up), as well as other possible elements, such as if the researcher places restrictions on who may sign up (e.g. females only for certain purposive/quota sampling requirements)

3.5.3 Sample Selection

In terms of actually sourcing the sample, online panels for the quantitative studies (RQ1 and RQ2) and the local population for the qualitative studies (RQ3) will be sourced. Both of these sources will allow for an easily accessible (convenience) and diverse (purposive) pool of participants to sign up (volunteer) and take part in the studies.

3.5.3.1 Qualitative Samples

Starting with the shorter discussion first, that of the sample for RQ2, participants will be sourced from the local area, i.e. the university. They will be contacted through either face-to-face, email, or poster communication and invited to participate. The recruitment can stop once enough participants (e.g. >10) have signed up so that a group of participants that span across age, income, gender, and education levels can be selected. This approach will allow for a convenience and purposive sample of volunteers. Building a sampling base to draw upon larger than the desired amount to actually conduct the research also ensures that should any participants withdraw, a replacement may be substituted quickly, without disrupting the data collection process.

3.5.3.2 Quantitative Samples

Moving on, the quantitative samples require a lengthier commentary as, firstly, they represent a significantly larger portion of this thesis, and, secondly, it is a more complex sampling situation. To begin, by utilizing samples sourced through the internet, research can obtain extremely large and diverse samples of participants (Fraley, 2007). This helps to tackle the issue of acquiring a large enough pool of willing participants from diverse backgrounds. Furthermore, this can be accomplished through the use of online panels such as Qualtrics and mTurk.

Qualtrics is a superior platform for recruiting high quality participants than mTurk (Ibarra et al., 2018). Therefore, any successful case made to justify the use of mTurk will, by transitive principles, therefore also justify the use of a Qualtrics panel. Therefore, a discussion on the use of mTurk is presented below, before both mTurk and Qualtrics are adopted as sampling sources.

mTurk is a web-based service that essentially crowdsources research participation, amongst other labour-intensive tasks (Paolacci et al., 2010). It allows volunteering individuals to sign up and be compensated for completed tasks issued by recruiters, such as researchers. A recent article by Goodman and Paolacci (2017) noted how over 40% of the behavioural research articles published by the *Journal of Consumer Research* had made use of mTurk samples from June 2015-April 2016 and is thus becoming an increasingly popular recruitment pool. Some authors fail to provide any justification in their use of mTurk, suggesting that like student samples, it has become commonplace enough to merit wide-spread acceptance; Ma and Roese (2014) are included in this group in their *Journal of Consumer Research* article on Maximization.

However, the use of mTurk in top tier journals alone should not be the only means of assessing its value and use. mTurk does provide several major advantages over other convenience-based samples. They are cost-efficient – a 15-minute questionnaire can cost less than $2 per participant. mTurk also allows the integration of technology by way allowing survey software like Qualtrics to be easily incorporated, once again improving efficiency. Lastly, mTurk workers are more diverse and representative of the population at large relative to student samples, and I would argue many other convenience samples. As mTurk can access members of a population from wide-reaching areas, it is better able to represent a larger population. Further, qualifiers and restrictions to certain geographic locations also allow for improve sample selection over traditional geographically restricted volunteer samples. Also, unlike generally younger student samples, mTurk workers range widely across education, income, age, and other demographics (Goodman and Paolacci, 2017; Paolacci et al., 2010).

Notwithstanding, mTurk workers are not perfectly representative of the population as a whole. For example, workers, compared to the general (American) population, tend to:

- score higher on the SAT (Cavanagh, 2014)

- cheat less and disclose more sensitive information (Mason and Suri, 2012; Rand, 2012; Shapiro et al., 2013)
- score higher on need for cognition and higher on learning goal orientation (Behrend et al., 2011; Berinsky et al., 2012)

mTurk also presents some problems when a particular screening process is required. Wessling et al. (2017) outlined how mTurk workers deliberately mispresented themselves to gain access to tasks (studies or questionnaires). For example, by coding participants from an initial study, they were able to show (using the unique mTurk worker code assigned to each worker), that when asked about product ownership (kayak) 89% lied to gain entry to the survey, 49% lied about their age to gain entry to a study on food and fibre, and 56% lied about being catholic for a political study. Fortunately, this becomes less of a problem for this study as there are no screening questions; the general population is the target population when examining the trait of maximization.

However, it does raise other questions as to the reliability of the data collected, for example, cheating behaviours. Wessling et al. (2017) also addressed this. They observed forums when they issued a task asking participants to guess how many gumballs were in a jar. Additional incentives were provided for the correct number of gumballs whilst the correct number was also presented at the end of the activity. Wessling et al. (2017) found that after the first few participants completed the survey; the answer was reported into the forums for other participants to benefit from. However, this was met with immediate disdain and criticism from the community. It seems that mTurk workers do uphold a set of values that they are hold themselves accountable to – only 3.8% of participants actually guessed correctly in the end to be awarded the bonus.

Nevertheless, there is sufficient evidence to suggest that the use of mTurk as a source of participants is appropriate. Furthermore, this therefore also confirms the acceptability of the use of a Qualtrics panel. Qualtrics, whilst providing higher quality data according to some (Ibarra et al., 2018) is more expensive. This likely stems from their more thorough vetting process when recruiting candidates. As there is a limit to funding available, any Qualtrics panels should be reserved for questions that are more important and, secondly, involve greater complexity in design. It stands, therefore, that RQ1 (discriminant analysis and temporal stability) would require this sample whilst RQ2 is a simpler survey design and therefore can rely on another, more cost-effective panel (e.g. mTurk). RQ3 can be source

locally, as it would also require face-to-face data collection that panels would less likely be able to provide.

3.6 Conclusions

This chapter opened with a discussion on philosophy of science before explaining the adoption of a critical realist mind-set. This included a discussion on mixed methods, the methodological approach adopted for this thesis, followed by a discussion on quantitative approaches, qualitative approaches, and sampling. Within the discussion on approaches, each research question was embedded where appropriate to elaborate on a method and technique that could be employed to address the question. Afterwards, a discussion on sampling concluded that a non-probabilistic blend or hybrid would most appropriately support the research questions data collection. In sum, the methodological approaches for the research questions can be summarised in the *Table 3.2: Summarising the Methodological Approaches for the Research Questions of this Thesis*. This includes each question's method classification (i.e. quantitative vs. qualitative), methodological technique (e.g. survey), sampling technique, and sampling source (e.g. Qualtrics).

	Research Question Methodology Summary		
	RQ1	RQ2	RQ3
Method Classification	Quantitative	Quantitative	Qualitative
Methodological Technique	Survey	Survey	Protocol Analysis
Sampling Technique	Non-Probabilistic Blend: Convenience, Volunteer, and Purposive		
Sampling Source	Qualtrics	mTurk	University locality

Table 3.2: Summarising the Methodological Approaches for the Research Questions of this Thesis

4. Research Question 1

Is maximizing a valid construct as it is currently studied?

4.1 RQ1 Introduction

This chapter addresses the first research question concerned with certain elements of the validity of the maximization construct. The main challenges concern the maximization construct (as a goal and strategy) and its a) temporal stability (in support of its trait status) and b) conceptual uniqueness (discriminant validity) from similar constructs.

4.2 RQ1 Conductive Methodology details the design and implementation of a longitudinal survey issued to over 300 participants. This also includes the selection of the measures used to address the question. *4.3 RQ1 Analysis* presents the analysis of the findings from the survey, employing a repeated measures ANOVA to assess the stability of *Maximizing Goal* and *Maximizing Strategy*. In addition to this, a confirmatory factor analysis is conducted to assess the discriminant validity of maximization (goal and strategy) against conceptually similar constructs. The chapter closes with *4.4 RQ1 Discussion* wherein the key findings are summarised and discussed with reference to parts of the wider literature. These findings are that maximization (as a goal and strategy) was stable across a two-week time period and that, generally speaking, discriminant validity was maintained against similar constructs.

4.2 RQ1 Conductive Methodology

This section outlines the design and implementation of the survey, describing the measures included. In summary, it details a longitudinal (two week) survey administered to a Qualtrics panel using measures of maximization (Turner et al., 2012: Dalal et al., 2015), decision making styles (Sproles and Kendall, 1986), and other construct measures that could be associated in a nomological net of maximization (Jarvis and Petty, 1996; Feick and Price, 1987). The figure below (*Figure 4.1: Overview of RQ1 Data Collection*) visually displays the data collection procedure.

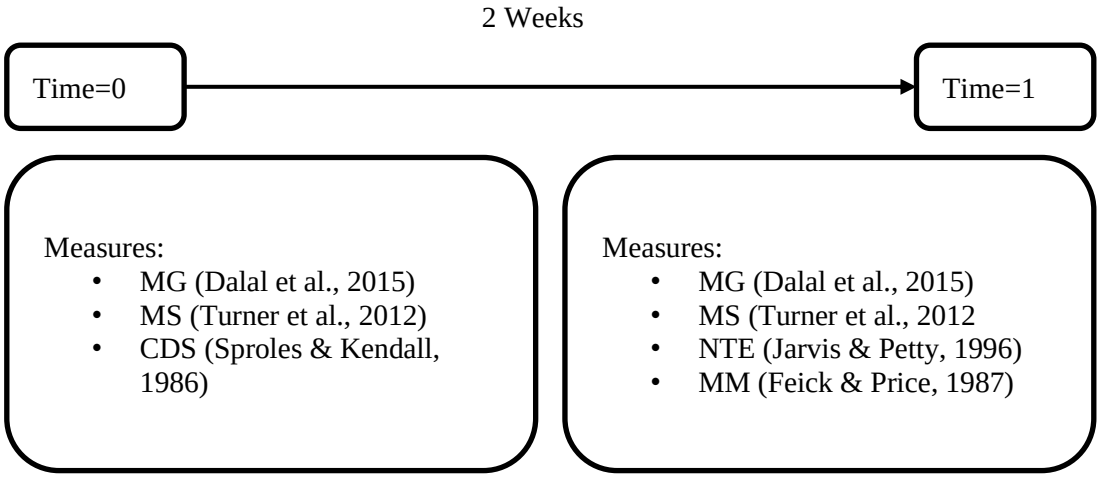

Figure 4.1: Overview of RQ1 Data Collection.

Note: MG (Maximizing Goal), MS (Maximizing Strategy), CDS (Decision-Making Styles), NTE (Need to Evaluate), MM (Market Mavenism).

4.2.1 RQ1 Sampling

A Qualtrics sample was employed. Qualtrics is an online research platform and interface similar to mTurk. It allows users to design surveys and experiments that can be issued online (as well as printed). Qualtrics also provides researchers with paid-for panels of participants to fill out the surveys (see *3.5.3.2 Quantitative Samples* for a defence of panel surveys). The Qualtrics sampling base selected was the UK general population (population in this case referring to the Qualtrics available panel). Further, qualifiers were also set to attempt the collection of a more representative sample. This included an even split of males and females and an even distribution across 5 age categories that span across 18-65+. Qualtrics also provides a pilot service whereby an initial 10% of the responses are collected and examined (whilst the survey is paused and therefore no other participants take part) to ensure there are no issues with the data collection process or the quality of the data.

4.2.2 RQ1 Measures

The measures recorded in the surveys included *Maximizing Goal* and *Maximizing Strategy* for maximizing tendency (with their operationalisations already justified in *2.8 Moving Forward: Adopting a Definition*), *Consumer Decision-Styles*, *Need to Evaluate*, and *Market Mavenism*. The selection of these measures are discussed and justified below. The selection of measures was also influenced by the need to avoid respondent fatigue, especially as this study utilised a longitudinal design, where the success of the study was crucially linked to respondents' willingness to complete a second wave of the study. All measures used in this thesis can be found in *Appendix B: Measurement Scales Used in this Thesis*

4.2.2.1 Consumer Decision Making Styles

Maximization involves, broadly speaking, pursuing the best choice and engaging in alternative search. Put another way, it could be conceptualised as an approach to making choices. This could be argued to have parallels with, *Consumer Decision-Styles*, which are defined as:

"*a mental orientation characterising a consumer's approach to making choices. It has cognitive and affective characteristics."* (Sproles and Kendall, 1986, p. 268).

Sproles and Kendall's (1986) work is of particular interest because it is rooted in Simon's original work on maximization (Sproles, 1983). In fact, two of the original CDS measures were termed "Perfectionist/Maximizer" and "Satisficer/Buyer of the 'good enough'". It therefore begs the question as to whether maximization (goal and strategy) has already been investigated in the CDS literature. Importantly, the work of Sproles and Kendall, which has been cited over 1,200 times according to Google Scholar, remains both a significant and contemporarily relevant piece of research. For example, in the August 2018 issue of *Journal of Consumer Research,* Ordabayeva and Fernandes (2018) made use of Sproles and Kendall's scales in their research on political ideology and social hierarchy.

Sproles and Kendall (1986) outline eight different *Consumer Decision-Styles* including 1) *Perfectionist*, 2) *Brand Conscious*, 3) *Novelty Conscious*[6], 4) *Recreational*, 5) *Price Conscious*, 6) *Impulsive*, 7) *Confused by Over-Choice*, 8) *Habitua*l. What is of interest about the Sproles and Kendall approach is that they allow participants to register on all factors, implying that multiple CDS are possible. For example, one may be a *Perfectionist* and simultaneously *Impulsive*. This resonates with the recent attempt to conceptualise maximization (goal and strategy) by Misuraca et al. (2015) that raised yet another debate. That is, whether maximizing and satisficing are indeed opposite forces on the same spectrum or actually two separate entities. Indeed, in their revised scales, Misuraca et al. (2015) allow for 2 satisficing scales and 2 maximizing scales, independently, suggesting that one may score high on both measures simultaneously. As a result, it is worth considering if the maximization literature is undergoing a similar discovery that came before in the CDS literature.

[6] This is left out of the analysis moving forward on the grounds that this trait is actually "Fashion Novelty" conscious and, therefore, is too narrow a construct to merit inclusion for discriminant analysis with maximization. Further, the need to keep the survey length manageable necessitates a strict inclusions/exclusions policy.

4.2.2.2 Need To Evaluate

The *Need to Evaluate* is the:

"*tendency to engage in evaluative responding*" (Jarvis and Petty, 1996, p. 172). Further, Jarvis and Petty continue to argue that "…*knowing what is good and bad allows people to maximize positive outcomes and minimize negative outcomes because those objects associated with reward will be approached and those associated with punishment avoided*".

This commentary is similar to the processes and outcomes of maximizers discussed in the original work by Schwartz et al. (2002) and so a question as to whether individuals who tend to maximize are in fact simply individuals that tend to evaluate more often arises. Maximizers, indeed, seek to maximize their choice outcomes whilst being more influenced by regret and negative emotions (Schwartz et al., 2002). Therefore, if maximizers are actually defined, operationally, by the extent of their evaluative processing, this raises implications for both bodies of research. On the other hand, it may just be that these two constructs are nomologically related. Nevertheless, this still requires investigation given the problems and lack of distinctive conceptualisation of the maximization construct.

4.2.2.3 Market Mavenism

Market Mavenism refers to individuals with:

"…*a propensity to provide general shopping and market place information*". Further, they are "*individuals who have information about many kinds of products, places to shop, and other facets of markets, and initiate discussions with consumers and respond to request from consumers for market information*" (Feick and Price, 1987, p. 86).

Maximizers are characterised by their propensity to engage with information exchange in their social networks (Schwartz et al., 2002) and so it may be that maximizers share strong overlaps with market mavens. This is perhaps the construct that least aligns with maximization as one (maximization) is cognitively oriented whilst the other (*Market Mavenism*) is socially oriented. Nevertheless, both focus on information collection and processing at their core; therefore, they should be investigated.

4.2.2.4 Other Constructs Considered

Several other constructs were considered to share close likeness with maximization (goal and strategy) but were excluded from the study. *Need for Cognition* (NFC) is the proclivity to deliberate hard on tasks or problems and appreciate the thinking and information

processing needed for it (Cacioppo and Petty, 1982). This reflects, broadly, maximization, and so it may be assumed that this was a worthy construct to investigate. Indeed, in previous research Nenkov et al. (2008) reported a positive association between NFC and the alternative search component of maximization. Lai (2010) echoed these results as well. As a body of previous studies already report and reach some consensus on a distinction between these two constructs, inclusion of NFC was excluded.

Involvement is another phenomenon that was considered. The following passage probably best highlights the argument for the conceptual similarities between maximization and involvement. From her seminal work on developing the involvement construct, Zaichkowsky (1985, p. 45) writes:

> *"In theory, involvement is considered an individual difference variable…depending on their level of involvement, consumers will differ greatly in the extensiveness of their purchase decision process (indicated by the number of attributes used to compare brands, the length of the choice process, and the willingness to reach a maximum or a threshold level of satisfaction) or in their processing of communications (indicated for instance by the extent of information search, receptivity to advertising, and the number and type of cognitive responses generated during exposure)"*

Maximization and involvement have not been examined together. This, in addition to strong theoretical overlaps, builds a strong case to examine maximization and involvement together. However, involvement scales often require a product or service to contextualise the scale. That is, many of the scales include items that require the research to enter a category of product or service. In some scales, such as Bloch's (1981) Automobile Involvement Scale item statements explicitly include cars such as "It is worth the extra cost to drive an attractive and attention-getting car". In many other scales (e.g. Mittal, 1995; Zaichkowsky 1985) the researcher must embed a good or service for the scale to operate, such as Schneider and Rodgers' (1996) Importance Subscale - "Choosing a ___ is a big decision in one's life". This raises a problem as whilst a context of innovation is available for this research, the actual purpose of the question under consideration at the moment is to ensure that maximization is distinct from more decision-making traits and constructs. Further, involvement seems to include items related to the social or financial importance of the product rather than the propensity towards search and deliberation *per se* and thus, arguably

be a modifier of a higher-level propensity. At this stage, the focus is on the distinction of maximization from similar constructs that are broader and as there is limited time and space available to conduct the survey, involvement was excluded at this point.

4.2.3 RQ1 Longitudinal Survey Design

A longitudinal survey was designed with the intention to 1) assess the temporal stability of the measures of maximizing tendency and 2) to demonstrate the discriminant validity of such measures of maximizing tendency (goal and strategy) from similar constructs. The longitudinal design involved two surveys, administered 2 weeks apart. At T=0, a first round of maximizing tendency measures were taken as well as the *Consumer Decision-Style* measures. At T=1, a second round of maximizing tendency (goal and strategy) measures were taken as well as measures related to the constructs of *Market Mavenism* and *Need To Evaluate*.

Two weeks was considered a reasonable duration between the surveys for several reasons. Firstly, repeat participation in surveys decreases with duration of the delay (Saunders et al., 2009), meaning the longer the time between surveys, the less likely participants would re-join, lowering the overall sample size. However, enough time must also elapse in order to sufficiently limit remembrance of the survey (Visser et al., 2000); participants may recall surveys they have recently answered and as a result bias their responses. Enough time was needed to ensure that this potential bias could be minimized. A time period of two weeks was also selected on the basis of time and cost pressures. Some have argued that two weeks is sufficient to balance with possible loss of participants (e.g. Haws and Poynor, 2008; Lynn and Harris 1997). Given the time and financial constraints, this was considered justifiable.

Some, however, may not accept 2 weeks as a sufficient length of time to test this, at least not without some additional effort made to more convincingly display maximization's trait status over this period. Recall, however, this question is exclusively concerned with 1) temporal stability and 2) discriminant validity and uniqueness. Assessment of other state/trait distinctions would jeopardize the integrity of these first two, under the same financial and time constraints. Nevertheless, it may be tempting to introduce additional features of this study to extract additional findings on this question which focuses on maximization's trait status. For example, it may be worth considering a manipulation to further assess maximizations trait stability – if simple interventions can alter the tendency to maximize,

then to what extent is it a trait? Indeed, as Ma and Roese (2014) demonstrated, the nature of the task and the framing of the task has a measurable impact on the maximizing tendencies of individuals, with individuals given a "select the best" task more inclined to maximize on later activities than those given a "make a selection" task.

However, demonstrating this in this study would not be of value for two reasons. Firstly, as mentioned, it would complicate the design of the study which is to address 1) temporal stability and 2) discriminant validity and potentially contaminate findings for these two focus points. Secondly, such additional work would increase the time and costs associated with this study which, as mentioned, is constrained by the nature of the research output format (PhD thesis). As was previously discussed (see *2.9.1 Issue 1: Maximization's Validity*), the definition of a trait relies more than on just how easily it may be induced. It would be ambitious and outside the bounds of this research to try and demonstrate both temporal stability and discriminant validity within the same study (i.e. simultaneously) as an experiment to manipulate the trait.

Given this, it is important to ensure that we minimize any possible influences that may skew participants and their inputs. In fact, adding such manipulations would defeat this very purpose. Importantly, even though thesis takes the position that maximizing is an individual difference, it also very clearly acknowledges that such a position requires significant validation – it is in fact the very purpose of this research question to address this debate. Shortly below, a short commentary on the randomisation of scale items, as well as the efforts to duplicate the survey conditions is presented to try and account for this. The larger sample size of this study and the higher quality nature of the sample are one of the other ways in which an attempt is made to counter this (see *3.5.3.2 Quantitative Samples* for more on this)

A decision to split the administration of the CDS, NTE and MM measures was also taken in order to limit participant fatigue. Participants that engage in excessive surveys lose interest and as a result of this, data quality and response rates potentially suffer (Bryman, 2008). Further, by distributing the non-maximizing measures across two surveys, it stood to better replicate the conditions of the surveys as no one survey was comparatively longer and/or more challenging, thus improving the validity of the design.

Finally, the survey was randomised in two ways. That is, the composite items for each scale were randomly ordered within itself, whilst the scales themselves were presented in a random order. Also, scales varied in the language of the scale's 'anchor' descriptions, e.g. Strongly Agree – Strongly Disagree vs. Not at all Characteristic – Extremely Characteristic, as well as the directions of anchors, e.g. Strongly Agree → Strongly Disagree vs. Strongly Disagree → Strongly Agree. These measures were taken to try and mitigate against anchoring and order effect bias, as well as survey fatigue (MacKenzie et al., 2011).

The surveys were pre-tested for completion time and clarity of instructions and questions.

4.3 RQ1 Analysis

4.3.1 RQ1 Analysis Introduction

The analysis begins with an assessment of the temporal stability of the maximization construct as measured. *Maximizing Goal* and *Maximizing Strategy*, operationalised by the Dalal et al. (2015) and Turner et al. (2012) scales respectively, were measured across two time points on the same individuals. Secondly, a discriminant analysis was conducted to ensure maximization (goal and strategy) is a unique construct. Several constructs from the *Consumer Decision-Styles* inventory (Sproles and Kendall, 1986) as well as *Need to Evaluate* and *Market Mavenism* were the constructs of interest in assessing maximization's uniqueness. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were used to assess this.

4.3.2 Data Preparation/Assumptions

The data were assessed in order to ensure that the data were of an adequate integrity to conduct the analysis (Malhotra et al., 2012). This involved several steps. First, the two data sets were merged. A unique ID code across both surveys that anonymously identified participants was used as a bridging variable to align both surveys' responses into one. As only the maximization (goal and strategy) measures were repeated, the two sets of measures were coded using A (Time=0) and B (Time=1) to distinguish when the measures were taken. In total, the first survey had 320 participants whilst the second had 223 return participants. As a result, the final uncleaned but merged data set held n=223. After this, all variable coding was checked and, where applicable, changes were made. These changes include actions such as reverse coding certain items (e.g. IMP4). There were no missing data as all responses in the survey were set as forced.

Regarding the integrity of the data, several checks were made. Firstly, a gender consistency qualifier was implemented to remove participants that were not consistent across time as it was assumed their data were unreliable. Other demographics that were taken, such as age, income, education, could all plausibly have changed during the period between surveys, but gender was considered reasonable to assume as consistent across both time points. This process removed 1 participant.

Another way in which the data were assessed was through time taken to complete the survey. The first survey took an average (median) time of 365 seconds (approx. 6 minutes), whilst a pre-test of the survey with 4 PhD students reported a time closer 8 minutes. Therefore, and on the basis of researcher judgement, any participants that completed the survey in less than 3 minutes were judged to have been inattentive and not reliable. In support of this action, an inspection of the standard deviation revealed that 193 seconds (approx. 3.2 minutes) represented 2 standard deviations (of the lower bound) for time taken to complete the survey. Faber and O'Guinn (1992) set (albeit arbitrarily) a participant cut off of 2 standard deviations (on a mean measure) during their study on compulsive behaviours; this approach has since been repeated (e.g. Koran, Farber, Aboujaoude, Large, and Serpe, 2006). However, it should be noted that some participants may be experienced survey takers (as they were purchased from a panel) and therefore plausibly perform quicker than novices. This process removed 15 participants.

Participants were also deemed to be inattentive if their entries were too standardised or a particular pattern in answering was evident. To assess this, a variance measure of the items for each construct (e.g. VFM1,VFM2,VFM3) was examined. Participants that reported extreme variance (highest and lowest when ranked against other participants) were investigated. In the case of 0 variance, participants had flat lined (e.g. by answering the same way across all items: 2,2,2,2,2) whilst in the case of high variance, participants had often jumped between extremities of the scale (e.g. by answering 1,7,1,7,1). There were 11 different constructs (e.g. MG, MS, PER) and participants that flat lined across 3 or more constructs were removed. Similarly, participants that reported high variance in their measures were inspected and, if deemed to be scoring between the extremes of the scale, were also removed. This process removed 8 participants.

Finally, multivariate outliers were checked by the widely used method of regressing composite score averages of all variables against a random ID number assigned to the

participant and inspecting a reported Mahalanobis statistic. 2 participants were removed as a result of this.

Other assumption checks of the data, such as linearity, were conducted during specific analyses and are discussed below. The final data set contained n=197 entries.

4.3.3 Assessing Temporal Stability: Repeated Measures ANOVA

In order to assess the temporal stability of the two measures, a repeated measures ANOVA is applied to the *Maximizing Goal* and *Maximizing Strategy* construct measures. Repeated Measures ANOVA is the:

"use of two or more responses from a single individual in an ANOVA or MANOVA analysis" (Hair et al., 2014, p. 668).

This technique controls for individual-level differences that may affect the within-group variance. Put otherwise, it allows us to assess whether a measure is consistent across time.

4.3.3.1 Assessing Maximizing Goal Temporal Stability

For this section of the study, there were 16 variables considered. 8 from Time=0 and 8 from Time=1. These variables were the same 8 variables in both time points and were the 7 items from the Dalal et al. (2015) scale for *Maximizing Goal* and 1 composite averaged score for all items. There are 5 assumptions of a repeated measures ANOVA that are required in order to conduct the analysis.

1) That the dependant variable is continuous. The maximization (goal and strategy) scales were administered on 7-point Likert-Type scales and can therefore be assumed as continuous (i.e. interval data).

2) That the independent variable consists of at least 2 categorical variables. The test administered considers the 2 time points when the measures were taken as the related category.

3) That there are no substantive outliers. When discussing univariate outliers, Hair et al. (2014, p. 64) states:

"*…the researcher must recognize that a certain number of observations may occur normally in these outer ranges of the distribution. The researcher should strive to identify only those truly distinctive observations and designate them as outliers*." Further, "*unless*

demonstrable proof indicates that they are truly aberrant and not representative of any observation"

then they should remain (p. 65). Less than 50 outliers were identified across 14 variables (when n=197). Following the advice above, at the researchers discretion, many were ignored as, given the interval scale (i.e. 1-7), these are not substantive (see final part of *4.3.2 Data Preparation/Assumptions*)

4) That the distribution of the dependent variable is normally distributed. However, given that a repeated measures ANOVA is robust when dealing with non-normal data, it is possible to move beyond this assumption given the sample size (Girden, 1992).

5) The variances between the combinations of related groups must be equal. This is often referred to as the test of sphericity. Mauchly's test of sphericity (for all variables) indicated that the assumption of sphericity had been violated, $\chi 2(2) = 1, p < .005$ for all variables. However, it is considered a challenge to avoid violating the assumption of sphericity (Weinfurt, 2000). Moreover, as there are only 2 levels for the repeated measures ANOVA to consider, some argue that this assumption is excusable as there is no third level to be compared to (Field, 2009). This also explains why the degrees of freedom register as 1. Further, and as a countermeasure, when sphericity is not met, there are adjusted measures that can be substituted to continue with the analysis. Maxwell and Delaney (2004) suggest using the Greenhouse-Geisser correction, especially if estimated epsilon (ε) is less than 0.75, and so this test was used.

Regarding the corrections of the repeated measures ANOVA, the Bonferroni correction is generally accepted as one of the more suitable adjustments when making several post hoc comparisons and was selected on this basis (Maxwell and Delaney, 2004). The relevant statistics are reported below.

For the following variables, there was no significant difference in the means between Time=0 and Time=1:

- MG1($F(1, 189) = 1.351$, $p = .247$, partial $\omega 2 = .007$),
- MG2($F(1, 189) = 0.014$, $p = .907$, partial $\omega 2 = .000$),
- MG3($F(1, 189) = 0.054$, $p = .817$, partial $\omega 2 = .000$),
- MG5($F(1, 189) = 2.973$, $p = .086$, partial $\omega 2 = .015$),
- MG7($F(1, 189) = 0.895$, $p = .345$, partial $\omega 2 = .005$)

However, time had a significant effect on the following variables:

- MG4($F(1, 189) = 3.986$, $p = .047$, partial $\omega 2 = .015$)
- MG6($F(1, 189) = 4.260$, $p = .040$, partial $\omega 2 = .022$)

MG4 and MG6 did not maintain temporal stability across both time points. This was true even with the Bonferroni correction applied beforehand, a measure taken to compensate against the increased likelihood of rejecting the null hypothesis when comparing multiple hypotheses. Neither item's statement had content that could have been reasonably assumed to be impacted by time (e.g. "I never settle"). Nevertheless, the effect size was small and the other 5 items were stable across time.

To summarise, a one-way repeated measures ANOVA was conducted to determine whether there was a statistically significant difference *in the individual items* in the *Maximizing Goal* measure across a 2-week period. Whilst some outliers were included in the analysis and the data were shown to be non-normal, according to the Shapiro-Wilk's test ($p<.05$), the analysis was still able to proceed and yielded results that suggest that the means of the item variables for the *Maximizing Goal* construct were stable.

Following this, when an *average composite score* was considered for the *Maximizing Goal* construct, this conclusion is strengthened. When the average *Maximizing Goal* score from Time=0 was measured against the average *Maximizing Goal* score from Time=1, the one-way repeated measures ANOVA revealed that there was no significant difference between the means of *Maximizing Goal* measured at Time=0 and at Time=1 - $F(1, 189) = 0.242$, $p = .623$, partial $\omega 2 = .001$.

4.3.3.2 Assessing Maximizing Strategy Temporal Stability

A similar process was followed to assess the temporal stability of the *Maximizing Strategy*. For this section of the study, there were 26 variables considered. 13 from Time=0 and 13 from Time=1. These variables were the same 13 variables in both time points and were the 12 items from the Turner et al. (2012) scale for *Maximizing Strategy* and 1 composite averaged score for all items.

Revisiting the previous assumptions, a similar scenario emerges. The dependant variable is continuous, and the independent variable consists of at least 2 categorical variables. The select few outliers observed on during the univariate analyses of the variables were ignored. Whilst none of the variables passed the Shapiro-Wilk's test for normality (all

p<.05), the test was able to proceed. Once more, Mauchly's test of sphericity was violated, $\chi 2(2) = 1, p < .005$ for all variables, although this has already been addressed. The Greenhouse-Geisser correction was likewise used and the Bonferroni correction was selected, with the results summarised in below.

There was no significant difference between Time=0 and Time=1 on all the individual variables of the *Maximizing Strategy* construct:

- MS1 (F (1.000, 189.000) = .285, p=.594 , partial ω2 = .002),
- MS2 (F (1.000, 189.000) = 1.307, p = .254 , partial ω2 = .007),
- MS3 (F (1.000, 189.000) = 1.349, p = .247 , partial ω2 = .007),
- MS4 (F (1.000, 189.000) = 1.335, p = .249 , partial ω2 = .007),
- MS5 (F (1.000, 189.000) = .295, p = .588 , partial ω2 = .002),
- MS6 (F (1.000, 189.000) = .448, p = .504 , partial ω2 = .002),
- MS7 (F (1.000, 189.000) = 1.070, p = .302 , partial ω2 = .006),
- MS8 (F (1.000, 189.000) = .196, p = .659 , partial ω2 = .001),
- MS9 (F (1.000, 189.000) = 1.297, p = .256 , partial ω2 = .007),
- MS10 (F (1.000, 189.000) = .077, p = .782 , partial ω2 = .000),
- MS11 (F (1.000, 189.000) = 3.808, p = .052 , partial ω2 = .02),
- MS12 (F (1.000, 189.000) = .112, p = .738 , partial ω2 = .001),

The results suggest that the item variables for the *Maximizing Strategy* construct were stable.

Furthermore, this outcome is strengthened when an *average composite score* was considered for *the Maximizing Strategy* construct, thus, strengthening the conclusion. When the average *Maximizing Strategy* score from Time=0 was measured against the average *Maximizing Strategy* score from Time=1, the one-way repeated measures ANOVA revealed that there was no significant difference between time points (F (1, 189) = .776, p = .379, partial ω2 = .004)

To summarise thus far; for both *Maximizing Goal* and *Maximizing Strategy*, the results showed that almost all the item variables and, importantly, both of the composite score variables were stable over a 2-week time period.

4.3.4 Assessing Discriminant Validity: Measurement Model Assessment

Discriminant Validity is the:

"*extent to which a construct is truly distinct from other constructs both in terms of how much it correlates with other constructs and how distinctly measured variables represent only this single construct"* (Hair et al., 2014, p. 601).

Maximization, operationalised through *Maximizing Goal* and *Maximizing Strategy* measures, and similar construct measures (CDS, NTE, and MM) were examined in a measurement model to assess discriminant validity and form a nomological net. Moreover, the valence of the relationship between the variables should be as suggested by the theoretical relationship, that is, positive or negative.

A rigorous test of discriminant validity is comparing the average variance extracted of two latent variables against the squared correlation between the same two latent variables (Gaskin, 2016)[7]. This difference allows researchers to assess whether the latent variable is better explained by some other latent variable than it is by its own item variables. In order to assess the discriminant validity of the constructs, a measurement model must be developed. That is:

"*A SEM model that (1) specifies the item for each construct and (2) enables an assessment of construct validity*." (Hair et al., 2014, p. 544).

This involves exploring the data (through an EFA) before then confirming that the data fit a hypothesised model (CFA)

4.3.4.1 Maximization and Decision-Making Styles: Time=0 Survey

An Exploratory Factor Analysis (EFA) was run on a 55-item survey. The items measured *Maximizing Goal, Maximizing Strategy,* as well as the *Consumer Decision-Styles* labelled *Hedonic, Perfectionist, Confused by Over-Choice, Value-for-Money, Impulsive, Habitual, and Brand Conscious.* An EFA conducted before a SEM analysis allows any problematic variables to be detected much more easily compared to CFA because none of the variables are constrained by a measurement model as there is no a priori theory that dictates item relationships (Brown, 2006).

Prior to the full model EFA, each theorised construct was examined on the basis of internal reliability (i.e. Cronbach's Alpha), and on how the data for each construct behaved under individual EFAs. Part of this process also ensures that any highly correlated items (>.8) within a scale can be deleted or combined in order to 1) limit potential multicollinearity

[7]As opposed to the less rigorous method of assessing this by fixing the correlation between two considered latent variables to 1 and then measuring whether that model is significantly different from the original 2 variable model.

issues and 2) enhance model parsimony. Regarding the thresholds set for the factor analysis, Hair et al. (2014) and Brown (2006) were predominantly consulted. Factor loadings were deemed acceptable at the >0.5 level, debatable at 0.4<Loading<0.5, and unacceptable at the <0.4 level. Further, loadings should load above 0.5 in order to achieve "practical significance". A factor model should exceed a threshold of 60% variance explained in order to be considered acceptable, although below this threshold is sometimes permitted. *Table 4.1: RQ1 Summary of construct validity (T=0)* summarises the initial observations

	MGA	MSA	HED	PER	CON	VFM	IMP	HAB	BRC
Cronbach's Alpha	0.847	0.926	0.886	0.875	0.897	0.639	0.697	0.791	0.84
Improvement if Item deleted	N/A	N/A	HED4(.896)	N/A	N/A	N/A	IMP4(0.703)	N/A	BRC7 (0.872)
Inter-Item Correlations (>.8)	N/A	N/A	HED 1,3 (.833)	N/A	N/A	N/A	N/A	N/A	N/A
EFA - KMO	0.86	0.924	0.823	0.881	0.835	0.625	0.694	0.762	0.881
EFA - Factors Extracted	1	1	1	1	1	1	2	1	2
EFA - Loading Problems	N/A	MS2(No Load)	N/A	PER5(No Load) PER7(Cross Load)	N/A	N/A	IMP4(Cross Load) IMP5(No Load)	N/A	N/A
EFA - Extraction Problems (<.4)	MG2 (.365); MG 6 (.302)	MS2(.276)	HED4(.313)	PER8(0.221)	N/A	VFM2(0.247) VFM (0.314)	IMP5(0.202)	HAB3(0.386) HAB4(0.323)	BRC7(0.217)

Table 4.1: RQ1 Summary of construct validity (T=0)

Note: MGA= Maximizing Goal, MSA= Maximizing Strategy, HED=Hedonic Shopping, PER= Perfectionist, CON=Confused By Over-Choice, VFM=Value For Money, IMP= Impulsive Shopping, HAB= Habitual, BRC= Brand Conscious

At this stage, only items that registered low (<0.3) extraction in the communalities (Hair et al., 2014) *and* whose deletion would not invalidate the "3 item rule" (Blunch, 2008) were removed. This included MG2, MG6, MS2, HED4, PER8, IMP5, and BRC7. Items that loaded (>0.4) on 2 or more factors were noted so as to be observed again during the full EFA.

The suitability of a full model EFA was assessed prior to analysis by ensuring that all variables correlated with at least one other variable (coefficient>0.3). The overall Kaiser-Meyer-Olkin (KMO) measure was 0.843 ($p<0.01$) with individual construct KMO measures (now) all greater than 0.7. This satisfies the Kaiser (1974) classification requirements of each variable as well as the data set as a whole. Bartlett's test of sphericity was statistically significant ($p < .005$) further confirming that the data were suitable for a factor analysis. However, it is also acknowledged that this data set falls below the ideal "5 observations per variable" rule (n=197, variables=55) suggested by Hair et al. (2014).

This initial EFA was run using the Maximum Likelihood Extraction and a Direct Oblimin Rotation. As the CFA to be conducted (to assess the discriminant validity) in AMOS (the software to conduct the test) uses a Maximum Likelihood Estimation (MLE) technique, MLE was used during the EFA to remain consistent throughout the study. The Direct Oblimin is an oblique rotation best employed when there is a theorised relationship between variables, such as in this case. Oblique rotations are more suited for psychological research as the underlying assumption is that factors are theoretically related (Field, 2009). The downside with using these rotations is that there is less interpretability when examining the results (Gaskin, 2016). Consequently, the Varimax Rotation, one which minimizes the number of variables with extreme loadings on factors (Hair et al., 2014), was also considered.

The EFA revealed 10 components (factors with eigenvalues>1), which explained 62.75% of the total variance. Visual inspection of the scree plot indicated somewhere between 9 and 11 components should be retained (Cattell, 1966). Upon further inspection, 4 items (PER5, PER7, MS8, IMP4) loaded problematically (loading on separate factors or high cross loadings with other factors). No extractions, however, loaded below 0.4. To address this, several new EFAs were run, removing the items with most serious concerns (in single-removal waves of highest cross loadings). Communalities, factor loadings, and tests of adequacy were checked each round. The final EFA was acceptable (KMO = 0.842, $p<0.01$; Bartlett, $p < .001$). All factors loaded (>0.4), with acceptable communalities (>0.3). 9 factors explained 61.29% of the total variance. No cross loadings were reported. In total, 11

items were removed (MG2, MG6, MS2, MS8, PER5, PER 7, PER8, HED4, IMP4, IMP5, BRC7) from the initial 55. All factors (constructs) maintained 3 or more item variables.

At this point, an initial look at how distinct maximization (goal and strategy) is from other constructs is possible. During the EFA stage, the rotated matrix can give insight to this. In the rotated matrix, if cross-loadings exist, then they should differ by more than 0.2 (Fabrigar, Wegener, MacCallum and Strahan 1999; Field, 2009) so as to not raise questions of a construct's (factors) validity. More rigorously, however, by examining the average variance extracted of two latent variables against the squared correlation between the same two latent variables (Gaskin, 2016), a more definitive claim can be made. In order to assess this, a CFA model was developed in AMOS (statistical software).

Confirmatory Factor Analysis (CFA) is considered a gold standard technique across social sciences; it is a multivariate analysis technique that falls under the family of SEM techniques and is also a cousin to Exploratory Factor Analysis (EFA). CFA is a special case of the structural equation model (SEM), also known as the covariance structure (McDonald, 1978) or the linear structural relationship (LISREL) model (Jöreskog and Sörbom, 2004). A major difference between CFA and EFA is that loadings upon several factors are permitted in EFA whereas in CFA, they are not. This is because the model, that is, the number of constructs and corresponding items, is already defined. Further, the justification for this level of detail on CFA over its parent technique Structural Equation Modelling (SEM), is that the focus of this study is more measurement model oriented, rather than structural model oriented. Often, CFA is used to confirm the measurement model (i.e. do the data fit the model?) before the more anticipated structural model is then tested (i.e. the hypothesised relationships between the data). The analysis for this measurement model was modelled on the factor structure generated by the EFA.

In order to ensure a model is fit for use, inspection of fit statistics is mandated. There exist several fit statistics, with general consensus as to how these statistics should be interpreted when assessing a model fit (Hair et al., 2014; Kline, 2005; Hu and Bentler, 1999) to establish how well the data fit the model. Hair et al. (2014) highlight that a selection of measures should be considered so as to observe a good model fit, which should include the Chi squared ($\chi 2$), an absolute fit index (i.e. RMSEA as presented below), an incremental fit index (i.e. CFI as presented below), a goodness-of-fit index (e.g. CFI as presented below), and a badness-of-fit index (i.e. SRMR as presented below).

The model (*Appendix E: RQ1 Measurement Models*) fits the data modestly ($\chi 2$ (996, N = 197) = 1.799, p < .001, CFI = .854, RMSEA=0.064, SRMR= .0807). Hair et al. (2014) consider CMIN values lower than 3 to be acceptable, a CFI above .8 to be permissible (although the .9 threshold is standard), a RMSEA between .05 and .1 to be considered moderate, and a SRMR below .09 to pass the threshold of a good fit. As the model is acceptable, an examination of the validity of the constructs can now be undertaken. From the model, several key measures were obtained and calculated to assess the discriminant validity of maximization (goal and strategy). *Table 4.2: RQ1 summary of construct correlations and construct validity (T=0)* summarises these statistics.

	CR	AVE	MSV	IMP	MS	MG	BRC	HED	CON	PER	HAB	VFM
IMP	0.776	0.536	0.278	**0.732**								
MS	0.923	0.551	0.252	-0.222*	**0.742**							
MG	0.852	0.456	0.533	-0.018	0.478**	**0.675**						
BRC	0.874	0.538	0.194	0.239	0.163**	0.362**	**0.734**					
HED	0.892	0.628	0.102	-0.072	-0.232**	-0.320**	-0.269	**0.793**				
CON	0.899	0.692	0.278	0.527***	-0.102	-0.049	0.111	0.105	**0.832**			
PER	0.921	0.700	0.533	-0.192*	0.502**	0.730**	0.440	-0.292	-0.148	**0.836**		
HAB	0.797	0.503	0.029	-0.145*	0.094	0.093	0.138	-0.014	-0.098	0.170	**0.709**	
VFM	0.933	0.900	0.076	0.136	-0.102*	-0.192*	-0.208	0.092	0.129	-0.276	-0.005	**0.949**

*Table 4.2: RQ1 Summary of construct correlations and construct validity (T=0) *denotes p<0.05, **denotes p<0.01, ***denotes p<0.001*

Note: CR= Composite Reliability, AVE= Average Variance Extracted, MSV= Maximum Shared Variance, Diagonal = Square Root of AVE.

IMP= Impulsive Shopping, MS= Maximizing Strategy, MG= Maximizing Goal, BRC= Brand Conscious, HED=Hedonic Shopping, CON=Confused By Over-Choice, PER= Perfectionist, HAB= Habitual, VFM=Value For Money.

These results show that all constructs satisfied the composite reliability measure requirement of a value greater than 0.8 (Hair et al., 2014). However, the results for *Maximizing Goal* raise serious concerns surrounding its discriminant validity. Firstly, the AVE for *Maximizing Goal* (.456) is less than 0.5. AVE

"*is the average percentage of variation explained (variance extracted) among the items of a construct*" (Hair et al., 2014, p. 601).

An AVE of below than 0.5 indicates that, on average, more error remains in the items than variance explained by the latent factor structure imposed on the measure. This is more an issue of internal validity than discriminant. Further, Dalal et al. (2015) reported the *Maximizing Goal* measure to be psychometrically valid after several tests with larger samples. Secondly, however, the AVE (.456) for *Maximizing Goal* is also less than the corresponding MSV (0.533), suggesting that *Maximizing Goal* shares at least as much variance with another construct than its constituting items. This is the first issue surrounding maximization's discrimination from other constructs.

Moreover, the square root of the AVE (0.675) is lower than the absolute correlation *Maximizing Goal* shares with another construct, namely *Perfectionism* (0.730). Hair et al. (2014, p. 620) continue:

"*A more rigorous test is to compare the average variance-extracted values for any two constructs with the square of the correlation estimate between these two constructs. The variance extracted estimates should be greater than the squared correlation estimate. The logic here is based on the idea that a latent construct should explain more of the variance in its item measures that it shares with another construct. Passing this test provides good evidence of discriminant validity*".

As such, the construct of *Perfectionism* explains more of the variance in *Maximizing Goal* than the items that constitute the construct itself. All of these results indicate that maximization, at least when operationalised as a goal by this measurement scale, does not stand up against questions surrounding its discriminant validity (in this context). This is expanded upon, with theoretic implications, in the discussion (*4.4.3 Maximizing Goal is Not Unique*)

Beyond this, another interesting observation can be made. *Maximizing Goal* and *Maximizing Strategy* correlate in a (moderate) positive manner ($r=0.478$, $p<0.01$) (which is to

be expected as they both tap into areas of the same theoretical construct) but not as strongly as they both do with the *Perfectionist* construct (MG, r=0.730, p<0.01; MS, r=0.502, p<0.01). This suggests that the *Perfectionist* construct registers a stronger operational relationship with the theoretical construct of maximization (as goal and strategy) than either of the other two constructs do (i.e. with each other).

Another notable observation comes from the (weak) positive relationship that *Maximizing Goal* has with *Brand Consciousness* (r=0.362, p<0.01). Considering maximizers seek the best, it may be plausible to assume that this relationship is explained by maximizers using brand as a key criterion in their definition and pursuit of the best, and thus, this relationship is in the expected direction.

The results also indicate what maximization, either as a goal or strategy, is **not**. *Maximizing Strategy*, interestingly, has a (moderate) negative relationship with *Hedonic* shopping styles (r=-0.232, p<0.01), as did *Maximizing Goal* (r=-0.320, p<0.01). Given what is known about the negative relationship between maximization and happiness (Schwartz et al., 2002), this should be of little surprise. It is also an expected tenet of maximization that choosing the best is a done through cognitive deliberation rather than affective choice. The relationships (for *Maximizing Goal* and *Maximizing Strategy*) are also weak or practically non-existent for *Confused by Over-Choice*, *Impulsive*, and *Habitual Consumer Decision-Styles*. The valence of the relationship between *Impulsive* shopping and *Maximizing Goal* and *Maximizing Strategy* is negative, which is in the expected direction given the proposed deliberative nature of maximization. The relationship with *Value-For-Money* shopping is also negative, which indicates the difference is in the maximizing tendency to search for the 'best' is rather more than simply the best price.

Thus, to summarise, the pattern of valence relationships supports the validity of the notion of maximizing tendency as relationships are in the expected and supportable directions. What is problematic is the discriminant validity of the *Maximizing Goal* from the *Perfectionist* construct as a *Consumer Decision-Style*. However, the relationship is strong for *Maximizing Goal* but only moderate for *Maximizing Strategy*, suggesting that there is a difference in the enactment of the goal and therefore, logically, some difference in the goal itself (as presently measured).

4.3.4.2 Maximization, Need To Evaluate, and Market Mavenism: Time=1 Survey

In a similar fashion to the analysis on maximization and the *Consumer Decision-Styles* (from the Time=0 survey), the Time=1 survey also contains constructs that resonate with maximization (goal and strategy). *Need to Evaluate* and *Market Mavenism* were examined along with *Maximizing Goal* and *Maximizing Strategy* to ensure maximization's discriminant validity from these theoretically related constructs. The data for the maximizing scales were taken from the Time=1 survey to lend consistency to the evaluations. Once more, a summary of the initial inspection of the data is provided in the table below (*Table 4.3: RQ1 Summary of construct validity (T=1)*)

	MGB	**MSB**	**MM**	**NTE**
Cronbach's Alpha	0.858	0.937	0.901	0.893
Improvement if Item deleted	N/A	N/A	N/A	N/A
Inter-Item Correlations (>.8)	N/A	N/A	N/A	N/A
EFA - KMO	0.867	0.936	0.887	0.905
EFA - Factors Extracted	1	2	N/A	2
EFA - Loading Problems	N/A	N/A	N/A	N/A
EFA - Extraction Problems (<.4)	MGB2 (0.355) MGB6 (0.304)	MSB2 (0.338)	N/A	N/A

Table 4.3: RQ1 Summary of construct validity (T=1)

Note: NTE= Need to Evaluate, MM=Market Mavenism, MSB= Maximizing Strategy, MGB=Maximizing Goal.

The reliability analysis reported that all items performed well ($\alpha>0.8$). There were no highly correlated items, no improvements to the Cronbach's alpha if items were deleted. KMO statistics all registered positively (>0.8), whilst a lack of cross loadings helps distinctly define two factors in the MS and NTE scale. This observation was kept in mind for the full EFA. As was the case in the Time=0 survey analysis, MG2, MG6, and MS2 all registered low extractions and so were removed prior to a full model EFA. Thus, the items included for *Maximizing Goal* and *Maximizing Strategy* were the same as in the previous analysis.

A full model EFA was acceptable (KMO = 0.912, $p<0.01$) with individual KMO measures all greater than 0.7. Once again, Maximum Likelihood was the chosen extraction

method whilst Direct Oblimin remained the rotation mechanism. The EFA revealed 6 factors (eigenvalues>1) that explained 59.62% of the total variance. However, there were issues. MS5, MS8, and NTE13 either did not load or loaded independently on a separate factor and were therefore removed from the model. The final EFA explained 58.56% of the variance, loaded 4 factors, and contained no cross loadings and all acceptable extractions.

A CFA resulted in a model that fits the data modestly ($\chi 2$ (996, N = 197) = 1.812, p < .001, CFI = .919, RMSEA=0.065, SRMR= .0709). As was mentioned in the previous analysis, these statistics and collection of such satisfy the requirements laid out by Hair et al. (2014). The table below (*Table 4.4: RQ1 Summary of construct correlations and construct validity (T=1)*) summarises the key validity statistics generated from the CFA. *Appendix E: RQ1 Measurement Models* presents the measurement model.

	CR	**AVE**	**MSV**	**MaxR(H)**	**NTE**	**MM**	**MS**	**MG**
NTE	0.877	0.506	0.260	0.884	**0.712**			
MM	0.903	0.609	0.310	0.917	0.499**	**0.781**		
MS	0.936	0.619	0.219	0.941	0.220**	0.270**	**0.787**	
MG	0.850	0.533	0.310	0.855	0.510***	0.557**	0.468	**0.730**

*Table 4.4: RQ1 Summary of construct correlations and construct validity (T=1) *denotes p<0.05, **denotes p<0.01, ***denotes p<0.001*

Note: CR= Composite Reliability, AVE= Average Variance Extracted, MSV= Maximum Shared Variance, Diagonal = Square Root of AVE, NTE= Need to Evaluate, MM=Market Mavenism, MS= Maximizing Strategy, MG=Maximizing Goal.

All constructs registered acceptable composite reliability (>0.8) and had no variance (extraction or shared) issues. Further, several relationships were observed. Firstly, and as expected, *Maximizing Goal* and *Maximizing Strategy* shared a positive relationship (r=0.468, p<0.01), to a degree similar to the first analysis. *Maximizing Goal* had a moderate positive relationship with *Need to Evaluate* (r=0.510, p<0.001) and *Market Mavenism* (r=0.557, p<0.001). *Maximizing Strategy* had weak positive relationships with *Need to Evaluate* (r=0.220, p<0.01) and *Market Mavenism* (r=0.270, p<0.01). In terms of discriminant validity, *Maximizing Goal* and *Maximizing Strategy* can be considered distinct from *Need to Evaluate* and *Market Mavenism*. As part of a nomological net, these relationships are in the expected direction (see *4.2.2 RQ1 Measures*). The pattern of weaker relationship with *Maximizing Goal* and *Maximizing Strategy* is again repeated.

4.3.5 Summary Comments

The *Maximizing Goal* and *Maximizing Strategy* construct measures were stable across time. As a nomological net, relationships with other constructs are either nearly non-existent or in the expected direction. *Maximizing Strategy* also held discriminant validity in the face of similar and competing constructs, though *Maximizing Goal* did not, with the *Perfectionist* construct causing validity issues. This not perhaps surprising considering the similarities between items in these two constructs (e.g. PER1= Getting very good quality is important to me, MG6= No matter what it takes, I always try to choose the best thing). A pattern of weaker relationship between variables correlating with MS over MG was repeated across all constructs (with IMP the only exception). This is explored further in the discussion below.

4.4 RQ1 Discussion

4.4.1 RQ1 Discussion Introduction

This section discusses the findings of the analysis in the light of extant research and presents the implications for the present research. In sum, the measures of maximization (goal and strategy) proved to be stable over 14 days. The discriminant validity of the maximization (goal and strategy) measures within the chosen nomological net is tolerable. Nonetheless, within the shopping context, the discriminant validity between *Maximizing Goal* and *Perfectionist* presented issues. It may be that these can overlooked outside of shopping environments. A summary of the correlated relationships in presented in the tables below (*Table 4.5: RQ1 Summary of relationships (T=0)* and *Table 4.6 - RQ1 Summary of relationships (T=1)*) below.

	MS	MG	BRC	HED	CON	PER	HAB	VFM	IMP
MS	**0.742**								
MG	0.478	**0.675**							
BRC	0.163	0.362	**0.734**						
HED	-0.232	-0.32	-0.269	**0.793**					
CON	-0.102	-0.049	0.111	0.105	**0.832**				
PER	0.502	0.73	0.44	-0.292	-0.148	**0.836**			
HAB	0.094	0.093	0.138	-0.014	-0.098	0.17	**0.709**		
VFM	-0.102	-0.192	-0.208	0.092	0.129	-0.276	-0.005	**0.949**	
IMP	-0.222	-0.018	0.239	-0.072	0.527	-0.192	-0.145	0.136	**0.732**

Table 4.5: RQ1 Summary of relationships (T=0)

Note: MS= Maximizing Strategy, MG=Maximizing Goal, BRC= Brand Conscious, HED=Hedonic Shopping, CON=Confused By Over-Choice, PER= Perfectionist, HAB= Habitual, VFM=Value For Money, IMP= Impulsive Shopping.

	NTE	MM	MS	MG
NTE	**0.712**			
MM	0.499	**0.781**		
MS	0.22	0.27	**0.787**	
MG	0.51	0.557	0.468	**0.73**

Table 4.6: RQ1 Summary of relationships (T=1)

Note: NTE= Need to Evaluate, MM=Market Mavenism, MS= Maximizing Strategy, MG=Maximizing Goal

4.4.2 Maximization is Stable (in the short-term)

Maximization (goal and strategy) was shown to be stable across 2 weeks. This was confirmed by both goal and strategy measures. From this, it becomes more reasonable (though not yet fully convincing) to accept what has long been assumed, yet rarely empirically verified. Dalal et al. (2015), in their *Maximizing Goal* scale, applied test-retest reliability[8], and Schwartz et al. (2002) referenced unpublished raw data as both sought to confirm the claim that maximization was stable. However, as has been the case especially in recent years (Misuraca and Fasolo, 2018) the definition of maximization and its respective properties has been under question. By more thoroughly addressing this particular element of

[8] Dalal et al. (2015) also mention, as part of their study, the administration of a choice task in which they attempted to observe certain behaviors. It is possible that the presence, and ordering of, the choice task contaminated the results of their study. Further, Ma and Roese (2014) have shown how certain factors (e.g. priming) may induce maximization. It is also why, for the purposes of this research question, scales were randomised, both in the order of scales as well as the order of the items within them.

maximization, it can now be further claimed, at least when maximization is conceptualised as a two-part construct of goals and strategy, and over a short time frame, that maximization is stable. This has wider implications for the maximization literature, however, on two fronts. These are 1) the state vs. trait maximization debate and 2) the other trait-related validity concerns.

Firstly, in acknowledging the argument for the counterproposition, that is that for some researchers, maximization is to be assumed a state, a trait-state dichotomy for maximization discussion is possible. Ma and Roese (2014) provided the strongest evidence for the claim that maximizing was a "mind-set" that could be primed; their extensive set of experiments were able to induce varying levels of maximization across contexts. Collectively, we may now explore maximization (goal and strategy), as we do with some other psychological constructs, as both a state and trait phenomena. Anxiety is another such example whereby a construct may exhibit both state and trait like features, with individuals differing in their general disposition to feeling anxiety, as well as certain situations or states affecting the experienced anxiety (Spielberger, 1971). Endler and Kocovski (2001) also detail how anxiety may be experienced and manifested as a result of state or trait induced anxiety.

Kokkoris (2019) is one of the early researchers to begin tackling maximization across different contexts and found that, using the Diab et al. (2008) scale, trait maximizing was associated with maximizing in services and experiences significantly less than with maximizing in consumer goods or in life decisions. Nevertheless, much more must be done to further validate claims re the stability of maximization across time (and contexts).

Secondly, we need to further explore the temporal extent of maximization's (goal and strategy) stability. Previous research (Purvis et al., 2011; Tanius, Wood, Hanoch and Rice, 2009) suggests that age and maximization share a relationship, in that younger people maximize more than older people. This may be explained as a function of a time-decision impact whereby the decisions younger people make about education, spouses, family, career, health, to name a few, have larger consequences than for someone older. This, however, is an easily challenged position. Alternatively, older people may have become comfortable with making decisions through experience. Neither claim can be verified at this moment, but research has suggested that age plays a role in the intensity of maximization. Therefore, this must still be better understood. If maximization denigrates, for whatever reason, this must be controlled for in research. More importantly, it must also be understood so as to more clearly

understand how maximization impacts choice as well as how decision making operates in a wider sense. Future research should then examine maximization temporal stability over longer periods of time (e.g. years, decades) to assess whether maximization remains stable in the long term.

4.4.3 Maximizing Goal is Not Unique

Maximizing Goal failed to retain discriminant validity against *Perfectionist* shopping styles, which some may use to extend a claim that maximization is not operationally valid; given the "*proliferation of scales*" (Misuraca and Fasolo, 2018, p. 153) that use validity as a means justification to generate new scales – a chief reason behind the confusion - it should be immediately noted that this result was in a shopping context. A more proportionate response would be that in shopping contexts, a function of maximization (*Maximizing Goal*) is not wholly distinguishable from a *Consumer Decision-Style* (*Perfectionist*)

Recall that many other *Consumer Decision-Style* traits, such as *Brand Consciousness* and *Value-For-Money*, may struggle to perform in many other decision domains, such as romantic partners. Maximization, however, more broadly considers decisions across domains. Maximization has been examined in the context of food (Iyengar et al., 2006), pop culture (Ma and Roese, 2014), and romance (Mikkelson and Pauley, 2013). Given this, the extent of the *Maximizing Goal* issue should not be extended beyond the domain of shopping without further research.

There may be positives from this, however. Research on *Perfectionist* shopping may provide possible starting points for shared theory. For example, Wesley et al. (2006) found gender to be an antecedent in the construction of different CDS profiles in shoppers, which also impacted shopping spend. Given the positive correlation of *Perfectionist* shopping style with *Maximizing Goal*, researchers of maximization may use this finding to explore the relationships 1) between maximization and gender further as it has only partially been examined (e.g. Richardson, Ye, Ege, Suh and Rice, 2014) as well as 2) better understanding domain-specific (i.e. consumption) forms of maximization.

4.4.4 Other relationships

Also of interest were the relationships that maximization shared with other constructs. To recall, *Maximizing Goal* and *Maximizing Strategy* were positively related to *Perfectionism*, *Brand Consciousness*, *Market Mavenism*, and *Need to Evaluate*. With respect to *Perfectionist* style, this construct and maximization share their roots in Simon's (1955)

work and so it is understandable why such a strong relationship exists. The functions of maximization (goal and strategy) correlated more strongly with *Perfectionist* than they did with each other.

Regarding *Brand Consciousness*, the positive relationship may be as a result of, at least in shopping situations, using brand as a key indicator to qualify the best. The literature on brand research suggest that brand can be used in this way (e.g. Aaker, 2004), and therefore it is plausible why this relationship exists. Interestingly, and if this is the case, it may contribute to the domain-specific maximization that Cheek and Schwartz (2016) discuss. During the literature review (see *2.3 Contemporary Research on Maximization*), a point was raised that there lacks consensus and effort in defining what defines the best for maximizers. Not only between maximizers, but within maximizers, as the same individual may qualify two different options as the best depending on the situation (e.g. Kahneman and Tversky, 1979). Therefore, this particular relationship may act as a starting point for maximization in shopping situations when researchers seek to understand how maximizers construct and define "the best".

Recall that *Market Mavenism* refers to individuals with:

"*…a propensity to provide general shopping and market place information"* and *"…who have information about many kinds of products, places to shop, and other facets of markets, and initiate discussions with consumers and respond to request from consumers for market information"* (Feick and Price, 1987, p. 86).

Maximizers are characterised for their higher levels of information exchange with other individuals within their networks (Schwartz et al., 2002) and so this relationship was expected. Interestingly, and with this relationship confirmed, it now becomes of interest in its own right for the current research. In the innovation literature, the role of what may be considered information brokers, is highly important. For example, Moore (2014) discusses how early adopters are looked to as sources of credible knowledge and assessment as to what innovations are worthwhile. Rogers (2003) discusses the importance of opinion leaders in facilitating the adoption of innovations in society. It would, therefore, be beneficial for the innovation adoption literature at least to examine this relationship more closely. Should maximizers indirectly act as these information brokers (and assuming that they are over-represented in the earlier adopter categories), their identification and targeting becomes of serious consideration.

Need to evaluate, alternatively, is the:

"*tendency to engage in evaluative responding*" (Jarvis and Petty, 1996, p. 172).

The results from this study showed that maximization (goal and strategy) and *Need to Evaluate* shared a positive relationship. It had already been confirmed in prior research that maximization and *Need for Cognition* share a positive relationship (e.g. Nenkov et al., 2008), but *Need To Evaluate* has not yet been examined. In following this path, not only is the nomological net expanded, but possible insights revealed as to how maximizers may operate. Cheek and Schwartz (2016, p. 136), in outlining their broader and more holistic view of maximization, posited that:

"*…a maximizer may identify all possible options quickly, but then spend a large amount of time trying to evaluate the trade-offs of the choice alternatives*".

This seems to be supported by the relationship uncovered in this study between maximization (goal and strategy) and a *Need to Evaluate*. In addition to this, these findings could help develop a descriptive model of maximization's operation. If maximizers conduct one particular phase quicker than satisficers, such as collecting information and identifying alternatives as Cheek and Schwartz (2016) mention, but take longer in making their decision overall, as for example Misuraca and Teuscher (2013) showed, it may be as a result of their extended evaluative processes. This would need to be empirically validated, but the key takeaway should be that exploring the nomological net in this way may open avenues to validate a conceptually coherent view of maximization's operations.

Maximizing Strategy and *Maximizing Goal* shared a negative relationship with the *Hedonic* style. This style revolves around the enjoyment of deciding and choosing in shopping environments. This relationship may have been predicted broadly on the basis of maximizers generally more regretful and less satisfied outcomes regarding decision processes (*Table 2.1: Summary of Key Maximization Research Papers*). Dar-Nimrod et al. (2009) found that maximizers experience more negative affect and stress during the decision whilst Iyengar, et al. (2006) concluded that maximizers were less satisfied with their decisions. After this, Huang and Zeelenberg (2012) also found that maximizers were less happy about their own choices when other peoples' choices are better, even when their choice was better than expected. Evidently, maximizers do not enjoy decision-making.

However, given the results of this study, there is support for the notion that it is specifically the process of decision making that maximizers do not enjoy, even if they achieve objectively better outcomes. Sproles and Kendall (1986) described the hedonic style as one wherein individuals find shopping pleasant, but interestingly previous research (Sproles, 1983) had this factor labelled as a time efficient style of shopping (although with negative loadings). It is also known that maximizers spend more time and effort in the decision process (Misuraca and Teuscher, 2013; Polman, 2010). With this in mind, it becomes plausible that the negative consequences maximizers report on are as a result of their dislike of spending time on making their decisions, but also, paradoxically, needing more time to make their decisions.

Finally, and also worth noting, *Maximizing Goal* and *Maximizing Strategy* did not share any meaningful relationships with *Confused by Over-Choice* and *Habitual* styles. Not only does this help to define the parameters of maximization's nomological net, it also serves to help better contextualise some of the existing literature. Regarding *Confused by Over-Choice*, the literature posits that maximizers seek out additional choices (e.g. Schwartz et al., 2002; Iyengar et al., 2006) and as a result are less satisfied. These results suggest that the potential confusion that arises from extensive choice is perhaps not involved in driving this dissatisfaction. A maximizer may be unhappy and less satisfied with their situations and choices, but not as a result of being confused by them. Other parts of the literature (e.g. Dalal et al., 2015) indeed make the case that maximizers are systematic and structured in their approach to making choices and it is plausible that this may lessen the confusion. Further, as Misuraca et al. (2015) argues, this dissatisfaction may be a result of fear of not making the best choice, and not confusion caused by the amount of choice. Regarding the lack of relationship between maximization and *Habitual* style, it may have been assumed beforehand that maximizing is not based on a habitual heuristic. Turner et al. (2012) found a weak positive relationship between an intuitive decision-making style (that relied on heuristics) and satisficing, suggesting that *if* a relationship between maximizing and *Habitual Consumer Decision-Style* did exist, it would be weak and negative. However, the lack of relationship may be explained by the context here and that *in general* satisficers resort to habits more than maximizers, but that the domain of shopping is not one especially impacted by this.

4.4.5 Moving Forward

Maximization, when operationalised as a goal (using the Dalal et al. [2015] scale) and strategy (using the Turner et al. [2012] scale) is stable (across a 2-week period) and remains (principally) discriminant against similar constructs. Maximization shared some relationships with some decision styles within consumptions settings, such as *Brand Consciousness*, as well as with more general traits, namely *Market Mavenism* and *Need to Evaluate.* Whilst this study helped to address some of the operational questions surrounding the maximization construct, as well as expanding the nomological net, the more conceptual confusions surrounding the construct remain. We can be more confident of maximization's trait status and its distinctiveness, but these are operational clarifications.

Having addressed some of the serious internal issues regarding maximization, questions surrounding maximization more broadly can be addressed. Firstly, however, as has been previously explained, the necessity of context is important when studying maximization (see *2.2.2 Contextualising Maximization, Introducing Innovation*). This effort serves two purposes; firstly, to establish the nature of the relationship between maximization and the context it is being examined, if any relationship exists at all. This, it is presumed, will add value to the succeeding questions that examine maximization in innovative contexts. Secondly, given maximization has rarely been examined against innovations, at least when studying it from a trait perspective, the findings may stand to serve both research communities. Scholars concerned with understanding the decision making behind innovation adoption can draw on the insights on maximization as a decision phenomenon; scholars concerned with understanding maximization can draw on the insights of maximization examined in a context of high restrictions (on options and information).

5. Research Question 2

What relationship, if any, does maximization share with an innovation adoption?

5.1 RQ2 Introduction

This chapter tackles the second research question raised, which is concerned with clarifying maximization's conceptualisation and relationship with innovation adoption. Furthermore, this question sought to identify and examine the nature of the relationship with innovation when operationalised through traits, namely *Consumer Innovativeness.* Additionally, this question was also purposed in order to bolster the discussions of the following research question (RQ3) so as to add context to any findings, should it be needed.

5.2 RQ2 Conductive Methodology outlines the sample selected as well as the data collection procedure. This also included the selection of several measures that represent a *Consumer Innovativeness* hierarchy, namely measures of *Innate Innovativeness* and *Behavioural Innovativeness*. *5.3 RQ2 Analysis* details the data preparation, exploration, and analysis of the data collected. The relationships between the different constructs demonstrate maximization's gravity towards cognitive elements of a *Consumer Innovativeness* hierarchy, but not the sensorial or experiential side of the hierarchy. *5.4 RQ2 Discussion* discusses these findings, where maximization's relationship to the cognitive facets of *Consumer Innovativeness* suggest that firstly, a relationship exists, and that secondly, it is cognitively bound.

5.2 RQ2 Conductive Methodology

5.2.1 RQ2 Sampling and Procedure

Participants were recruited from the Amazon Mechanical Turk 'worker' panel. To improve the quality of the data, criteria for entry to the survey were set at 98%+ approval ratings and successful completion of 1000 tasks or more and only "Master Workers" were allowed to take part. Master workers are those that have been selected by Amazon as having provided high quality work as rated and ranked by other requesters, this service incurs a small premium cost payable to Amazon.

Once participants agree to take part, they click on a link that takes them to the online survey hosted by Qualtrics. Upon completion of the study, they are administered a unique and randomly generated code that they enter into the mTurk interface and this completes their

task. Provided the code entered into the mTurk interface matches the code generated by Qualtrics, they are then compensated; if not, they are flagged and inspected. If participants are unable to submit this information, the provision of an email allows participants to notify the researcher of their completion. This was an infrequent occurrence, but nonetheless an important addition. Worker IDs (that contain no personal information) verified completion for participants unable to submit the code. The use of a code is a measure to stop false code claims for compensation. Further, it also acts as a disincentive for participants searching for the code in the forums, should anyone have posted it. As everyone is given a unique code at the end, no one person may use another person's code.

5.2.2 RQ2 Measures

To measure maximization, *Maximizing Goal*, operationalised by Dalal et al (2015) and *Maximizing Strategy*, operationalised by Turner et al. (2012) were selected. These, as already justified in *2.8 Moving Forward: Adopting a Definition*, are the most appropriate choices available. Further, selecting these scales maintains consistency with the previous research question.

Regarding the selection of measures for innovation adoption, *Appendix A: Conceptualising and Measuring Innovation Adoption* provides a supplementary discussion in that assisted with the measure selection. Nevertheless, a brief comment is still needed.

Recall that the idea of trait hierarchies is not a controversial one, even if the ordering within some of those hierarchies is (e.g. Judge, Rodell, Klinger, Simon, and Crawford, 2013). Using one developed in the innovation literature is advantageous as it allows for the trait relationship between maximization and innovation to be examined at multiple levels. In doing so, it becomes possible to have a contextual (innovation) and theoretical (trait hierarchy) framework with which to examine maximization in respect to the question being asked.

Therefore, to measure *Innate Innovativeness*, Venkatraman and Price's (1990) *Cognitive Innovativeness* (CI) and *Sensory Innovativeness* (SI) scales were selected. To measure *Behavioural Innovativeness*, Baumgartner and Steenkamp's (1996) *Exploratory Acquisition of New Products* (EAP) and *Exploratory Information Seeking* (EIS) were used. Both sets of scales come recommended in the *Handbook of Marketing Scales* (Bearden et al., 2011) as well as receiving praise in Bartels and Reinders' (2011) systematic review of *Consumer Innovativeness* measures. Additionally, these scales are not as long as other scales

(e.g. Price and Ridgeway, 1983), are more timely than other scales (e.g. Craig and Ginter, 1975), and can be used without the need for product categories to be input (e.g. Goldsmith and Hofacker, 1991). All scales used for this research question can be found in *Appendix B: Measurement Scales Used in this Thesis*

5.2.3 RQ2 Survey Design

The survey opens with an introduction explaining the survey and addressing the standard ethical requirements outlined by the University. A consent button is also presented that must be clicked before continuing. If they seek to continue without giving consent, they are redirected to a custom end message that thanks them for their time but informs them that they are ineligible to take part.

Once the survey begins, the 6 scales are randomly administered. First the *Innate Innovativeness* scales (CI and SI) are presented in a random order; The *Behavioural Innovativeness* scales (EAP and EIS) are presented in a random order; the maximization scales (MG and MS) are presented in a random order. Each scale was also internally randomised. Finally, consistency questions, demographic questions, and administrative messages (e.g. "you have now completed 50%") were also included in the middle of the survey to help address common method bias by interrupting cognitive repetitiveness. *Figure 5.1: Structure of RQ2 Survey* summarises the survey structure.

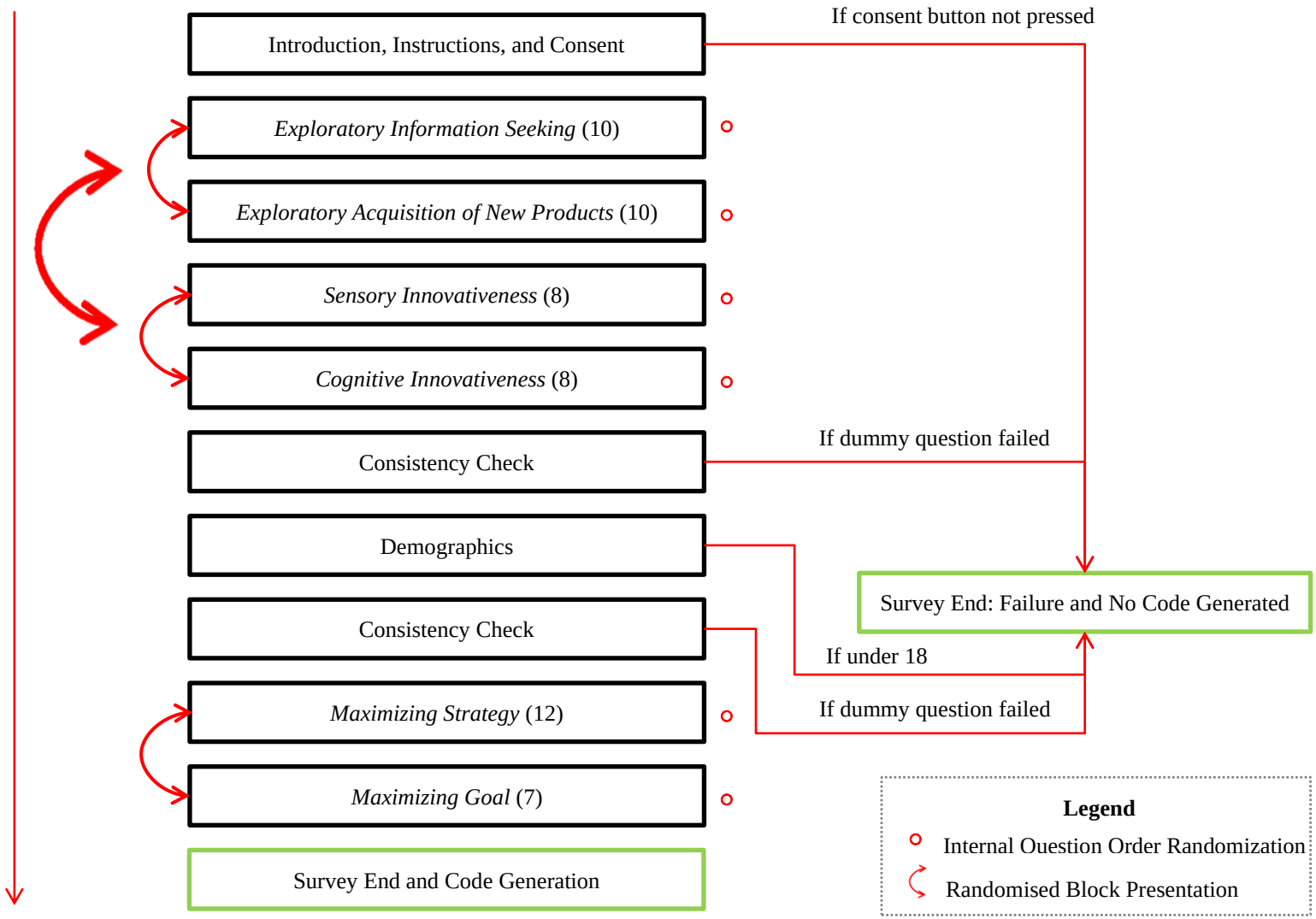

Figure 5.1: Structure of RQ2 Survey. Parentheses indicate number of questions per scale e.g. *Maximizing Goal (7) indicates 7 items for this scale.*

5.2.4 RQ2 Pilot

Survey pre-tests (or piloting) are a test run of the survey administered to a smaller group of participants. Pre-tests are helpful because they give the researcher information about probable time and monetary costs of the survey; information regarding item ambiguity or confusion; and information about how items and constructs may initially score (Visser et al., 2000). A pilot of the survey was administered to 50 participants using MTurk. This version of the survey included an open-ended question towards the end that asked participants their thoughts on several facets including fair compensation, time of survey, clarity and ease of survey, and more. Unlike RQ1 that employed a Qualtrics sample (that provides a piloting service), mTurk requires this additional more committed step to ensure that the data collection proceeds efficiently. Several consistent comments/themes were raised during the pilot.

Firstly, the compensation of the survey was not appropriate given the duration of the survey. On average, participants took between 11-12 minutes for the survey and were compensated $1. Forums in mTurk communities tend to agree that an appropriate rate of pay for standard surveys is $0.10 per minute. This was echoed in the pilot responses Wessling et al. (2017, pp. 219) explain:

"*A HWTF ("HITs Worth Turking For") is any task that pays 10 cents or more per minute to complete. It is based on the actual time that a Turker (an MTurk worker) took to complete the task and not the posted time by the researcher*."

The final survey was streamlined and compensation increased to $1.05. The streamlining involved removing the open-ended questions used to assess the pilot.

Secondly, as an attempt to address common method variance (Williams et al., 2010; Podsakoff, MacKenzie and Podsakoff, 2012), there were alternating Likert-Type orientations. For example, one question would show "Strongly Agree" on the far left, with the next showing "Strongly Agree" on the far right. This was reported as frustrating and confusing at times and caused too much disruption to the task at hand. To remedy this, consistency questions were used in place to assess any scale anchoring. Further, assessing individual participant variance on scales was also considered as a means of identifying participants that were either "flat-lining" or anchoring towards a scale end. Reverse scored questions also helped in identifying such participants.

Finally, participants felt that a "perseverance message" at the half-way point was too "condescending" and so a more neutral message was developed, in part from the examples provided by some the seasoned mTurk workers. An original message read as "Congratulations, you have now completed 50% of this survey. Please click the next button to continue" and was altered to "You have now completed 50% of the survey. Please click the next button to continue".

5.3 RQ2 Analysis

5.3.1 RQ2 Analysis Introduction

This section presents the analysis of the second research question. It opens with a review of preparation and steps taken to ensure the data were acceptable for analysis. After this, assumptions necessary for the analysis were checked and addressed. Upon completion, correlations between the constructs were examined to address the question.

5.3.2 RQ2 Data Preparation

An initial sample (N=215) was collected from mTurk and was firstly examined for poor participant responses with the intent to remove poor data. Cases were deselected on the basis of, and in order of, 1) inattentiveness and 2) outlier status.

To begin, any participant that failed the consistency question was deselected on the judgement that their responses were not generated attentively. 3 participants were removed as a result. Cases were also deselected if they had taken less than 5 minutes (300 seconds) to complete the survey as participants were judged to have been inattentive given that the median completion time was approximately 10 minutes (595 seconds). The 5-minute mark was a judgement call based on the researcher's interpretation of the available data on duration. In total, 14 participants (approx. 5% of the sample) were judged to be inattentive given how fast they completed the survey. Further, and after removing these cases, there were no cases that exhibited missing data and hence no discussion on data imputation or participant exclusion on this basis. Finally, cases were excluded wherever a participant exhibited zero variance in responses (e.g. answering only "Agree" for all items within a scale) over two or more scales. These participants were judged to have been inattentive. A legitimate criticism of this perhaps overindulgent case exclusion may be that a participant may have *attentively* intended these measures as they perceived them to accurately reflect themselves. Whilst this may be true, in this instance only 2 participants were removed as a result of this and these two cases did exhibit this tendency on more than 3 scales.

Outliers are another concern researchers contend with prior to an analysis (Malhotra et al., 2012). Outliers at the univariate and bivariate level were ignored for reasons set out in the RQ1 analysis (see *4.3.2 Data Preparation/ Assumptions*). At the multivariate level, however, the Mahalanobis D^2 statistic is used to identify outliers. Values exceeding 2.5 using D^2/df helps in identifying outliers existing across multiple variables simultaneously. Treatment of outliers is somewhat debated and is often left at the discretion of the researcher, specifically whether to delete or retain cases that are outliers. Hair et al. (2014) suggest that outliers should be retained:

"*unless demonstrable proof indicates that they are truly aberrant and not representative of any observation"* (p. 65).

In total, 8 cases were deemed to be multivariate outliers but there was no sufficiently strong evidence to justify the removal of cases on the basis of the multivariate outlier status alone (see the upheld assumptions below). No missing data, as a result of the forced response design of the survey, were reported. Therefore, a final sample (N=196) was taken forward as further assessed before analysis.

Exploring Items. Normality is the most statistically fundamental assumption made during analyses. If the variation from normality is sufficiently large, then statistical tests become invalid. However, Hair et al. continues (2014, p. 70):

"*For sample sizes of 200 or more, however, these same effects may be negligible*".

Considering the sample size (n=196), assessment of the data set's normality is considered perhaps less stringently. Normality is impacted by the shape of the distribution, that is, kurtosis and skewness. From this data set, no item registered statistics that violated the acceptable ranges of kurtosis or skewness (i.e. between -1 and 1), with thresholds adopted from Hair et al. (2014). The normality of individual items was acceptable and allowed for the examination to continue.

Construct reliability was also checked before computing new construct variables using the Cronbach's alpha (CA) measure. Hair et al. (2014) consider values above 0.7 to be considered acceptable. All of the constructs registered above 0.8 (with only SI below at 0.757). Inter-item correlations were also examined to ensure all items within constructs correlated at above 0.3. The results are summarised in the table (*Table 5.1: RQ2 Summary of reliability of construct*) below.

Construct (no. of scale items)	MG (7)	MS (12)	EIS (10)	EAP (10)	CI (8)	SI (8)
Cronbach's Alpha	0.909	0.905	0.899	0.913	0.812	0.757
Improvement if Item deleted	N/A	N/A	N/A	N/A	**CI8** (0.821)	**SI6** (0.759)

Table 5.1: RQ2 Summary of reliability of construct

Note: EIS= Exploratory Information Seeking; EAP= Exploratory Acquisition of New Products; CI= Cognitive Innovativeness; SI=Sensory Innovativeness; MAXS= Maximizing Strategy; MG= Maximizing Goal

CI8 ("Figuring out how many bricks it would take to build a fireplace") and SI6 ("Dreaming that I was lying on the beach with the waves running all over me") were removed on the basis that this improved the reliability of their respective measures. Also, given both measures had 8 items (7 after removal) to draw upon, this removal was not deemed to be operationally problematic.

Following this, new variables were created (e.g. *Maximizing Goal*) that comprised of the items related to it. Each new composite variable was calculated as a score based on the summed average of the scores for their respective items. With this done, other assumptions could be addressed, namely normality and linearity.

Exploring Constructs. Graphical interpretations of normality, both of the histograms and of the probability plots, were used to continue the assessment of normality. Normal probability plots, in particular, were utilised. These are graphs that represent a normal distribution as a 45-degree line, with the actual distribution plotted against it to highlight deviations. The newly computed construct variables were examined. None of the constructs displayed graphical deviations from normality.

Another important assumption that was addressed was that of linearity. Linearity is the assumption that variables share a linearly consistent relationship. This refers to a consistency of slope between variables (IV and DV). Visual inspections of scatterplots are one way to assess linearity amongst variables. Using this approach, none of the variables presented plots indicative of non-linearity. In SPSS, another test for linearity can be run as part of a means comparison test. By setting maximizing constructs (MG, MS) as independent variables, and the other 4 (EIS, EAP, CI, SI) as dependent variables, the test was possible. All relationships were deemed linear ($p>0.05$), expect one relationship between MS and CI. A visual inspection of the scatterplot suggested this relationship, however, was linear.

Importantly, there is no hypothesised relationship between the variables. Upon concluding this, the data were deemed appropriate and ready for analysis.

5.3.3 Maximization relationships

A bivariate correlation (using a Pearson coefficient) was run using all constructs to examine the relationships between maximizing constructs and the innovation constructs (see *Table 5.2: RQ2 summary of correlation analysis*).

Maximizing Goal (MG; r=.305, p<0.01) and *Maximizing Strategy* (MS; r=.337, p<0.01) both shared moderate positive relationships with *Exploratory Information Seeking* (EIS) but did not share a significant relationship with *Exploratory Acquisition of New Products* (EAP).

Maximizing Goal (MG; r=.254, p<0.01) and *Maximizing Strategy* (MS; r=.318, p<0.01) both shared a moderate positive relationship with *Cognitive Innovativeness* but did not share a significant relationship with *Sensory Innovativeness*.

The *Behavioural Innovativeness* measures, EIS and EAP, shared a weak positive relationship (r=.277, p<0.01). The *Innate Innovativeness* measures CI and SI shared a weak positive relationship (r=.291, p<0.01). The results are summarised in *Table 5.2: RQ2 Summary of Correlation Analysis* and *Figure 5.2: RQ2 Summary of Relationships*. These are discussed further in section *5.4 RQ2 Discussion*.

Correlations

	EIS	EAP	CI	SI	MAXS	MAXG
EIS	1					
EAP	**.277***	1				
CI	**.222***	**.224****	1			
SI	.047	**.200***	**.291****	1		
MAXS	**.337***	-.023	**.318***	-.033	1	
MAXG	**.305***	.122	**.254****	.097	**.491***	1

*Table 5.2: RQ2 Summary of correlation analysis. * denotes p<0.05, ** denotes p<0.01*

Note: EIS= Exploratory information seek; EAP= Exploratory acquisition of new products; CI= Cognitive innovativeness; SI=Sensory innovativeness; MAXS= Maximizing strategy; MG= Maximizing goal

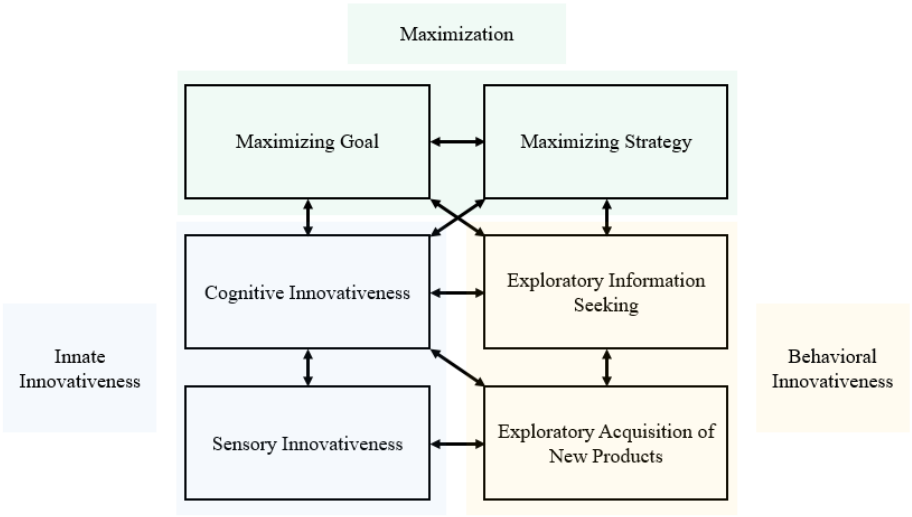

Figure 5.2: RQ2 Summary of Relationships

Alternative approaches to analysis: Other approaches to the analysis were considered. Recall that the purpose of this study was to examine the relationships between maximization and different innovativeness constructs that formed a hierarchy so as to 1) assess what, if any, relationship existed and, 2) to potentially give some additional insights for the forthcoming study. An alternative approach to this may have been to employ structural equation modelling, using a measurement model (CFA) as the basis for exploring the relationships. A confirmatory factor analysis would have allowed for an examination of these relationships as well. However, given the sample size (n=196) in relation to the number of items (55), this would be problematic, namely due to the degrees of freedom available. Hair et al. (2014, p. 615) also noted that small sample sizes (<200) increase the likelihood of problems related to this. An increased sample size would be more appropriate for an SEM approach. Tanaka (1987) suggests a 5:1 ratio of sample to indicator items, whilst Bentler and Chou (1987) more conservatively suggest a 10:1 ratio. Currently, with the data available and model required, the ratio would be at less than 4:1. Therefore, an SEM approach was considered inappropriate given the sample size.

Partial Least Squares (PLS) may have also been suggested (Kock and Hadaya, 2016). This would solve the problem of sample size as PLS can operate with a much smaller sample. In these data, the largest construct (by item count) would have 10 indicator variables,

suggesting that a sample size of 100 would suffice[9]. However, unlike in RQ1, this question (RQ2) is concerned with relationships *between* constructs, not *against* them (e.g. discriminant validity). Fundamentally, PLS is an extension of a multiple linear regression model which, in its basic form, still relies on independent variables predicting dependent variables (Hair et al., 2014). The purpose of this question is not to predict variable outcomes in a linear fashion, but instead to explore the (possibly two-way) relationship between them. For this reason, PLS was not used, with a bivariate correlation being sufficient to examine the relationships.

5.4 RQ2 Discussion

As reported in *Table 5.2: RQ2 summary of correlation analysis*, maximization (both as goal and strategy) correlated at both abstract (*Innate Innovativeness*) and concrete (*Behavioural Innovativeness*) levels in the *Consumer Innovativeness* hierarchy. However, maximization only correlated with some elements at these levels. These elements (*Cognitive Innovativeness* and *Exploratory Information Seeking*) both represented the cognitive elements of their respective trait hierarchy level and suggests that maximization may be restricted to the cognitive components of traits involved with decision making (in innovative contexts). That is, it does not relate to the motivating sensory elements of *Consumer Innovativeness*. A visual representation of this relationship is presented in *Figure 5.3: Visually Presenting the Relationships Between Maximization and Innovativeness Constructs* below.

What the results from this study firstly suggest is that, given the lack of any relationships on the sensory side of the trait hierarchy, maximization relates exclusively with the cognitive components in the traits that drive (innovative) behaviours (i.e. *Innate* and *Behavioural* Innovativeness). Maximization did not register with the non-cognitive elements of innovativeness (i.e. the sensory elements).

[9] Hair (2014) outlines a 10x rule on the highest indicator item construct to determine the sample size required to conduct PLS. EIS and EAP both have 10 items, therefore a sample size of 10*10=100 would suffice.

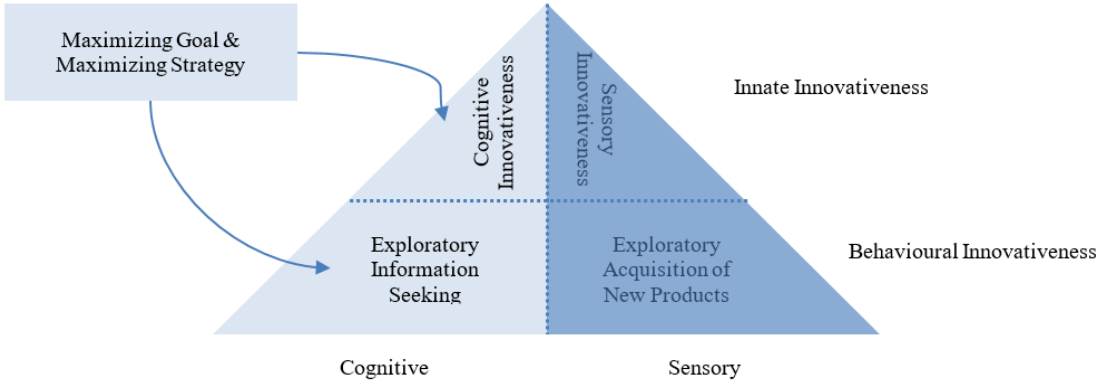

Figure 5.3: Visually Presenting the Relationships Between Maximization and Innovativeness Constructs.

This is of interest in that two key themes can now be considered. Firstly, that there exists a relationship between maximization and innovation adoption at all. General (albeit empirically challengeable) claims may be made now that maximizers are likely to engage in certain innovative behaviours, that they are more likely to adopt innovations than satisficers, at least when considering cognitively favouring scenarios (i.e. where the cognitive side of the hierarchy is dominant). To support this claim, Feiereisen al. (2008; 2013) have observed the differences in both adoption behaviours and decision-making when participants consider innovations that are either utilitarian or hedonic (cognitive or sensorial) in perceived nature. This introductory insight stands to serve this research in that the following studies can rely on an existing relationship between maximization and innovation adoption when being conducted. It also serves the maximization and innovation literatures more broadly in now having a new relationship to examine and consider when exploring either construct.

Secondly, and more substantively, the nature of that relationship, being both positive and weighted to the cognitive side of the *Consumer Innovativeness* trait hierarchy, has other important implications worth discussion. To state: ***the cognitive components of innovation adoption (operationalised as certain Consumer Innovativeness traits) are positively related to maximizing propensities***. It implies, therefore, that marketing efforts that, whether intendedly or inadvertently, cater to a maximizing tendency (e.g. providing sufficient information to assist with search and framing options as the best) may be wasted on sensorially perceived innovations. Further, whilst the behaviour of seeking out information (e.g. EIS) about an innovation does indeed relate positively with maximizing, that does not necessarily translate to a purchase of that of that innovation (EAP); even though those two

behaviours (EIS and EAP) are themselves weakly positively correlated. Should marketers be aware of the maximizing tendencies (e.g. through market research) of their target audience, they should be weary of the conditions in which maximization may be a tool to be leveraged (e.g. in marketing communications and information provisions) or a hindrance (e.g. if the product is highly sensorial or during the purchase phase of the decision to adopt).

Finally, whilst these findings are both interesting and valuable, they were not able to address some of the other conceptual concerns raised in the literature. In particular, beyond the emphasis on cognition, this study did little to support better understanding how maximization operates, as well as how it might be positioned in such a hierarchy.

5.4.1 Moving Forward

A relationship between maximization and innovation adoption exists, with certain restrictions noted. This central claim is of importance and interest both on its own, as well as in conjunction with the study that lies ahead. The relationship between maximization and innovation adoption holds important insights for scholars and practitioners in both fields.

Understanding more fully how maximization operates now becomes of interest for two reasons. It may help in addressing the discussion here, such as how and why *Exploratory Information Seeking* was related highly with maximization, but not it's highly correlated counterpart, *Exploratory Acquisition of New Products*. Moreover, it more broadly addresses the wider questions surrounding maximization's conceptualisation, such as how goals and strategies work together, how the best is defined, and what constitutes alternative search.

6. Research Question 3

Where and how may maximization operate within an innovation decision-process?

6.1 RQ3 Introduction

This chapter addresses the third research question raised, also concerned with further clarifying the conceptualisation of maximization. The objective of this question is to understand how maximization operates.

6.2 RQ3 Conductive Methodology outlines the sample selected and the design of a protocol activity task that asked participants to think aloud as they performed an innovation adoption task. *6.3 RQ3 Preparing for and Conducting the Analysis* details how the data collected from this study were prepared and initially examined before analysis. *6.4 RQ3 Analysis* reveals two key themes, namely maximization's lack of manifestation as well as some insights on its role and positioning. Finally, *6.5 RQ3 Discussion*, expanded on these findings, blending existing research to better support the claims that maximization was goal activated[10] and that its presence was one of a supporting role rather than a primary directing and motivating force.

6.2 RQ3 Conductive Methodology

6.2.1 RQ3 Sampling

Participants were recruited through researcher invitation (email and face-to-face) and once accepted, were scheduled at their convenience to take part in the study. Participants were sourced purposively to ensure adequate coverage of the population (and address the trustworthiness of the study, as outlined in *6.3 RQ3 Preparing and Conducting the Analysis*). A summary and brief of the participants is available in *Table 6.4: RQ3 Participants Summary*.

6.2.2 RQ3 Study Design

Participants were asked to, and recorded whilst they, "think aloud" as they decided whether they would purchase a virtual reality headset. The study was designed to collect concurrent data from participants, using a limited probing script, and was accepting of reports that may be less specific than desired (i.e. they may be general or particular); see *3.4.3 Method for RQ3* for an expanded discussion on this.

[10] Goal activated and goal stimulated are used interchangeably in this chapter. Both imply that the goal is the casual power in manifesting maximization.

Participants then filled out a short questionnaire that contained several scale measures of maximization and innovativeness. Upon completion, they were thanked and debriefed.

A visual depiction of the how participants engaged with study is also presented in *Figure 6.1: Overview of RQ3 Data Collection*.

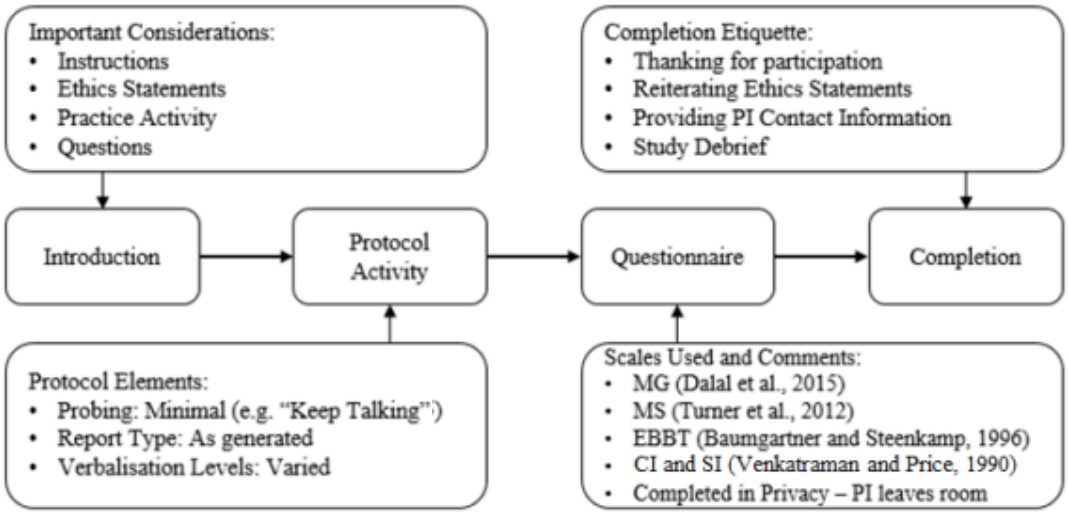

Figure 6.1 Overview of RQ3 Data Collection

6.2.2.1 Selecting the Stimuli

Several products could have been chosen to conduct the decision task, but ultimately virtual reality was selected. To begin, the consumer electronics category was selected on the basis that innovations were both readily available in this category as well as more realistic purchases compared to other categories, (e.g. smartphones vs. fashion innovations). Within this category, several products were considered including 3D printers, recreational drones, and 3D televisions.

A consumer electronics categories list (e.g. smart TV, Virtual Reality, 3D TVs) was compiled using the categories found on a (global) popular online electronics store. A brief study (n=67) was conducted in which a convenience sample sourced from mTurk answered a series of questions regarding ownership and opinions of these consumer electronics. From this study, it was clear that Virtual Reality, as compared to other consumer electronics, rated low in current ownership (<5%), and therefore, under the laws of diffusions of innovations, could be considered innovative (Rogers, 2003). VR also scored high in perceived

innovativeness (μ=4.66 on a scale where 1=Not at all Innovative, 5=Extremely Innovative), affirming that people considered it innovative. This was an important caveat to address as although people may not currently own a certain consumer electronic device (e.g. VCR player), they may still consider it non-innovative. Further, VR also rated high in unfamiliarity (μ=4.21 on a scale where 1=Very Familiar, 5=Not at all Familiar), increasing the likelihood that participants would have little previous knowledge of VR and had to engage in some form of information search.

6.2.2.2 Introduction

Participants were welcomed into a quiet private room at a scheduled time and were read an introduction passage with instructions as to how the study would proceed. Importantly, they were not informed of the nature of the task (i.e. adopting an innovation), just that they would be given a choice task and asked to talk aloud. This was done in order to prevent any pre-data collection contamination or biasing as it is possible that participants may begin to think about adopting innovations before the data collection could begin (Trickett and Trafton, 2009).

This passage stated the necessary ethical statements surrounding free withdrawal, confidentiality, and anonymity. In instructing participants on the activity, it was made clear that there were no correct answers/processes, that even unintelligible sentences/words were acceptable, and that they try to minimize the length and frequencies of silence periods. This was stressed in order to 1) try and minimize any social conformity in their responses and, 2) try and generate as authentic and reflective as possible data from the participant's reporting (Ericsson and Simon, 1980).

This phase also allowed for both questions and a practice exercise to ensure participants were clear and familiar with how the process worked, as suggested by Trickett and Trafton (2009). The practice exercise was designed with as little context as possible and to be as simple as possible, specifically "Talk aloud how you would work out how many chairs there are in this building". An additional effort was made to reiterate that the answers they gave were not important and that there were no correct answers. This activity also provided the participants with an opportunity to ask questions about the actual activity, as well. This added feature sought to ensure minimal confusion and as rich a data set as possible. Finally, they were also provided with a computer and informed that, should they want, they would be able to search for information at their discretion.

6.2.2.3 Protocol Analysis

Once clear and ready to proceed, participants were asked to talk aloud how they would go about purchasing a virtual reality headset, if at all. Audio of the study was recorded, as were notes taken by the researcher *discretely and sparingly*. The researcher was seated in such a way that they were present, but not confronting (at an angle with some distance between). Probes were set minimally and often read as "Please continue to talk aloud" during periods of extended silence (with minor silences pardoned so as to minimize researcher involvement/influence on potential social conformity). For extreme cases "Could we go back to when you mentioned… and continue from there" was noted down in the event that participants went severely off track. These efforts were made in order to minimize researcher involvement and influence during the process.

Regarding the nature of the data collected during the protocol, it was accepted that, given the anticipated complexity and variety within the decision processes, all forms of data would be present and tolerated (see *3.4.3. Method for RQ3* for further discussion on this). This encompasses the particular vs. general spectrum as well as the varying levels of recoding in the verbal reports. Additionally, participants may address this task with broad (general) processes or focus on specific instances or elements (particular). Further, it would be unsurprising to observe a range of verbalizations; such as instances where simple price comparisons are made (Level 1) to sourcing the reasoning and motivation (for personal not social reasons) for certain avenues of thoughts (Level 3).

Ultimately, participants would talk aloud throughout the activity and (often) conclude their activity naturally and without prompt.

6.2.2.4 Questionnaire

Upon completion of the activity, participants were then asked to complete a questionnaire. This questionnaire recorded trait maximization and trait innovativeness of the participants. Additionally, they responded to questions on demographics and ownership of VR headsets. Maximization was operationalised using *Maximizing Goal* (Dalal et al., 2015) and *Maximizing Strategy* (Turner et al., 2012) measures. Innovativeness was measured *Cognitive Innovativeness*, *Sensory Innovativeness* (Venkatraman and Price, 1990), *Exploratory Information Seeking*, and *Exploratory Acquisition of New Products* (Baumgartner and Steenkamp, 1996). See *Appendix A: Conceptualising and Measuring Innovation Adoption* for further discussion on scale selection.

These results were used in conjunction with the other data to provide a triangulated set of insights. Finally, so as to minimize social conformity, the researcher waited in a nearby area until the participant completed the questionnaire.

6.2.2.5 Completion

Upon completion of the study, participants were thanked and debriefed. The debrief explained that the purpose of the study was to better understand the cognitive processes that people undertook when making decisions, with specific focus on maximization. The debriefing also served to ensure that, to the best of their abilities that they not discuss the activity with others until 1 week later, in the event that they influence a potential participant. Also, in reiterating the ethics statements, participants were asked if they were still comfortable with their data being used, and their data could be excluded, if they so desired. PI information was also provided should any follow-up questions need answering later on.

6.2.3 RQ3 Pilot

A pilot of the initially designed study was run with two volunteering PhD researchers, both of whom were psychologists by training and highly experienced with qualitative research. This was to serve two purposes. Firstly, any potential hazards or problems of actually running the study, as well as testing the study's intended data collection, would become evident. For example, identifying unclear language in the instructions, practicing use of probing language, forming early potential coding schemas, and becoming familiar with recording software were some of the benefits that could be attributed to this pilot. Secondly, the researchers, able to draw on their own expertise and experience in conducting qualitative research, were able to provide important contributions to help further improve the study. For example, discussions of the study design contributed to anticipated improvements of the quality of data collected (through appropriate probing language, participant positioning, and note-taking); environmental factors (such as lighting and distractions); procedural efficiencies (such as comments on room bookings, equipment advice, and transcribing formats), and other potential impacting factors such as procedures for navigating abstract ideas. Such efforts help to add to the study's trustworthiness by way of credibility and confirmability (see *6.3 RQ3 Preparing for and Conducting the Analysis* below for further detail).

These were practical supplements to the research already available on PA procedure, such as Ericcson and Simon's (1980) seminal piece, Trickett and Trafton's (2009) PA primer,

as well as on conducting qualitative research more broadly (Creswell, 2009; Denzin and Lincoln, 2011).

6.3 RQ3 Preparing for and Conducting the Analysis

This section outlines how the analysis was prepared for and conducted. The audio files were transcribed. Following this, the transcripts were coded and mapped. Trait measures were also calculated prior to the analysis. Finally, the resources were used together in a data triangulation fashion to conduct the analysis.

First, once the data had been collected, they were transcribed using the online software "Trint". Audio files were uploaded securely to the service and the software then transcribed a draft of the words in the audio files. Afterwards, each draft-transcripts was read along with the corresponding audio file and the necessary changes were made. Examples of changes included removing names and relationships, inserting instances of pauses and gestures, and correcting transcribing errors (including mutterings and slang). Further, the transcripts included footnotes and comments from the researcher's notes taken during the study that detailed other qualitative insights not recorded by the audio. Such examples included hesitations to use the laptop and facial expressions at times of confusions. The data were then ready for further prepping.

Furthermore, efforts were made to assess and address the data reliability and validity. However, unlike in RQ1 and RQ2 wherein these terms were appropriate, it would be more accurate to use the terminology that is epistemologically aligned with the qualitative tradition. In qualitative research, often researchers consider a range of criteria such the dependability, the transferability, the confirmability, and the credibility of the data (c.f. Guba, 1981). These aspects form the overall trustworthiness of the data and provides the reliability and validity that would be expected in quantitative studies in qualitative format. In more detail:

Credibility is defined as the confidence that can be placed in the truth of the research findings (Holloway and Wheeler, 2002). It establishes whether (or not) the research findings reflect plausible insights drawn from the original data and is a "correct" interpretation of the participants' original views (Lincoln et al., 2011).

Dependability is the "the stability of findings over time" (Bitsch, 2005, p. 86). In some ways, this is reflective of the temporal stability previously discussed. Dependability can

be established using strategies such as audit trail and peer examination (e.g. Schwandt, Lincoln, and Guba, 2007).

Confirmability is the extent to which the data can be corroborated or confirmed by other researchers (Baxter and Eyles, 1997). Further, it is "concerned with establishing that data and interpretations of the findings are not figments of the inquirer's imagination but are clearly derived from the data" (Tobin and Begley, 2004, p. 392). Confirmability can be established though strategies such as triangulation and audit trial.

Finally, transferability is the extent to which the findings of the research can be transferred to other contexts with other respondents; in quantitative research, this would reflect the generalisability of the findings and data (Bitsch, 2005). Bitsch (2005) comment that the "researcher facilitates the transferability judgment by a potential user through 'thick description' and purposeful sampling" (p. 85). This has been addressed partly in *6.2.1 RQ3 Sampling* and further addressed in the substantial descriptions and participant extracts in *6.4 RQ3 Analysis* that follows.

These trustworthiness criteria are further addressed in the discussions that follow.

6.3.1 Coding Schema

In order to assess the transcripts, a coding schema was implemented to better interpret the data. Recall that the purpose of this study was to examine where and how might maximization operate during the decision to adopt an innovation. Five distinct nodes were used. Three of these came from the Innovation-Decision-Process framework from Rogers (2003) and were *Knowledge*, *Persuasion*, and *Decision* (see *Figure 2.2: Rogers' [2003] Innovation Decision-Process*). The other two came from maximization literature and included *Maximizing Goal* and *Maximizing Strategy*. In doing so, an established framework for the scenario (innovation adoption) could be used in parallel with maximization.

Firstly, it is worth reiterating that the purpose of this study was not to *develop* a process or decision model of innovation adoption, but rather *observe* one with attention directed to maximization. A number of process models in decision making are available, notably the awareness, interest, desire, and action (AIDA) framework of decision-making, Robertson (1967), which specifically concerns innovations, breaking down phases such as attitude formation thoroughly. However, Rogers' (1962; 2003) process model is not only specific to innovation but has been more widely cited and researched in innovation adoption

literature and continues to be influential. It was selected on this basis; that it provides an accepted well-researched framework with defined stages that allows the researcher to more confidently observe the focal phenomena of maximization during the decision processes. Definitions and qualifications for the codes were adapted from Cheek and Schwartz (2016) and Rogers (2003). These definitions and qualifications are summarised below in *Table 6.1: RQ3 Defining and Qualifying the Codes Used in Analysis* along with further comments and justifications.

Coding Schema	Definition	Requirements to Qualify	Comments and Justification
Knowledge	Exposed to an innovation's existence and gains an understanding of how it functions	Seeking to Understand: Participants seek information or process information processing that helps to reduce uncertainty of the advantages and disadvantages of an innovation (not necessarily a product). Specifically includes awareness, how-to, and principles knowledge of the innovation (i.e. What it is and how it works)	Adapted from Rogers' Innovation Decision Process
Persuasion	Forms a favourable or unfavourable attitude towards the innovation	Evaluating and Assessing: Assigning credibility to sought information and messages as well as how the choose to interpret that information. Applying innovations to present or anticipated future situations. Also instances of considering relative advantage, complexity, compatibility, observability, or trialability	Adapted from Rogers' Innovation Decision Process. Important to note that this is both product and category oriented. For example, Individuals may assess the relative advantage of the category as a whole or as an individual product. If this is the case, then double coding with "Strategy" is permitted.
Decision	Engages in activities that lead to a choice to adopt or reject an innovation	Involves any end-state behaviour whereby a decision is enacted. Also includes any commitments to trial the innovation.	Adapted from Rogers' Innovation Decision Process. Statements of intent to purchase are acceptable.
Goal	Pursuit of and aim to choose the best	Setting a standard: Maximizers seek the best whilst satisficers desire some acceptable level of utility. A desire to continue searching even after an acceptable choice has been located.	Adapted from Cheek and Schwartz (2016). Strictly speaking, maximization exists on a spectrum and so any behaviour of setting a standard, whether that be minimal or optimal still constitutes an instance of goal maximization. Satisficers still pursue some standard they assign.
Strategy	Instance of search for information on attributes or alternatives	Comparing Options: Information seeking or information processing activities that helps to locate and process information specifically about attributes of products as well as comparing between the alternatives of that product category.	Adapted from Cheek and Schwartz (2016).

Table 6.1: RQ3 Defining and qualifying the Codes Used in Analysis

In an effort to add to the trustworthiness (especially dependability and confirmability of the data) of the coded transcripts, two reviewers were recruited to review extracts from the transcripts. Both had at least a Master's degree, had English as their native tongue, had conducted and were familiar with qualitative research, and agreed to take part with no

incentives. The reviewers were each given (privately) the same 4 samples from the transcriptions and asked to match the sample passages with one of the 5 coding schemas available as well as the criteria to qualify the coding. They were also given a full transcript and asked to apply the schema throughout. They were allowed to assign a single code, multiple, or none at all. Upon completion the samples were compared; the table below (*Table 6.2: RQ3 Summary of the Process for Coding Reliability)* summarises the reliability findings. Had there been disagreement with the coding outcomes, the reviewers agreed to help in reviewing the other transcripts for a consensus as a team of three.

Sample from Participant	Sample Passage	Reviewer 1 Coding	Reviewer 2 Coding	Researcher Coding	Comments and Justifications
Mark	"There is a website that has everything you need to know"	Knowledge	Knowledge + Maximizing Strategy	Knowledge	As the website did not include information that compared alternatives, but instead gave an overview to the category, this could not be considered maximizing strategy under the given qualifiers
George	"…in that respect I can not see the value of me paying presumably what will be a fair amount of money."	Persuasion	Persuasion	Persuasion	The relative advantage (or net-benefit cost) of the category is under consideration and this constitutes an element of persuasion.
Grace	"I'm not very informed about how it works"	Knowledge	Knowledge	Knowledge	Specifically an instance of understanding what the innovation is and how it works
Mary	"I would never ever consider buying…"	Decision	Decision	Decision	
Simon	Full Participant Transcript	8 Nodes	9 Nodes	8 Nodes	Reviewer 2 coded an extra instance of knowledge during a long sequence on gaming. Reviewer 1 argued that this was a single instance (however rich) and could not constitute a break for a new phase. The researcher agrees with Reviewer 1.

Table 6.2: RQ3 Summary for the Process for Coding Reliability

6.3.2 Mapping the Sequence

In an attempt to gain other insights from the data, each participant's transcript was chronologically mapped using the nodes mentioned. This involved taking a step-by-step approach, that is, linearly listing the different nodes as and when they appeared during the transcript. For example, in the first few sentences of a transcript a participant may state something to the tune of "I can say right away I won't buy one". In this instance, this would be coded as a *Decision* node. Immediately after they may state "I'm not sure of how they

work and can't be bothered finding out". This would constitute *Knowledge*. In total, this sequence would map out as "*Decision→Knowledge→*…" An example is provided in *Figure 6.2: Example of mapped sequence* of what the mapped sequences look like. Additional participant mapped sequence can be found in *Appendix F: RQ3 Additional Mapped Protocol Analysis Sequences*. This effort was intended to add an additional dimension to the analysis, enhances the triangulation potential, ultimately aiming to improve the trustworthiness of the data (especially the confirmability of the data).

6.3.3 Participant Trait Measures

As was described, participants were asked to answer a questionnaire that contained several trait measures upon completion of the task. These measures were taken as a supplement, that is, the inclusion of these measures was as a means to contribute to a triangulated analysis, with the forethought that participant's tendency towards certain traits (i.e. maximizing and innovativeness) may influence their decision processes. It should be noted that the analysis that follows holds true, although slightly weakened, without this consideration and application of the trait measure scores. Nevertheless, and for similar reasons outlined above for the mapped sequences, such an effort contributes towards an effort at triangulation which serves to address the trustworthiness of the data (especially the confirmability).

6.3.3.1 Maximizing Measures

The questionnaire contained measures for *Maximizing Goal* and *Maximizing Strategy*. The scales were selected on the basis of the conceptualisation and definition adopted in the literature review, as well as maintaining consistency with the scales selected in RQ1 and RQ2. The two-component model of maximization (Cheek and Schwartz, 2016), therefore was measured by the Dalal et al. (2015) scale for *Maximizing Goal* and the Turner et al. (2012) scale for *Maximizing Strategy*.

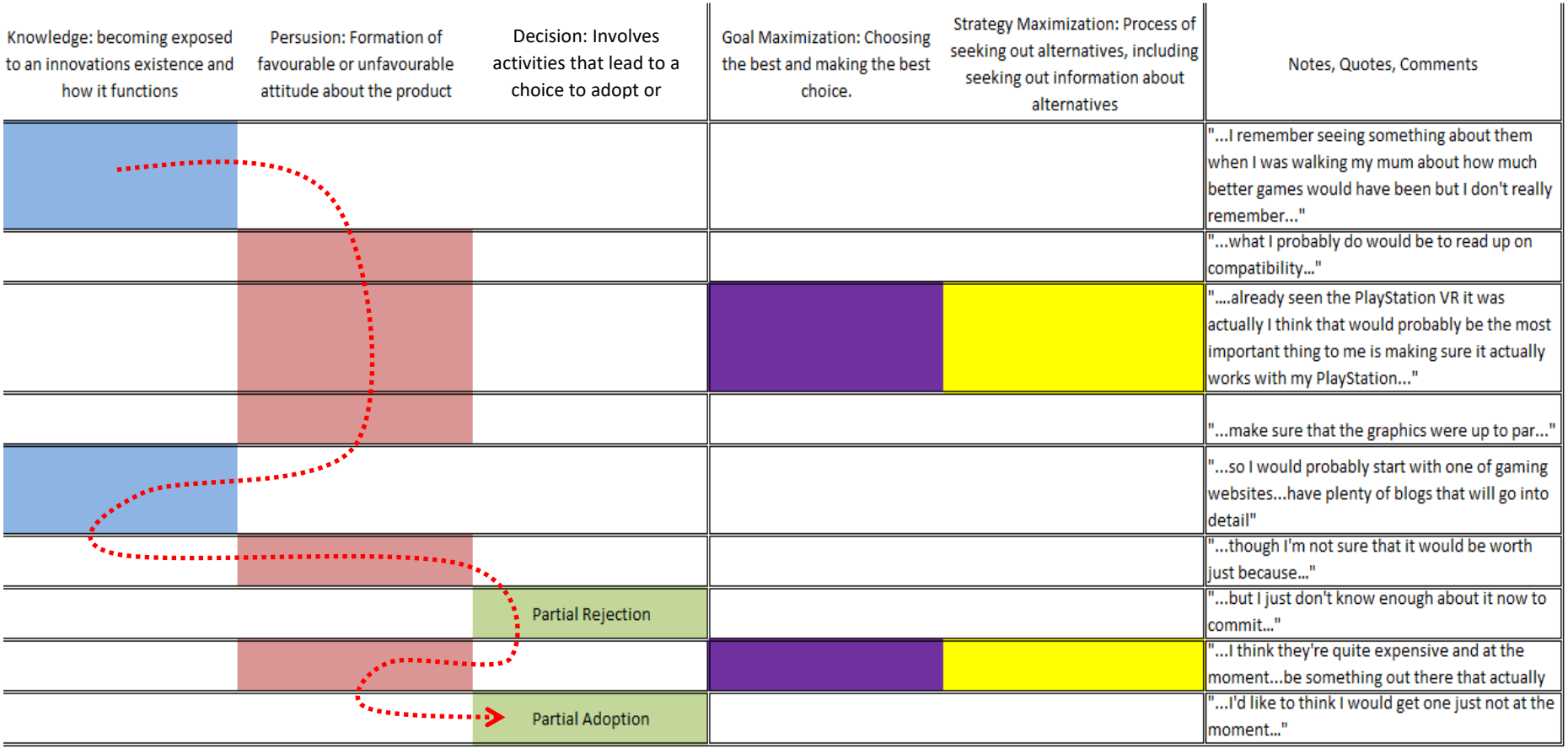

Figure 6.2: Example of Mapped Sequence – Jo (Trait Maximizer and High Innovator)

Note: This is example illustrates the chronology of the coded instances in which participants engaged with a particular decision process. The sequence moves vertically, from top to bottom, with the red arrow acting as a guidance through the decision-process. The three segments (vertically divided) represent the Innovation Decision Process (left), Maximization (Centre), and the quotes/comments for that instance (right). Further, the colour coded cells reflect the different decision processes encountered – Knowledge (blue), Persuasion (Red), Decision (Green), Maximizing Goal (Purple), and Maximizing Strategy (Yellow).

6.3.3.2 Innovativeness Measures

The questionnaire also contained scales to assess innovativeness. These included *Cognitive Innovativeness* and *Sensory Innovativeness* (Price and Venkatraman, 1990) and *Exploratory Information Seeking* and *Exploratory Acquisition of New Products* (Baumgartner and Steenkamp, 1996). Further discussions and justifications of measuring innovativeness are presented in *5.2.2 RQ2 Measures* and *Appendix A: Conceptualising and Measuring Innovation Adoption*. To sum up, innovativeness was measured using 4 scales (46 items) that accounted for *Consumer Innovativeness* across varying levels.

6.3.3.3 Scoring and Labelling Participants

Scores for the measures were calculated and participants were given labels based on those scores. Participants were given two labels, one for maximization and one for innovativeness. These labels were qualified and assigned on the basis of a sample mean split. This is an adapted approach from existing approaches on how maximizers and satisficers have been classified, with other studies using a median-splits in their data analysis (e.g. Schwartz et al., 2002; Misuraca and Teuscher, 2013). Using mean splits, whilst less common, is acceptable (e.g. Hayes, 2015, p.473) and serves the same purposes; that is to generate groups. Furthermore, given the 1) low sample size and 2) restriction to a 7-point scale, the case for median splits over mean splits (on the basis of skewed data from mean outliers) becomes less clear. Furthermore, a previous comment is reiterated that the groups serve to add a minor perspective on the discussion, and if removed, the key points in the analysis and the conclusions would still hold.

Those above the sample mean score were deemed as Maximizers/High Innovators with those below deemed Satisficers/Low Innovators, respectively. Importantly, these labels played a minor part in the analysis and served to aid in guiding further participant analysis, and not as a major contribution to it. This assignment resulted in 7 maximizers and 5 satisficers. This also resulted in 8 high innovators and 4 low innovators. *Table 6.3: Labelling System for maximization/innovativeness scores* summarises the scoring procedure and *Table 6.4: RQ2 Participants Summary* summarises the participants that took part.

	Label	Qualifier
Maximizer Label	Maximizer	Above the Mean Split on Total Maximizer Score
	Satisficer	Below the Mean Split on Total Maximizer Score
Innovator Label	High Innovator	Above the Mean Split on Total Innovator Score
	Low Innovator	Below the Mean Split on Total Innovator Score

Table 6.3: RQ3 Labelling System for maximization/innovativeness scores

Pseudonym	Gabriella	George	Grace	Mary	Mark	Michelle	Malcolm	Sam	Sandra	Simon	Susan	Sarah
Max Type	Maximizer	Maximizer	Maximizer	Maximizer	Maximizer	Maximizer	Maximizer	Satisficer	Satisficer	Satisficer	Satisficer	Satisficer
Innovator Type	High Innovator	High Innovator	High Innovator	Low Innovator	Low Innovator	High Innovator	High Innovator	High Innovator	Low Innovator	High Innovator	High Innovator	Low Innovator
Gender	Female	Male	Female	Female	Male	Female	Male	Male	Female	Male	Female	Female
Decision	Rejection	Rejection	Adoption	Rejection	Rejection	Partial Adoption	Rejection	Partial Adoption	Rejection	Partial Adoption	Rejection	Rejection
Instances of Maximization	0	1	0	0	2	2	0	2	0	2	0	0
Time Taken (Seconds)	540	683	81	344	925	700	500	380	104	350	464	303
Words in Transcript	458	739	121	422	1693	333	156	180	95	296	368	300

Table 6.4: RQ3 Participants Summary. This table summarises key information on the 12 participants that took part in the study. Participants have been given pseudonyms, assigned labels on maximization and innovativeness, as well as some study statistics such as the number of instances of maximization.

6.3.4 Triangulating the Resources

In chapter 3, there was a discussion on triangulation. Triangulation of data was also discussed within the context of the Critical Realist philosophy. In this study, it was intended that such data triangulation takes place. This is intended as a form of data enrichment, as has been inferred in the opening of *6.3 RQ3 Preparing for and Conducting the Analysis.* Therefore, the transcripts, the mapped sequences, and the trait measures were used collectively to generate a richer understanding of the data. At first, each participant's set of resources were assessed and analysed individually. This process was iterative and unstructured, often allowing for the same pieces of information to be reassessed and re-examined in light of whatever insights were illuminated upon cross examination of other resources. These efforts to triangulate resources also exist in part to contribute to trustworthiness of this study, ensuring that no one data point or source is used to build and interpret findings. After this, the collective set of resources were assessed together to generate broader themes and insights of the data.

6.3.5 Data Preparation Conclusion

This section detailed how the data were prepared prior to analysis. Once the data had been collected, it underwent several steps and transformations before being deemed ready for analysis. In line with the triangulating approach laid out in the philosophy of mixed methods and critical realism, these resources were analysed concurrently. To begin, participants were recorded as they took part in the PA (talk aloud) task. These audio recordings were transcribed and then coded (with a reviewer process) in order to identify specific decision processes. These transcripts were also mapped to provide a chronological and sequential view of the phases of the decision-making processes undertaken by participants. Participants also filled out questionnaires to assess their trait innovativeness and maximization as an additional angle of analysis. Collectively, these resources provided the basis of the analysis.

Furthermore, to also summarise efforts towards the reliability and validity of the data, or more appropriately for qualitative research, the trustworthiness of the data, several steps were taken. As outlined by Teeter and Sandberg (2016), data triangulation and eliciting examples of interviewee or participant inputs are two of the most common ways of establishing trustworthiness. As was described with in the discussion above on triangulation (for example), and as will be demonstrated in the coming discussion using interviewee extracts, both of these considerations have been made in order to improve the trustworthiness

of the research study. Furthermore, the confirmability, dependability, transferability, and credibility of the data have also all been addressed to some degree in the discussions above.

6.4 RQ3 Analysis

6.4.1 RQ3 Analysis Introduction

There is no consensus on the way in which verbal data for decision tasks should be processed. There exist primers and articles on how to design the studies (e.g. Ericsson and Simon, 1980), but little on a systematic approach to analysing the data collected. Importantly, strong theoretical grounding should be present in conducting the analysis. Nevertheless, evidence from other literature suggests that there is some flexibility about how data from verbal reports are analysed. For example, Bettman and Park (1980) performed statistical tests using the frequencies of coded verbal data as a means of examining the effects of knowledge, experience, and phase on decision-making. Whilst this approach would align with the quantitative approaches of previous research, it would detract focus from the interpretive data that merits examination.

Further Simon (the originator of this thesis' adopted theory of satisficing *and* an originator of this study's methodology, protocol analysis) and Bhaskar (the originator of the Critical Realist philosophy adopted) actually collaborated once before and as a result we are able to observe how the two of them approached the analysis of verbal data. One extract is most telling in their approach to their analyses and reporting where they detailed:

"*The subject's knowledge of thermodynamics enters into the solution process in several ways. First, he is able to deduce that certain variables can be ignored or set equal to zero on the basis of the language of the problem statement. 'Key words' in the statement appear to evoke this information from memory. Second, when faced with a variable to be evaluated, he generally is able to evoke from memory an equation containing that variable which might be solved for it*" (Simon and Bhaskar, 1977, p. 214).

This article also serves as a good example of how an analysis of verbal data may take place and, further, is the primary gauge of the structure and approach of the analysis that follows. This approach not only allows the research to interpret cognitive processes more abstractly, but, more importantly, allows for an approach that encourages the use of theory to support and explain findings. Given maximization requires theoretical development, the use of extant theory may be beneficial to the analysis.

With this in mind, the approach to analysing the verbal data collected also involved a triangulating approach whereby the mapped sequences, specific codes and corresponding passages, participant information and questionnaire scores, and context were all considered in trying to generate a deeper understanding as to *how* maximization manifested. This approach is also supported by the epistemological paradigm outlined by the Mixed Method approach.

Surface observations: To begin with, the number of phases (i.e. long vs. short processes), the depth of the sequences (i.e. multiple uninterrupted instances of the same phase), and the nature of any iterative processes (i.e. strictly linear vs. circular processes to a choice) had little meaningful insights to why or how maximization appeared or operated. Quickly, it is worth noting again that this method is intended to generate observational data, and therefore the consideration of evidence that may be less qualitative in nature is not a betrayal of it, although it actually makes little difference here.

Furthermore, some interesting surface observations were made at this stage. One was the disconnect observed in maximizer behaviours and maximizer trait status. One example of this can be observed when George (1 instance of maximization and labelled a maximizer as a result of his trait measurement score) compares against Simon (2 instances of maximization and labelled a satisficer as a result of his trait measurement score). Upon closer inspection, no substantial argument could be made based on the available transcripts and data to explain this within the existing literature. Some initial explanations may be that 1) behavioural maximization and trait maximization do not align, 2) one or both of these participants are outliers, or 3) the nature of the task and the environment (incl. internal states such as participants' knowledge banks) resulted in a context-specific result that would not generalise across other contexts; yet there is a lack of sufficient evidence to support points 1 and 3. Therefore, one may consider these as outliers (if they consider the labelling system faultless). However, an important note to consider here is that the labelling system (as previous discussed in *6.3.3.3 Scoring and Labelling Participants*) relied on the results of participant questionnaire results, independent of their observed maximizing behaviours. As the case was made, this discussion would still stand ground without the labels, an added element to complement the discussion and not a major contributing factor for it. If, however, one chooses to consider this disconnect is more seriously (and the labelling system methodology overlooked) then indeed, this observation contributes to a parallel discussion on maximization's definition and conceptualisation, one related to how well trait maximization

reflects behavioural maximization. This is another debate in the maximization literature, although not tackled in this thesis. An approach to tackle this very question is actually presented in *Appendix G: Initial Efforts at Future Questions - Maximization's Manifestation*, developed upon the conclusions from this thesis.

Another interesting observation was how quickly some participants completed the task in relation to others. Grace (81 seconds) and Sandra (104 seconds) completed the activity sooner than all other participants (Sarah at 303 seconds was third quickest, for reference). A possible explanation as to how they so quickly arrived at this decision is that they had already considered this decision before and simply recalled their previous decision processes and outcomes from memory; this is more plausible when remembering that Grace chose the adoption option. Another explanation may be that contextual factors (such as other commitments after the study) not recorded or observed forced a quick decision process for these participants.

Major Themes: Upon closer inspection of the transcripts and sequences of the decision process, two areas of interest are raised. Firstly, maximization (instances of goal and strategy) seemed to be absent much of the time and secondly, when maximization did manifest, it seldom took any commanding role, rather appearing as a support mechanism for larger more dominant process of *Persuasion*. Below, these two themes are developed.

6.4.2 Stimulation of Maximizing

A major theme of the findings was how maximization appeared to be absent (or unstimulated) much of the time. To begin, a contextual and tangible observation worth reporting on was how few high-scoring maximizers made use of the laptop. Careful efforts were made to ensure participants could use the laptop to search for information should they choose to without also explicitly instructing them to do so. However, all but one of the participants, Mark (Trait Maximizer), failed to use the laptop provided. This is the first, albeit least powerful, example of a lack of maximizing behaviours throughout the observation of the decision tasks. With easy access to information and a task assigned, it would not be unreasonable to assume that maximizers would make more use of a tool to complete the decision task and yet they did not. Maximizing was also less present and evident upon a closer and more integrated inspection of the data. Numerically, there were only 5 instances of maximizing that were coded across the 7 maximizing participants that took part. To give scope to this, the same maximizers also recorded a total of 52 other decision processes (i.e.

total number of the *Knowledge*, *Persuasion* and *Decision* stages). This also translates as maximizing featuring in less than 10% of the recorded decision processes.

Initially this could infer that maximization was not active. It may also infer that maximization has minimal agency in the decision process, which is discussed later. For now, however, more must be understood about maximization's presence before understanding maximization's magnitude. Further, for the satisficers, 4 instances of maximizing across the 5 satisficing participants further highlights possible lack of stimulation. This lack of stimulation of maximization ultimately becomes clearer once some examples are brought to light.

Grace and Gabriella: Grace and Gabriella are both trait maximizers and are both high innovators. Contemporary theory and measures (Bartels and Reinders, 2011; Cheek and Schwartz, 2016) would suggest that they desire innovations and would aim to select the best, or at the very least set high standards for themselves.

Grace (Trait Maximizer and High Innovator) chose to adopt the innovation immediately; she did not engage with the *Knowledge* or *Persuasion* phase before-hand and she did not engage in any maximizing behaviours. This is somewhat unexpected as she made her choice without any evidence of pursuing the best or alternative search. This runs counter to what is known about maximizers in their behaviours (e.g. Iyengar et al., 2006). Further, Grace took, in total, 5 phases to conclude her task, the shortest (tied) of all participants (including the satisficers) implying a reduced/limited action of information processing (c.f. Bettman et al., 2008).

Gabriella (Trait Maximizer and High Innovator), however, chose to reject the innovation. She did so after careful deliberation it seems, by navigating between the *Knowledge* and *Persuasion* phases repeatedly. That is, she sought information to understand the innovation as well as forming attitudes and evaluating it yet exhibited no maximizing behaviours. Interestingly, she was quite iterative in her process (moving back and forth between *Knowledge* and *Persuasion*) and was able to delve deeper into phases (i.e. same phase repeated concurrently) before rejecting.

In many ways, these two individuals were stark opposites in their processes, yet are the same in terms of their innovativeness and maximization. It is the way in which Grace opens and the way that Gabriella closes that is most telling as to maximization's position and

operation. Grace's opening words are "I love trying new things" during her decision to adopt at the beginning. Gabriella's final words during her rejection are "I'm not sure what personal benefit I would get from it. If it was to engage in something with my family I would". Novelty (Grace) and family (Gabriella) are well documented and researched higher ordered goals (Midgley and Dowling, 1978; Rokeach, 1979) and both seem to be driving the decision (adoption in Grace's case), or at the very least a reconsideration (Gabriella's case). The fact that these (different) goals seemed to be the driving force in arriving at an individual choice is perhaps not radical, but it begs the question as to why maximization behaviour seemed absent, given that both were high scoring trait maximizers.

Michelle and Mark: One of the maximizers that did present maximizing behaviours was Michelle. Michelle commented that what "would probably be the most important thing to me is making sure it actually works with my PlayStation..." What could be interpreted from her comments is that she is setting a standard or criteria (maximizing) in which to evaluate potential options – the most important thing is compatibility. Preceding, Michelle had established how VR may align with parts of her life - "Actually I play video games so I think it might be quite interesting" – before agreeing there may be benefits for her gaming – "I know what I would use it for I just don't know how I'd figure it out so I would probably start with one my gaming websites that I use frequently…they have plenty of blogs on games, tech, movies, applications…that will go into detail about it and I trust them". It seems that, upon exploring ways in which VR addressed aspects of her life, Michelle began to exhibit maximizing behaviour.

In a similar way, Mark, another trait maximizer, also somewhat displayed maximizing behaviours when he methodically stated that "I will decide which category I want, what experience I want, and then I will find which is the most reliable at the most reasonable price". In almost text-book fashion, Mark identifies his attribute requirements, his options set, and his evaluation and assessment (of what is the best). That said, this is more reflective of the retrospective hypothesised verbalizations mentioned in *3.4.3 Method for RQ3*; Mark is hypothesising how he would act but is not actually enacting the steps he has laid out at this point. Interestingly, almost immediately prior to this, Mark states "The main question is do I need it?" Therefore, whilst maximization does not appear earlier in the decision process, it does so immediately once an effort to assess whether virtual reality can serve some purpose in his life.

Mark and Michelle both displayed some maximizing behaviours but only *after* some form of assessing how VR could benefit them.

Simon: In fact, the greatest instances of maximizing behaviours, unexpectedly, came from one of the trait satisficing participants. Simon (Trait Satisficer; High Innovator) displayed the richest instances of the maximization behaviours. This is somewhat unexpected. Carrying over from the previous participants, he also more compellingly, compared to others, demonstrated and communicated a clear set of benefits that the stimuli (VR Headset) would yield. That is not to say he would objectively benefit more from the VR headset than the others, but rather that he articulated these benefits more with greater clarity (in this case, entertainment and hobbies and professional actualization) over the other participants. He states early on "yes I can use it for work" and then more passionately introduces his love of gaming and how virtual reality enhances it "I play a lot of high-end-high-spec triple-A video games which means a lot of them would be able to utilise things like the Oculus especially with the way games have been designed now". It is only then, upon fore-fronting his goal that Simon begins to display maximizing behaviours. He briefly mentions "I get flooded by prices and different brands [*Maximizing Strategy* -comparing alternatives/attributes]…I couldn't come to a safe conclusion now because I don't know enough about it to know about the almost bang for buck or value of it [*Maximizing Goal* - making the best choice]". It is worth noting that even though Simon rejected adoption, he made clear he desired one eventually. By trying to access internal information, committing to research further, and commenting that he will be waiting for better options at a later date, Simon is in essence exhibiting maximizing behaviour.

To summarise at this point, maximization's limited appearances suggest it was unstimulated. Several participants scored highly on the measures of trait maximization and yet it failed to present itself convincingly in action. Moreover, it was one of the trait satisficers of the group that best displayed "textbook" maximization in action, which begs the question as to why maximization managed to appear in the least likely of places.

6.4.3 The Role and Position of Maximization

Where maximization did appear, it seemed to be brief and located in the middle of the decision-making process of the participants displaying it. Further, it most effectively (or rather only) appeared during the *Persuasion* stage, when participants were forming attitudes, utilizing the information at their disposal (even if that information was inference-based or

assumptive), and choosing how to interpret information. Also, worth noting is that *Maximizing Goal* and *Maximizing Strategy* did appear almost exclusively together, and that it was the goal the preceded the strategy, in line with what Schwartz et al. (2002) originally suggested. It was, however, less clear how exactly maximization operates in process-terms. Once more, examples from participants help to illustrate this.

George: George (Trait Maximizer and High Innovator) exhibited a brief *Maximizing Strategy* behaviour directly after entering the *Persuasion* stage of the *Innovation Decision-Process* when he stated "I cannot see the value of me paying [persuasion-relative advantage]…I could check on the laptop but I'm presuming without checking, it will be at least 300 pounds [*Maximizing Strategy* – search for attribute information]". Initially, George assesses the relative advantage (an element of *Persuasion*) and then displays an instance (albeit superficially) of seeking attribute information (*Maximizing Strategy*). The instance of seeking attribute information and the comparison of options occurs almost as a supporting mechanism to the *Persuasion* phase, that is, that the maximizing merely helped in developing and evaluating the relative advantage of the innovation, as part of a grander *Persuasion* stage. Put another way, maximizing was a tool employed by the decision process. Interestingly, it seems as though price was the focal attribute. If this was the case, *Maximizing Strategy* in this instance may operate in a similar fashion to elimination by aspects (Tversky, 1972), whereby a single criterion is deemed the most important (the best qualifier) and used to make the decision.

Mark: Another example to highlight maximization as a supporting function in *Persuasion* can be drawn from Mark (Trait Maximizer and Low Innovator). Theory would suggest that Mark seeks to compare alternatives and seek the best (as he is a maximizer), but that he is also unlikely to adopt innovations. Sure enough, when Mark enters a mid-process *Persuasion* stage, maximizing behaviours appear when he states "I will decide which category I want, what experience I want, and then I will find which is the most reliable at the most reasonable price". As already discussed, Mark assigns the criteria by which he will compare options (*Maximizing Strategy* ultimately decided upon based on the standards by which they must be met (*Maximizing Goal*), all as part of the greater process of forming an attitude towards the products and to assess relative advantages. Here, however, *Maximizing Strategy* seems multi-levelled in that several factors are considered (e.g. category and experience) and that some compensatory trade-off system will be employed so as to

determine the "most reliable at the most reasonable price". It is unclear how this reasonable price is determined. A telling passage of how iterative and dynamic maximizing may be occurs when Mark states "The experience you get with this headset is the best one available right now OK [*Maximizing Goal*]… I would probably reject it. It seems a bit better than the Google Cardboard but the compatibility is a big problem."

Simon: We can also return to Simon (Trait Satisficer; High Innovator) to further understand maximization's limited and supporting role during *Persuasion*. Once more maximization appeared during the *Persuasion* stage; Simon realises early on "yes I can use it for work [persuasion-compatibility/relative advantage]…I get flooded by prices and different brands [*Maximizing Strategy* -comparing alternatives/attributes]…I couldn't come to a safe conclusion now because I don't know enough about it to know about the almost bang for buck or value of it [*Maximizing Goal* -making the best choice]". Ultimately, maximization appears during the *Persuasion* stage to support assessing compatibility and relative advantages. Importantly, Simon begins this phase with a product category (virtual reality headset) in mind and not a particular product (e.g. Oculus Rift). It is for this reason that the opening cannot be considered a *Maximizing Strategy* as he is yet to establish a choice set or consider specific attribute. Nevertheless, he begins this phase and uses *Maximizing Goals* and *Maximizing Strategies* to support it. Here again it is unclear how the actual process of maximization is taking place.

This all occurs simultaneously, and these verbal data seem to reflect maximizing more than most, which raises the question as to why the one of trait satisficers of the group was the most maximizing (behaviourally). Simon is comparatively well informed about virtual reality and goes on to considers specific brands such as the Oculus Rift, as well as incorporating information from social reports by saying "a lot of people report nausea and like vision difficulties afterwards". Perhaps most telling was his concluding comments "if someone got me one as a gift I'd be over the moon" but when considering making the financial commitment himself, he summarised "probably not until they step into a few generations later down the line." Summarily, Simon desires a virtual reality headset, he is comparatively well informed, and has an explicit need for one. Further, he maximizes more so (proportionally) than any other participant and chooses to wait for a better option.

To conclude here would be to acknowledge supporting role for maximization during a *Decision* process, instead of as a driving force of the process and eventual choice. Further

that *Maximizing Goal* and *Maximizing Strategy* appeared in unison with the goal often preceding and driving strategy. However, what was, and remains, unclear is an understanding as to how maximization actually operates in process-terms.

6.5 RQ3 Discussion

6.5.1 Goals as Stimulants for Maximizing

The emerging claim thus far is that goals stimulate maximization in innovative contexts (and perhaps other contexts too). A goal is a desirable end-state to move toward or an undesirable end-state to move away from (Baron, 2000). When these (un)desirable states were made salient, maximization manifested to facilitate movement towards (away from) these states. When goals were not as easily articulated, maximization failed to present itself during the decision-processes. Put otherwise, maximization is relatively dormant in decision processes until some goal is made salient.

6.5.1.1 Considerations against the Claim

One may argue that such a statement hinges on goal saliency *within* the individual. That is that the individual is consciously aware of the goal at hand, and therefore in non-conscious decision making, this claim may not hold. Rightly so; this claim is made with conscious processing (System 2) in mind and stops short of extending into the realm of non-conscious processing. Dual-processing theory (Evans, 2008) allows for this and habitual purchasing behaviours are just one example of times when consumers can move towards end-states (goals) they deem desirable (e.g. quenching thirst) by employing non-conscious processing (e.g. use of heuristics) and without the goal being at the forefront of consciousness. However, arguably, innovations are not such an example; consumers are highly involved with the decision-making process and are aware of the financial, performance, personal, and social risks associated with their choice (Hirschman, 1980; Feiereisen al., 2008; 2013). Driving the *Innovation Decision-Process* is a need at the very least (Rogers, 2003), likely driven by higher-ordered goals (Pieters and Baumgartner, 1995) and/or traits (Bartels and Reinders, 2011). In Roger's (2003) model for innovation adoption, he states a prior condition necessary for the adoption of an innovation as "Felt Needs or Problems" and from the discussions on means-end theory, those needs manifest in order to address and satisfy higher-ordered structures (such as goals or traits). As such, it is fair to dismiss this counterpoint, and even more so when support for the claim is considered.

6.5.1.2 Support for Claim

Therefore, and in support of this claim, several points may be considered. To begin, we consider only high scoring trait maximizers that should all theoretically exhibit these maximizing behaviours. The major difference in whether maximization manifested within the data from these individuals was whether or not a goal had been established. ***Importantly, goals were present without maximization, but maximization was not present without goals***. For example, Mary opens with a self-probing question as to why she would use one, in essence searching for some goal that may be achieved by using virtual reality, before making a rejection decision without any instances of maximization activities. Similarly, Malcolm struggles to align the VR with a goal when he states "*but I don't know what they're good for*" before also rejecting and failing to relate any maximizing activities. Both struggled to identify a goal that they may achieve by adopting VR and therefore, even though they both engaged several other decision processes (*Knowledge and Persuasion*), maximizing behaviours were not evident in the spoken reports.

To further illustrate the decision-making power of the goals, we can revisit Gabriella. Gabriella's carefully navigated decision to reject the innovation was made less convincing and somewhat inconsistent at the very end when she considered her family. With her family in mind, and in discussing how VR may assist supporting this, virtual reality changed from an undesirable state to avoid, to a desirable one to be sought *provided* it fulfilled her goal. Whilst she did not display maximizing behaviours, her eventual decision was somewhat swayed when her goals are considered.

If we now expand the scope to also consider the satisficers in the sample, then the greatest instance of reporting of maximizing behaviours was generated by a trait satisficer within the group, Simon. He also happened to communicate most clearly, not only the goal in mind but, vitally, the ways in which VR would help him achieve those goals. This is not a correlational observation, rather an explanatory one. Simon's decision-processes were driven by his dedication to improving his work, to enhancing his already self-proclaimed love of gaming. Whilst he rejected adoption of the innovation at that time, he did so for ultimately maximizing reasons, that is, to wait for later, enhanced generations of VR and search for more information. Simon explicitly stated his commitment to additional research on brands and features as well as on waiting for later generations. A satisficer would, theoretically, not

do this. Here the claim extends somewhat in that the goal not only seemed to activate maximization behaviours, but the saliency of the goal seemed to amplify maximization.

Thirdly, simply questioning whether a goal could be fulfilled was enough to tease out maximizing behaviours in some instances. The best example of this occurs when Mark (Trait Maximizer and Low Innovator) unintentionally primes himself with a goal for the technology "…there would be one question – do I need it?" He follows by actively searching for knowledge on virtual reality and specifically searching for options and attributes by which to make a choice, even though he ultimately rejects adoption.

Mark maximizes during specific *Persuasion* phases that have been brought about by considering possible specific goals (in his case leisure gaming). Importantly, Mark's decision-process is hypothetical: "Okay so assuming I am a gamer. And I would decide." As such, his maximizing behaviours are hypothesised in a reflected manner when he continues that "I will decide which category I want, what experience I want, and then I will find which is the most reliable at the most reasonable price". Mark does engage in some actual maximizing behaviours yet, vitally, with goals in mind. He is maximizing when he says "…So if I decide that I want let's say the Google cardboard because I think that it fills my needs - it seems that it is the worst of the options from what I read online…It seems like the Google Cardboard and the Samsung headset are just toys compared to the real experience" Shortly after, he reiterates the purpose of this decision "So if I have the discretion to buy myself, I would probably go for these because if I want the gaming experience and I want it to be 3D and 360 I think this would be a better choice but it seems they are very expensive.". In making his choice, Mark reported maximizing behaviours when a goal was present.

Another instance of how simply questioning if any goals could be achieved was enough to initiate maximizing behaviour could be highlighted in the encounter with Mary. Mary (Trait Maximizer and Low Innovator) rejects adoption quicker and more vehemently than any other participant. However, during her instantly rejecting introduction, she sarcastically asks herself "why would I even want to buy a virtual reality headset?" yet then proceeds to evaluate what benefits may be attained: "I think it's fake...I see it's practical…used [for] scenarios…try and see new places". Whilst her pursuit of what is best for her was not within a product choice set (the more common application of maximization), it was the pursuit of a choice between whether the innovation would be better than the status

quo of no virtual reality. Similar to Mark, by allowing virtual reality the opportunity to address a goal she held, maximization behaviour (by weak association) appeared.

To summarise, the claim here is that ***if no goal is present, then maximization within the decision-making process (of innovations) fails to manifest***. Consequently, once a goal is presented, the strength of the goal seems to amplify maximization behaviours. Prior research illuminates that strength of a goal is determined by a variety of components of the goal; they vary in their level of desirability, importance, feasibility, and abstractness (Baumgartner and Pieters, 2008) with each of these impacting the strength and motivating force of the goal. For example, a neutral, non-important, unfeasible, and abstract goal is much less powerful than a highly desirable, important, feasible, concrete goal. Goal presence and strength, then, may be what moderates maximization tendencies.

6.5.2 Maximization as a Supporting Decision Mechanism

The second emerging theme from the analyses was that of maximization as a supporting mechanism or tool during the *Persuasion* stage, and that the *Maximizing Strategy* was driven by the *Maximizing Goal*. More broadly, maximization appeared as a decision tool used to support a certain decision-process. Whilst it is clear that maximization and *Persuasion* were bound together, this thesis argues it is most plausible, based on the analysis, that maximization takes a supporting role for the reasons that 1) *Persuasion* stages appeared without maximization's presence, 2) maximization only appeared during *Persuasion* stages, and 3) maximization's specific form (goal/strategy) was aligned with the direction of the *Persuasion.*

Maximization (goal and strategy) was only ever present during the *Persuasion* stage. Further, it often presented itself as a means of addressing a specific element of *Persuasion.* For example, Michelle establishes a use domain and a salient goal "Actually I play video games so I think it might be quite interesting". Michelle enters a *Persuasion* stage process focusing on the compatibility and relative advantage of VR. To support this process, she maximizes (goal) when she begins to define how important this criterion "…I think that that would probably be the most important thing to me…is making sure it actually works with my PlayStation. I'd also want to make sure that the graphics were up to par". She continues to maximize (strategy) when she considers particular options "…I've already seen adverts for the PlayStation VR…what I saw for like the PlayStation was that headset…" In doing so, Michelle's maximizing contributes to the larger decision processes at hand (*Persuasion*) that

are ultimately driven by her goal to enhance her gaming experience. Another powerful demonstration of maximization's supporting role is when Mark explicitly maps out his ordering and priorities during the *Persuasion* phase. He states "I will decide which category I want, what experience I want, and then I will find which the most reliable at the most reasonable price is". In this example the elements of *Persuasion* (i.e. compatibility and relative advantage) are the primary focus.

6.5.2.1 Contending the Claim

Once more, we may contend this claim and offer alternative interpretations. A competing way of interpreting maximization's role could be that of a maestro or conductor, with *Persuasion* being the metaphoric orchestra. This would be in line with some of the proponents of maximization as a grander decision phenomenon (e.g. Nenkov et al., 2008).

In this alternative explanation, *Persuasion* stage is still very much the substance and focus of the decision-process, but we may suggest that its efforts and focus are directed by maximization. For example, in much the same way that certain elements of an orchestra are held silent by the maestro through a performance, certain elements of *Persuasion* were noticeably absent and maximization may be the reason why. There was clear divergence between participants as to what elements of *Persuasion* were given attention, or rather what the priorities were. Some participants, such as George, were only concerned with price information (relative advantage). Others, such as Simon displayed a more balanced consideration with relative advantages, complexity, compatibility, all given some attention. What constitutes each participant's focus could be reflective of what their maximizing selves have already identified as the standards against which they make their decision.

Further, setting the standards and criteria for the evaluation is only suggestive of the goal component of maximization. The strategy component of maximization could also be seen as directing the way in which the selected *Persuasion* elements manifested themselves. For example, if we recall one of George's *Persuasion* stages he stated "I cannot see the value of me paying [persuasion-relative advantage]…I could check on the laptop but I'm presuming without checking, it will be at least 300 pounds [*Maximizing Strategy* – search for attribute information]". George chose to establish attribute information by use of internal knowledge and estimation techniques, as a result of his *Maximizing Strategy.*

However, this claim would require that the *Persuasion* stages in the decision processes falter and struggle when maximization is not present. It was clear that the

Persuasion stage operated and performed without issue in the absence of maximization, which would dispel this claim. Continuing the metaphor, it would be as if the orchestra played seamlessly without a conductor.

6.5.3 Concluding Thoughts and Moving Forward

The purpose of this study was to better understand how and where maximization operated. As a result, it is conceivable that maximization operates at a low-ordered position during decision making and as a supporting feature. To further conclude the discussion, the two major findings are restated.

- Firstly, that ***goals were present without maximization, but maximization was not present without goals,*** thus, maximization failed to manifest by whether or not a goal was present and that, with lesser conviction, the strength of the goal may have amplified maximization.
- Secondly, ***when maximization manifested, it did so in a supporting fashion and as a tool for other larger decision processes***. To extend this claim further, and by combining the claims with contemporary research, it may be argued that maximization is a lower-ordered decision tool or decision style. This claim helps in understanding the decision power maximization has as well as its relative position in a decision-making process.

Decision processes are complex[11] and generally, a decision-process involves several stages that each direct a necessary function within the decision process. In the innovation literature, these functions include *Knowledge, Persuasion,* and *Decision*, whilst other models present similar approaches (e.g. AIDA in Solomon, Russell-Bennett and Previte, 2012). These functions are composed of sub functions; in the Innovation-Decision-Process, for example, the *Persuasion* function is composed of elements such as relative advantage and compatibility. It is during the processing in these sub-level elements where maximization appeared and did so in a supporting fashion. It was obvious that maximization did not manifest itself when we recall the goals (and values) considered when VR Headsets were proposed. Put another way we may understand the following:

> Once we have **chosen** (motivated by super-ordinate goals and basic values) **to choose** (take some action to achieve those goals and desired end states), we may then **choose**

[11] They may be moderated by a number of different factors, such as how knowledgeable an individual is with a decision task (Moreau et al., 2001) or their affective state (Baumeister, Sparks, Stillman & Vohs, 2008)

(*Maximizing Goal*, setting the standards *of the decision*) **how we choose** (*Maximizing Strategy*, information search and processing support).

This approach positions maximization almost at the bottom, in hierarchical terms, of a choice model. Further, this approach still allows maximization to operate as a trait, much in the same way that a decision-making style does (Sproles and Kendall, 1986), just with much less decision authority. This is also in contrast to a position on maximization that claims that it is a major driver in choice (Nenkov et al., 2008). It reflects clearly the power (or lack thereof) maximization holds.

Finally, what this study also revealed was an interesting dichotomy between the component view of maximization as a goal and strategy and the holistic view of maximization as a unidimensional trait. Trait maximizers (under the holistic view), anecdotally, did not act out the maximizing behaviours of seeking the best (*Maximizing Goal*) and searching through alternatives (*Maximizing Strategy*).

Importantly, this stands to address the confusions and uncertainty in the literature more broadly. Misuraca and Fasolo (2018) presented an explicit call to action to the research community, namely, to generate conceptual consensus. The third research question tackles where and how maximization may appear during a decision process, as a direct attempt to address this. This adds to the debate on the construct integrity of maximization that initially inspired this question. It also reaffirms that more is needed moving forward in better understanding the nature of maximization. The study and results presented here concern one domain (innovation), one product (virtual reality), and a small sample of people. These results must be tested further and with a wider sample.

7. Discussion and Contributions

7.1 Introduction

This chapter summarises the results of the studies undertaken, discusses the initial research questions, and presents theoretical and managerial contributions. In more detail, *7.2 Discussions* discusses each of the research questions and their implications. The findings are discussed as part of the wider body of maximizing literature, as well as what implications these contributions have for managers and marketers. *Table 7.1: Summary of Thesis Findings* summarises the findings of this thesis.

7.2 Discussions

7.2.1 Research Question 1: Discussions and Contributions

Research Question 1 was concerned with answering the question *Is maximizing a valid construct as it is currently studied?* Specifically, this question sought to confirm that maximization was stable across time and that it was a distinct construct. The results demonstrated that maximization was stable across a two-week period and that maximization maintained discriminant validity against several constructs including *Need To Evaluate*, *Market Mavenism*, and *Brand Consciousness*. However, *Maximizing Goal* and *Perfectionism* (in consumption settings) did display issues of discriminant validity with one another, raising questions concerning the construct validity of *Maximizing Goal* (as operationalised by Dalal et al., 2015).

Summary of thesis findings

Domain of Contribution			Maximization Component		Evidence from thesis
			Maximizing Goal	Maximizing Strategy	
Operational Validity		Temporal Stability	Stable over two-week period		RQ1
		Discriminant Validity	Discriminant against all examined traits except Perfectionism	Discriminant against all examined traits	
Nomological Net	Trait				
	Consumer Decision Styles	Perfectionism	N/A*	Strong Positive Relationship	
		Brand Consciousness	Moderate Positive Relationship	Weak Positive Relationship	
		Hedonic	Moderate Negative Relationship		
		Value-For-Money	Weak Negative Relationship		
		Impulsive	No relationship	Moderate Negative Relationship	
		Confused by Over-Choice	No relationship	Weak Negative Relationship	
		Habitual	No relationship		
	Need to Evaluate		Strong Positive Relationship	Moderate Positive Relationship	
	Market Mavenism				
	Innate Innovativeness	Cognitive Innovativeness	Moderate Positive Relationship		RQ2
		Sensory Innovativeness	No observed relationship		
	Behavioral Innovativeness	Exploratory Information Seeking	Moderate Positive Relationship		
		Exploratory Acquisition of New Products	No observed relationship		
Conceptual			Maximization was stimulated by goals. Maximization supported larger decision processes (in the Innovation Decision Process, this was the Persuasion process). Trait maximization was not reflective of behaviorally observed maximization		RQ3

*Table 7.1: Summary of Thesis Findings. *The relationship between Maximizing Goal and Perfectionism was not reported due to the discriminant validity issues*

7.2.1.1 Theoretical Implications: Maximization stability and construct validity

Theoretically, these results provide support needed to reinforce the claim that maximization is a trait. Importantly, this thesis is one of the few works (with the exception of Dalal et al., 2015[12]) that explicitly validates the temporal stability of maximization. Temporal stability is an important factor in determining whether a construct can be classified as a trait (Paunonen, 1998).

Furthermore, much of the maximization research published relies on a conceptualisation of maximization as a trait; without this, its trait status stands to be unconvincing. For example, Bruine de Bruin, Dombrovski, Parker, and Szanto (2016, p. 364) considered and defined maximization as an "individual-difference" (a trait) based on their interpretation of the Schwartz et al. (2002) conceptualisation. They continued, under an unsupported assumption of maximization's trait status to suggest:

"*that maximizers could be at risk for clinical depression because of their proneness to regret*." In the same vein, they further argue that their results had "*promise for clinical practice*" (p. 363). They concluded that "*ultimately, late-life depression and suicidal ideation may be treated with interventions that promote better decision making and regret regulation*".

Should it be the case that maximization is not a trait[13], and instead a state, then clinical treatments aimed at preventing suicides and treating venerable peoples becomes less effective and, possibly, even misguided. To illustrate this; Hembree's (1988, p. 74) meta-analysis on treatments for trait and state anxiety concluded that effective treatment for state anxiety differed from the treatment for trait anxiety. Whilst no discussion was presented on the impacts of mistreatment or misdiagnosis, it is fair to assume that it would not result positively. For studies and topics far more serious, such as suicide as presented by Bruine de Bruin et al. (2016), it is fair to assume that this impact would be more serious, too. The importance of supporting maximization as a trait, then, should be considered theoretically significant. It should be noted, however, that this result does not rule out the possibility of maximization being both a trait and a state.

[12] As was mentioned in *4.4.2 Maximization is Stable (in the short-term)*, Dalal et al. (2015) also conclude that maximization is stable but their study has some procedural difficulties that limit the findings (the presence of a choice activity that may have contaminated the results). In fact, this procedural difficulty, in part, is what helped to build out *Appendix G: Initial Efforts at Further Research – Maximization's Manifestation* as the presence of certain activities (as shown by Ma and Roese, 2014) may impact an individual's maximizing tendency.
The study reported in this thesis was designed to avoid that difficulty and present a stricter test. The results of both studies (i.e. this thesis and Dalal et al., 2015) support the temporal stability of maximization.

[13] The current conclusions are that maximization is a trait, yet as *8.2 Limitations and Further Research* will argue, more must be done to confirm this to a higher degree of satisfaction.

On the discriminant validity of this study, this too has important contributions for theory. It is now clear that the *Maximizing Strategy*, as operationalised by Turner et al. (2012), is distinct from the examined and theoretically overlapping constructs, such as *Need To Evaluate*, *Market Mavenism*, and *Perfectionism*. This is an important first step in supporting the wider claim that maximization is a distinct construct. *Maximizing Goal*, as operationalised by Dalal et al. (2015), also held discriminant validity against all constructs except *Perfectionism* (in consumption settings). Whilst other research has shown maximization to be distinct and, by association, conceptually unique, this research is less convinced that that claim may be so easily made. This is a serious contention and before continuing it is worth reiterating the psychometric superiority of the Dalal et al. (2015), the scale used in this research, against the original Schwartz et al. (2002) scale.

Schwartz et al. (2002) concluded that their scale maintained discriminant validity against *Perfectionism* when operationalised by Hewitt and Flett's (1990; 1991) *Self-Oriented Perfectionism* scale[14]. They stated:

"*…although maximizing was significantly correlated with perfectionism (Sample 6), the correlations of each of these measures with happiness and self-esteem in the study were quite different (happiness was negatively correlated with maximizing and positively correlated with perfectionism; self-esteem was negatively correlated with maximizing and uncorrelated with perfectionism), suggesting that maximizing and perfectionism are distinct."* (p. 1184).

These results are unsurprising as indeed, as already evidenced; *Self-Oriented Perfectionism* is associated with positive affect (c.f. Stoeber, 2018). However, Schwartz et al. (2002) did not measure their maximizing scale against Hewitt and Fleet's other dimension of *Perfectionism*, that of *Socially Prescribed Perfectionism*. Interestingly, *Socially Prescribed Perfectionism* is positively correlated with negative affect factors such as depression and anxiety (c.f. Stoeber, 2018). The original Schwartz et al. (2002) scale was also positively correlated with negative affect, such as depression. On the grounds that correlation direction, an approach used by Schwartz et al. (2002), is enough to claim discriminant validity, these findings would suggest that actually, *Perfectionism* and

[14] As a note, this perfectionism scale is different to the one used in this thesis (Sproles and Kendal, 1986). The main point of this argument relies less on which perfectionism scale was used, and more so on the fact that a comparison of maximization and perfectionism has not been conducted to a sufficient degree to claim they are distinct from one another

maximization are not discriminant. Therefore, the claim that maximization and *Perfectionism* are distinct is challenging to make unless a thorough examination takes place.

Furthermore, Stoeber (2018) notes how *Self-Oriented Perfectionism* is internally motivated whilst *Socially Prescribed Perfectionism* is externally motivated. According to Schwartz et al. (2002) maximizers are more reliant on social cues and motivations, aligning with the Hewitt and Flett (1990; 1991) *Socially Prescribed Perfectionism*. This further highlights the conceptual similarities of the dimensions of each construct. Therefore, the contribution here is that it rouses the research community to more seriously address the operational and conceptual similarities and overlaps with *Perfectionism*, in an effort to further legitimise the construct. The correlations between the two are strong and they share 53% variance, yet not so strong and not so much shared variance that researchers would begin to suspect the two measures are measuring essentially the same entity. Both constructs are complex, evidently multidimensional, and rooted in Simon's original work, hence, one conceivable reason for the relationship is that maximization has multiple origins and connections, one of which is *Perfectionism*, and so acts as a possible (but not sufficient) indicator of *Perfectionism* alongside other psychological entities.

The results of RQ3 that suggest maximization is a lower-order entity in goal hierarchy terms support this position. The presence of other possible connections and origins (e.g. self-esteem) are a subject for further research (see also the arguments in *7.2.2.1 Theoretical Contributions: Marketing* and *7.2.3.1 Theoretical Implications and Contributions* concerning other multi-dimensional constructs that also provide support for this view)

7.2.1.2 Theoretical Contributions: Marketing

An additional theoretical contribution is also made more specifically for marketing. The nomological net of maximization has been expanded, namely to include the moderate to strong positive relationships that maximization shares with *Brand Consciousness*, *Need to Evaluate*, and *Market Mavenism*, in particular. These findings suggest that researchers concerned with understanding these respective traits now have additional insights to draw on, based on the literature available from maximization. As an example, it may be that an individual's maximizing tendency mediates or moderates existing relationships between an individual's *Need to Evaluate* and ability to perform information processing tasks. For example, Wood, Quinn, and Kashy (2002) found that there was a negative relationship between an individual's tendency to perform habits and the *Need to Evaluate*. RQ1 revealed

a positive correlation between maximization and the *Need to Evaluate*. It is already known that maximizers alter their choice patterns more frequently than satisficers depending on the situation (Lin, 2015). It may be that an individual's tendency to perform habits is dependent, or at least related, to their maximizing tendency.

7.2.1.3 Implications for Management Practice

Managerially, these findings have impact as well. Collectively, the temporal stability and relatively discriminant validity of the maximizing constructs bolster the claim of maximizing as a valid trait construct. Therefore, managers and marketers can more comfortably employ maximizing scales in their market research and market strategies. Marketing research suggests that consumers find ads more persuasive when these are customised to their particular traits (e.g. Irmak, Vallen, and Sen, 2010; Kim, Ratneshwar, Roesler, Chowdhury, 2014).

Further, understanding a consumer's traits (in addition to the context in which they interact) can help predict consumption behaviours, such as those of healthy food products (Baumgartner, 2002). By incorporating the maximizing trait into research on consumers, marketers can tailor their ads, both in terms of content (as, according to Weaver et al. (2015), maximizers value relative superiority over absolute superiority) and format (as, according to Polman (2010), maximizers are more likely to use social comparison information over other information to judge quality of choice), to suit maximizers[15]. Again, it may be the case that after research on a target market is conducted, that consumers in a certain group are disproportionally disposed to maximize (as was the case with innovation), allowing marketers to benefit from understanding their decision processes.

7.2.2 Research Question 2: Discussions and Contributions

Research Question 2 was concerned with answering the question *What relationship, if any, does maximization share with an innovation adoption?* Specifically, it was important to better understand maximization's relationship with innovation adoption so as to understand the relationship between the two and give further context to the study that followed. Moreover, it also served to explore a new relationship between maximization and another set of traits (*Consumer Innovativeness*). RQ2 revealed that maximization correlated with the cognitive elements of *Consumer Innovativeness*, but not the sensory elements.

[15] However, it should be noted that neither researcher operationalised maximization as was done in this thesis. Polman (2010) used the Nenkov et al. (2008) scale, whilst Weaver et al. (2015) used the Schwartz et al. (2002) scale. Therefore, this example needs further confirmation using the multi-dimensional view of Maximization.

7.2.2.1 Theoretical Contributions: Marketing

The results presented in this thesis make additional marketing contributions by again expanding the nomological net. Specifically, the expanded nomological net of maximization can now include positive relationships with *Cognitive Innovativeness* and *Exploratory Information Seeking*. It is also worth noting the absence of any relationship with other *Consumer Innovativeness* constructs, namely *Sensory Innovativeness* and *Exploratory Acquisition of New Products*. These relationships align with existing literature that highlights the relationship between maximization and cognitively associated constructs such as *Need for Cognition* (Nenkov et al., 2008). However, maximization failed to register relationships with the sensory elements of these constructs and that is, perhaps, more telling. In trait and goal constructs wherein there exists both cognitive and sensory elements, it seems (from an innovation context at least), that maximization only relates with cognitive elements. Therefore, with regards to future research in which maximization and multidimensional constructs are examined, it becomes of interest and important to remember that the relationship with maximization may exist with only certain elements of that construct. For example, maximizations and *Neuroticism* have been shown to have a positive relationship (Purvis et al., 2011). However, *Neuroticism* is multidimensional (i.e. comprised of sub-factors such as *Withdrawal*) and from previous research it is unclear as to whether maximization relates to the construct itself or to one of its sub factors. This is expanded upon in *7.2.3.1 Theoretical Implications and Contributions*

7.2.2.2 Implications for Management Practice

The managerial implications of this are also significant. Starting with marketers and managers of innovations, a key takeaway from this study is that a moderate and positive relationship exists between maximization and (the cognitive elements of) *Consumer Innovativeness*. The chasm between earlier adopters and the remainder of the population, so often a guilty party in discussions as to why innovations fail, can now be better understood given some of the maximizing literature available. Maximization may play an important role in "crossing the chasm" (Moore, 2014) and allowing innovations to succeed. This is discussed in more detail further below (*7.2.4.1 Innovation Adoption*). More broadly, however, marketers and managers can now draw on the relationship between maximization and innovativeness as traits can be used in conjunction with one another to support marketing efforts (Baumgartner, 2002).

7.2.3 Research Question 3: Discussions and Contributions

Research Question 3 was concerned with answering the question *Where and how may maximization operate within an innovation decision-process?* Understanding more clearly the "black box" (Ding and Li, 2018) operations and processes involved in maximizing supports both its conceptual and operational development. The results of RQ3 concluded with two major claims. Firstly, that ***goals were present without maximization, but maximization was not present without goals, that is, maximization was goal-activated***. Secondly, that ***maximization was a low-ordered supporting mechanism*** (instead of a high-ordered, more powerful motivating construct). These findings were concluded within an innovation context.

In summary, once we have **chosen** (motivated by super-ordinate goals and basic values) **to choose** (take some action to achieve those goals and desired end states), we may then **choose** (*Maximizing Goal*, setting the standards *of the decision*) **how we choose** (*Maximizing Strategy*, information search and processing support).

7.2.3.1 Theoretical Implications and Contributions

Theoretically, these claims have substantial implications. Maximization has been conceptualised and defined as an unwillingness to reduce standards (Dalal et al., 2015) or wanting the best (e.g. Cheek and Schwartz, 2016). However, these desires may not even manifest, unless some more pressing goal were to elicit it. Trait maximizers may actually reduce their standards in decision situations where no salient goal (or goal of sufficient motivating force) allows maximization. This claim is made viable when reminded of how Ma and Roese (2014) were able to have individuals maximize (i.e. select the best option) by priming a mind-set. It stands that those who were not primed to maximize may have still registered as a high-maximizer (on trait scales). Yet a salient goal has shown to play an important role in directing maximizing behaviours in the data for RQ3. Whilst these results are from an exploratory qualitative study and in contexts of innovation, these claims can begin to impact the literature.

Notwithstanding, we may look outside of the innovation literature to build this case further. Purvis et al. (2011) explicitly concluded that there exists a positive relationship between maximization and *Neuroticism*. *Neuroticism* is considered one of the big-five traits, and therefore considered high-ordered. *Neuroticism* is a tendency to experience negative emotions, such as anger, anxiety, or depression (Goldberg, 1992; Jeronimus Riese

Sanderman, and Ormel, 2014). These outcomes connect highly with the maximization literature (e.g. Schwartz et al., 2002; Purvis et al., 2011). Judge et al. (2013) present a framework that portrays a hierarchy of traits, using the big-five as the basis, with *Neuroticism* at the highest level. Additionally, they elaborate to discuss the facets of those traits. For *Neuroticism*, there are two facets, *Volatility* and *Withdrawal*. These two facets are each composed of sub facets. For example, *Withdrawal* is composed of *Anxiety* and *Depression* amongst others (see *Figure 7.1: Hierarchy of Traits: Neuroticism*).

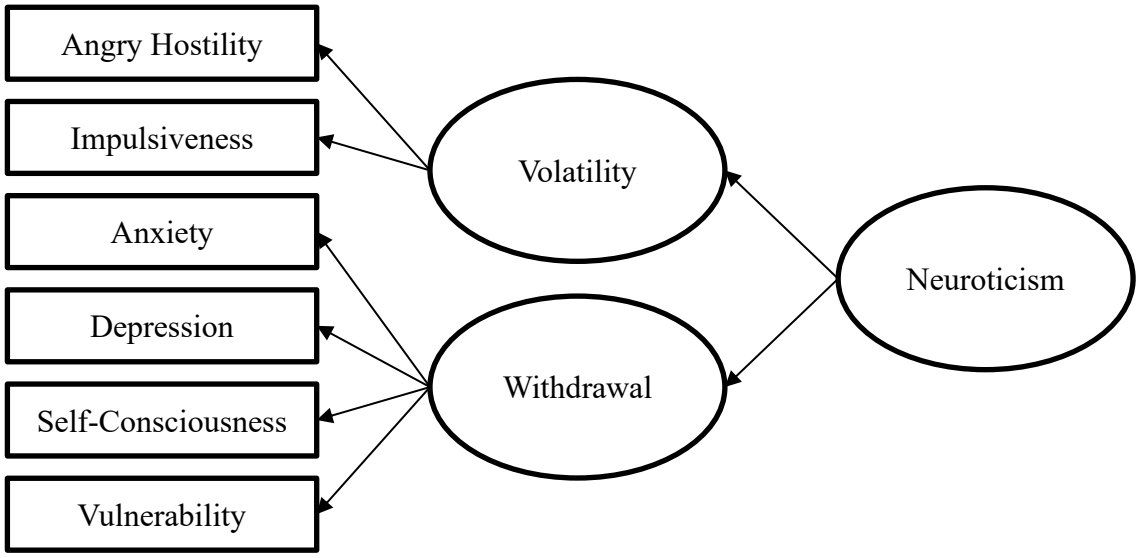

Figure 7.1: Hierarchy of Traits: Neuroticism. Adapted from Judge et al. (2013)

In trying to place maximization in regard to this framework, we know that whilst maximization is correlated with *Neuroticism,* it is also true that Maximization correlates highly with many of the low-ordered traits of Neuroticism (the sub-facets of *Anxiety* and *Depression).* Given the pattern of relationships, it is less plausible that maximization is a high ordered construct, similar to *Neuroticism* (a horizontal relationship), rather it is more plausible that the relationship of maximization and *Neuroticism* is explained by the relationship to its components and sub-components (a vertical relationship). Thus, the results of the present study that maximization is elicited in service of higher-order goals also have some support in the wider literature[16], we must remain cautiously aware, though, that

[16] Importantly, this is will not suffice alone in trying to present a fully functioning and uncontested conceptualization of maximization. These claims not only require further validation, but theoretical consensus too. By simply bringing forth a particular maximization position, the findings and claims of this study may already be contested by some on the grounds that maximization's conceptualization was misinterpreted. Only until a shift in priorities takes place in the literature, namely focusing on conceptual clarity and consensus away from scale development, will this problem cease. Recently, Misuraca et al. (2015) developed another scale that contained maximizing, minimizing, and satisficing components, accompanied by a new conceptualization. More recently, Durinik et al. (2018) published another

correlation does not mean causation. Recall that in their seminal work, Schwartz et al. (2002) argued that individuals differ in their goals, i.e. that some maximize and other satisfice. However, an important theoretical implication flowing from maximization in the service of a higher goal that this thesis claims is: ***it is the decision goals that differ between individuals, and not the higher ordered goals of the individuals***.

The individuals do not differ in their *goals* to obtain the best (and perform an alternative search), but instead differ in their *decision goals* to obtain the best. An example to illustrate this important difference may be an instance where, when the goal is to achieve a "good but not the best result", the maximizer's decision goal is to optimise what that "good but not the best result" is. For example, during contract negotiations, an employer may seek to optimize what the best package to offer is (decision goal), given their goal of offering a competitive package against competitors without over-offering. *Appendix C: Supplement Reading on Decision-Making* discusses touches on this further.

It is worth reiterating that these claims are made possible on the basis of the strength of the analysis approach taken. As will be discussed further on (*7.2.4.2 Methodology*), the use of protocol analysis to understand maximization, under the framework and approach by Simon and Bhaskar (1977), allows this thesis to build on the conceptual and process-like understanding of maximization more so than previous research had been able to, using exclusively theoretical or empirical approaches.

7.2.3.2 Implications for Management Practice

Managerially, this also has implications. Should marketers desire to tease out consumers' maximizing propensities, for whatever reason, then attempting to make salient a goal should assist in this. This effort and discussion of marketers attempting to elicit goals is not novel (e.g. Boyd, Ray and Strong, 1972) and therefore, this option is available for practitioners. Future research may reveal something about maximizers that positions some marketers more advantageously in the eyes of maximizers; therefore, encouraging maximization through goal activation would be practical. However, the existing maximization literature does not offer any meaningful insights to build a case as to *when* marketers may want consumers to maximize. More speculatively, Kim and Kramer (2006) showed how consumers with high *Need for Cognition* were more likely to purchase products

scale, this time a revised shortened version of the Nenkov et al. (2008) scale. This new scale comes two years after Cheek and Schwartz (2016) thoroughly reviewed the literature and strongly recommended using other scales. As a result, the findings and claims of this research stand to make the greatest impact when researchers focus on clarifying the construct. Once done, efforts to test these claims may be laid out so as to further develop a richer understanding of maximization.

that provide list prices and relative surcharges separately. Given the strong relationship, empirically and theoretically, that maximization (Schwartz et al., 2002) has with *Need for Cognition*, marketers constrained by consumer pricing laws may try to encourage maximizing as a means of increasing sales. Using the findings from the maximization literature, however, given the contentions and remaining lack of clarity, it becomes challenging to make these speculations.

However, whilst a salient goal may not guarantee maximization, the potential of it doing so would also suggest that marketers anticipate a consumer's processing strategy. In anticipation of increased maximization, marketers would also need to ensure that information was available on attributes and options for comparative purposes. However, understanding the exact taxonomy of the information would be equally important in ensuring that maximizers process and decide in a focused manner. For example, in the innovation literature Feiereisen et al. (2008; 2013) show how different formats of information (text vs. pictures) and different types of information (utilitarian vs. hedonic) have an impact on the evaluation of innovations. In the maximization literature, little is known about the impact of information formats on maximizing processes. Nevertheless, understanding that there are increasing *Maximizing Strategy* propensities would be valuable for marketers.

Furthermore, some products and services may actually be hindered by an individual's maximizing behaviours, especially if those products more often rely on sensory or habitual purchase behaviours (e.g. Sproles and Kendall, 1986). Recall that maximization occupied a cognitive pathway in the innovation hierarchy framework used; conceptually this leads to the less contentious claim that maximizers are more cognitively engaged (e.g. Cheek and Schwartz, 2016). Should marketers rely on sensory or experiential processing pathways as means of increasing sales, maximizing may be problematic. For example, Zarantonello and Schmitt (2010) found that the relationship between purchase intentions and (brand) attitudes was strongest for consumers who were interested in all sorts of experiences (that is, sensory, affective, intellectual, and behavioural) whilst it was weakest for low-experiential, utilitarian consumers. Their results indicated that experiential appeals may directly activate impulsive behaviours. Further, they concluded that:

"*if a consumer likes a brand because it provides experiential gratification in various ways, he or she may be willing to buy it without further scrutiny"* (p. 539).

Marketers that are involved with, or rely on, sensory or experiential product features may choose to actively minimize the possibility of invoking maximizing. This extends further when reminded of social marketing; assuming maximization is stimulated by goals, then behaviours that are impulsive may be discouraged. For example, when marketers attempt to supplant positive emotional associations (such as popularity) with negative emotional associates (such as poor health), they may be able to impact a target audience (e.g. smokers) that may have previously discounted them.

7.2.4 Other Contributions

7.2.4.1 Innovation Adoption

One contribution this research provides is to the innovation adoption literature. Based on the results of these studies, researchers concerned with improving innovation adoption can now draw on the role of maximization to better understand decision making processes of maximizers in innovation contexts. Innovations often fail once introduced to the marketplace (Yang and Aldrich, 2012) and consumer decision making processes are often involved in this (e.g. Veryzer, 1998). RQ2 revealed that maximization and innovation adoption (operationalised through *Consumer Innovativeness*) were moderately positively correlated. Moore (2014) outlines how innovations fail as a result of their inability to "cross the chasm". This chasm is the gap between the earliest adopters of an innovation (termed *Innovators* and *Earlier Adopters*) and the remainder of the population.

It stands that maximizers would, therefore, be overrepresented in this vital group that is needed to launch innovations into commercial success. As a result, marketers and managers of innovations can now (carefully and with further empirically supported evidence) draw on theory of satisficing (maximization) to further enhance their understanding of a fundamentally important group of individuals. For example, it is becoming apparent that maximizers value relative superiority over objective superiority (Weaver et al., 2015). Marketers of innovations should, presumably, consider positioning and communicating their innovations as possessing socially superior elements over more objective elements of the innovation itself. Recall that in the Weaver et al. (2015) study, maximizers were more satisfied with situations where they are 5/10 when others are 4/10 *in preference to* situations in which they are 6/10 when others are 7/10 (i.e. second scenario, over first scenario, is objectively better as 6>5, but subjectively worse 6<7).

RQ3 further revealed that maximization appeared during the *Persuasion* phase as a means to help support decision makers during their evaluations (once a goal had been made salient). Building on the confirmed relationship between maximizers and innovation adoption (from RQ1), marketers and managers of innovations can now further benefit from the anticipated maximizing behaviours that may accompany the *Innovation Decision Process* and make appropriate arrangements for it. For example, maximizers desire as complete information as possible (on options and alternatives) when making their decisions (e.g. Schwartz et al., 2002; Iyengar et al., 2000; Dar-Nimrod et al., 2009). As a result, marketers of innovations may seek to ensure that their communication channels and marketing outputs provide this information easily and readily available to targeted groups, so as to assist them in their *Innovation Decision Process.* Whilst this will not necessarily guarantee an adoption, it will assist in the decision process and likely remove some of the barriers associated with innovation adoption. For example, Aggarwal, Cha and Wilemon (1998) outlined the barriers to innovation adoption, such as the requirement for consumer learning. Nevertheless, there is a limit on how far this claim may go, as consumer decision making on innovations varies based on the newness of the innovation (e.g. Feiereisen et al., 2008; 2013) and the category of the innovation (e.g. Talke and Snelders, 2013). This is further complicated as within the innovation literature, the intention to purchase does not always translate into actual purchase (c.f. Bartels and Reinders, 2011).

7.2.4.2 Methodology

Another contribution that this research also delivers is of a methodological nature. RQ3 (the protocol analysis) is one of the few attempts at examining maximization employing a qualitative approach (see Karimi, Papamichail and Holland [2015] for another example). This research employed a Protocol Analysis approach to better understand and explore maximization conceptually. In doing so, this effort provides other researchers with a sample of how maximization may be examined using more interpretive methods. Moreover, the mode of analysis, including the selection and developing of a coding schema, also provides researchers with a novel approach in which to more qualitatively assess maximization. This is expanded upon in further research in Chapter 8.

8. Conclusions, Limitations, and Further Research

8.1 Introduction

This chapter discusses the limitations, further research, and conclusions of this thesis. *8.2 Limitations and Further Research* discusses the limitations of the research; broadly, these limitations revolve around the research design of each study, such as sample size. It further discusses the paths for further research, building on questions that now need to be addressed following the results of this thesis as well as more generally, the questions still prevailing in the literature. *8.3 Conclusions* summarises this thesis, its findings, and its contributions.

8.2 Limitations and Further Research

8.2.1 Limitations

The main limitations of this thesis concerned the nature of the samples used, as well as some study design elements, whilst further research calls for additional work on the operational validity (stability) and conceptualisation of maximization.

To begin broadly, before isolating study-specific limitations, a thesis-wide limitation was the restrictive use of only two maximizing scales (Dalal et al., 2015; Turner et al., 2012). These were, given the adopted conceptualisation and their psychometric properties, the best choices available. However, given the literature-wide issues with the operational validity of scales for both temporal stability and discriminant validity, it becomes challenging to extend the claims in this thesis to research findings that were generated using alternative scales. Only until the scales unused in this thesis have proved similarly to be temporally stable and hold strong discriminant validity can a synthesis and extension of claims begin.

Sampling in the studies was also a thesis-wide limitation. RQ1 and RQ2 used what were essentially opt-in purposive samples recruited through mTurk and Qualtrics whilst RQ3 relied on a locally sourced, though purposive, sample in Manchester, United Kingdom. For the quantitative studies, sample size was the main issue. As sample size increases, sampling error reduces (Bryman, 2012). However, as sample sizes increase, so too do the powers that determine the statistical significance of relationship between variables examined (Hair, 2014). This may lead some to conclude *substantive* relationships on the basis of *statistically significant* relationships. Assuming that this is accounted for, however, increased samples sizes would serve to improve the generalizability of the findings. Larger sample sizes (e.g.

>200) would have also likely allowed for the consideration of other analytical techniques with which to explore the data further (Hair, 2014).

Furthermore, one may argue that the sourcing of the samples also somewhat holds back the research as different sampling bases and countries were used. RQ1 (Qualtrics) and 3 (Local population) used participants based in the United Kingdom, whilst RQ2 (mTurk) relied on a sample recruited from the United States. Therefore, using participants from different countries and cultures could cause issues as these populations are arguably culturally different. Indeed, Oishi, Tsutsui, Eggleston, and Galinha (2014) reported population differences in Japanese and American populations when examining maximization and so this limitation is further worth considering. However, other studies in maximization (e.g. Schwartz et al., 2002) have used samples from varied locations without major concern. Further, it is reasonable to argue that British and American samples would not vary to the extent that, say, Japanese and American samples would. Nevertheless, this is an acknowledged drawback of the data collected.

RQ1, specifically, was limited in its duration to two weeks. A stronger case for maximization's temporal stability, an integral element of its trait status, could have been made had this period been longer. If additional time points were incorporated, then this case could have also been made more robustly. For example, the study could have been set up to measure participants over a 6-month period, with 6-time intervals. Doing so would make for a stronger claim to maximization's temporal stability, although other issues, such as familiarity with the scales, would then materialise. *8.2.2.1 Validating Maximization* discusses this further as an avenue for further research.

One may argue that a limitation of RQ2 was the inability of the design to allow extrapolation towards a hierarchal positioning of maximization. As will be discussed below, the notion of maximization's hierarchal position still needs further support and clarification. Nonetheless, although RQ2 employed a framework of a trait hierarchy, it is difficult to envisage how, without making considerable assumptions based on extant research (that also uses different scales for maximization), more may have been done to leverage the theory and measures available so as to design a study that not only addressed the question of the relationship between maximization and innovation adoption, but also the motivating power of maximization. The results of the Protocol Analysis (RQ3) ran contrary to some of that literature support this view.

The findings and discussion from RQ3 are bounded by the nature of the study design. In employing a Protocol Analysis (PA), it was possible to observe the process of maximization. However, the emerging themes from the study, namely that maximization's positional (or motivating) power was lower, strongly urges follow-up with a more probing method. Protocol Analysis was unable to assist in developing these insights, however, other methods are available. Laddering (Gutman, 1982; Reynolds and Gutman, 1988) or its extension in ZMET (this is discussed further in *8.2.2.2 Conceptualising Maximization*), for example, could likely provide additional insights as to the motivational structure and goal hierarchies involved when discussing maximization. Whilst this was not the priority of the study, it still stands to be a drawback of the study's purpose, namely to understand where and how maximization may have operated. Additionally, a separate vein of further research (expanded upon in *8.2.2.2 Conceptualising Maximization*) suggests experimental studies that could examine maximization goal and behaviour manifestations while controlling a) whether a goal present or not and b) the different types of innovation considered.

Further research is, evidently, still required to address a broader need to examine maximization. However, the conclusions from this thesis lead to two particular avenues of research that would most appropriately advance the field. In sum, these avenues are 1) extending the claims of maximization's trait status and 2) a matched zeal for producing maximization theory papers as there is with scale development papers

8.2.2 Further Research

8.2.2.1 Validating Maximization

Further research should seek to strengthen the operational validity of maximizing scales. This suggestion extends to both existing and new scales. Specifically, it would be of benefit to address the temporal stability of scales. Temporal stability is an important feature in empirically supporting and arguing the trait definition of a construct (e.g. Paunonen, 1998). A tangent line of research should also begin to investigate maximization's concurrent (or criterion) validity; that is, the extent to which certain scales predict theorised maximizing behaviours. Concurrent validity is an important factor in developing measurement scales (Creswell, 2009). In doing so, this could also serve to develop the conceptualisation of maximization as once trait measures (of sufficient validity) converge with behaviours, a clearer conceptualisation can begin to emerge. As mentioned above, experimental studies could provide much clarity here.

Finally, whilst these two areas of operational validity are of the most interest, if possible, research may look to also incorporate discriminant validity questions. As RQ1 demonstrated, *Maximizing Goal* and *Perfectionism* raised some discrimination questions, thereby questioning the maximization's construct uniqueness (at least of the *Maximizing Goal* scale used in this study and only to a certain extent). In addition to expanding the nomological net, by examining the relationship of maximization with other constructs, theory on maximization may also stand to benefit, and in turn support the development of a stronger maximization conceptualisation (see *8.2.2.2 Conceptualising Maximization* further discussion on this).

8.2.2.2 Conceptualising Maximization

More must be done to develop the conceptualisation of maximization. The integration and consideration of other important literature bodies will almost certainly support the effort to understand maximization more clearly. Beginning broadly, whilst this thesis contends and agrees with the wider body of maximizing literature, that maximizing is a trait, other contending contributions in the field cannot be ignored, e.g. contributions such as Ma and Roese (2014) which strongly demonstrated a state-styled maximizing.

These findings beg further research into a deeper understanding maximization; and this is completely possible and obtainable. Using the approach laid out by Chaplin, John, and Goldberg (1988), for example, may help in conceptualising maximization in light of these questions. In their approach, within which they build on the seminal work from Allport and Odbert (1936), they clearly outline the differences between traits, states, and activities. Traits, such as *Trustful* and *Cunning* differ from states such as *Angry* and *Aroused*, differ from activities such as *Ranting* and *Revelling*. It may be plausible that the *Maximizing Goal* is a trait whilst the *Maximizing Strategy* is a state. Such a hypothesis may help to explain other conclusions in the maximization literature, such as Misuraca et al.'s (2015) claim that maximizing and satisficing were related but distinct constructs. However, strong theoretical discussions and empirical validations would be needed to settle this.

Narrowing down to the trait discussion exclusively, it would be worth also exploring the trait discussion more comprehensively. Progressing with the notion of maximizing and *Maximizing Goal* specifically as a trait, it then becomes of interest to understand the construction of that trait in more detail. Once more, existing literature is available to develop maximization's conceptualisation further. Referring back to Allport and Odbert's (1936)

classic work, this avenue of research can continue in assessing maximization's trait centrality to the individual. Individuals possess traits with varying degrees of significance and generality. Traits may be cardinal:

"*a disposition that is so pervasive and outstanding in a person's life that virtually every act is traceable to its influence*"; traits may be central, which "*express dispositions that cover a more limited range of situations than is true for cardinal traits*"; traits may be secondary dispositions that are "*traits that are the least conspicuous, generalized, and consistent.*" (Cervone and Pervin, 2013, p. 238).

This type of discussion touches on the previous concerns as to what is meant by maximization more abstractedly; it also addresses the questions raised by Weaver et al. (2015) when they challenged the notion of the maximizing self. Indeed, whilst the results from RQ3 provide some insights to this question, much more must be done to conceptually understand the maximizing trait. A possible title or question for this research might be phrased as "Understanding the trait construction of satisficing".

Finally, such efforts would also likely benefit from the use of qualitative techniques. Whilst not a direct call to qualitatively examine maximization, advances in qualitative techniques offer researchers a variety of tools with which to tackle these questions. This thesis utilised a Protocol Analysis, with the intention of examining cognitive processes. However, more interpretative techniques are available; in *3.4 Qualitative Approaches*, a technique referred to as laddering was discussed that utilised allowed researchers to examine motivations and cognitive structures. Attributes (What is different about these alternatives?), Consequences (What does this difference mean?), and Values (How important is this for you?) would provide a platform to examine what maximizers look for, why they look for it, and how that builds to their goals and values. Most importantly, it could highlight the differences between high rating maximizers in this regard, further enriching the conceptualisation of what maximization is. An extension of laddering (Coulter, Zaltman, and Coulter, 2001), the Zaltman Metaphor Elicitation Technique (ZMET)[17] could be useful in uncovering less conscious thoughts and processes to feed into the laddering process.

The notion of the lower hierarchal position of maximization still needs further support and clarification. Moreover, the nature of the goal involved with maximizing and satisficing

[17] See also application specifically to innovation adoption in Lee, McGoldrick, Keeling, and Doherty (2003).

remains unclear. Even within a group of maximizers, it may be that some are seeking to maximize their decision outcomes based on certain drivers, whereas others may have separate reasons. Take, for example, the work on motivation by Kowal and Fortier (1999). They found that athletes motivated by self-determined (intrinsic) reasons experienced flow more easily than those extrinsically motivated. 203 masters-level swimmers were described as either being motivated in a self-determined way, by engaging in swimming for their own pleasure, satisfaction, or benefit; versus those motivated for more external reasons. They also found that the situational determinants of perceived competence, autonomy, and relatedness were positively related to flow experiences. *Appendix G: Initial Efforts at Further Questions: Maximization's Manifestation* lays out an initial methodological approach that may tackle this. Again, in seeking further clarification, experimental studies could be most useful as these involve control or manipulation under controlled conditions (Saunders et al., 2009) of variables that can separate out various effects, for example, whether a goal is present (primed) or not.

8.3 Conclusions

Over the last two decades, the theory of satisficing, a vital work in contemporary choice theory, has been transformed into a measurement scale of maximization with much enthusiasm. However, it has become apparent that maximization as it is currently operationalised and conceptualised is lacking in key ways. In particular, operational issues surrounding the distinctness and stability of maximization questioned its trait status, as well as adding to the conceptual confusion surrounding it. The main objectives of this thesis involved examining maximization so as to enhance and develop its conceptualisation. This was approached through operationally validating the assumptions of its uniqueness and stability as a trait (RQ1) as well as expanding maximization's nomological net both contextually (Innovation; RQ2) as well as more broadly (RQ1). In an effort to further understand maximization in process terms, a Protocol Analysis (RQ3) was conducted. Collectively, this thesis revealed maximization to be stable and distinct, as well as registering several relationships with other constructs (such as *Brand Consciousness, Need to Evaluate,* and *Exploratory Information Seeking*). This thesis also moves towards the viewpoint of maximization as a low-ordered decision construct, and not a high-ordered motivating decision force as is currently argued by some researchers. This may be summarised as:

Once we have *chosen to choose*, we may then *choose how we choose*.

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Appendix

Appendix A: Conceptualising and Measuring Innovation Adoption

The following is supplement literature on innovation adoption. Further, in addition to providing some background on consumer innovativeness (as a representation for innovation adoption), a summary of scales is also presented.

The idea of innovation adoption has often and successfully been operationalised using a branch of innovation research labelled *Consumer Innovativeness. Consumer Innovativeness* represents an individual difference that reflects an individual's tendency towards innovations and adopting them (c.f. Bartels and Reinders, 2011). This broad definition is often categorized and conceptualised into a hierarchy of Consumer *Innovativeness*, with *Innate Innovativeness* at the top and *Behavioural Innovativeness* at the bottom. *Figure A1: Visually Presenting the Different Innovativeness Approaches* reflects this.

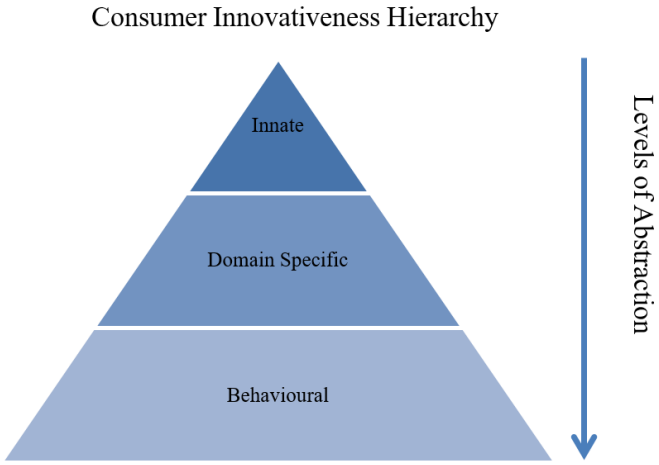


Figure A1: Visually Presenting the Different Innovativeness Approaches

Below is a table (*Table A1: Summary of Key Empirical Articles on Innovation Adoption including Scale Development*) summarising some the key consumer innovativeness empirical studies and scale development papers over the past 40 years. Venkatraman and Price (1990) operationalise *Innate Innovativeness* using their *Cognitive Innovativeness* and *Sensory Innovativeness* Scales. Baumgartner and Steenkamp (1996) operationalise *Behavioural Innovativeness* using their *Exploratory Information Seeking* and *Exploratory Acquisition of New Products* scale. Both scales are recommended for their respective construct measures (e.g. Bearden et al., 2011; Bartels and Reinders, 2011)

Year	Journal	Authors	Defining Consumer Innovativeness (Abstract Level)	Scale Development	Scales Used	No. of Items (if scale developed)
1980	Journal of Consumer Research	Raju	Innate and Behavioural	Yes	Exploratory Tendencies in Consumer Behaviour (ETCBS)	39
1990	Journal of Business Research	Venkatraman and Price	Innate	Yes	Cognitive Innovativeness (CI) and Sensory Innovativeness (SI)	8 (CI) and 8 (SI)
1991	Journal of the Academy of Marketing Science	Goldsmith and Hofacker	Domain-Specific	Yes	Domain-Specific Innovativeness	6
1992	Journal of Consumer Research	Steenkamp and Baumgartner	Innate and Behavioural	No	N/A - Instead used choice between American and European gum rewards in experiment	N/A
1995	Journal of Consumer	Manning, Bearden, and Madden	Innate and Behavioural	Yes	Consumer Independent Judgement Making (CIJM)	6 (CIJM) and 8 (CNS)

	Psychology				and Consumer Novelty Seeking (CNS)	
1996	International Journal of Research in Marketing	Baumgartner and Steenkamp	Innate and Behavioural	Yes	Exploratory Acquisition of New Products (EAP) & Exploratory Information Seeking (EIS)	10 (EAP) and 10 (EIS)
1999	Journal of Marketing	Steenkamp, ter Hofstede, and Wedel	Innate	No	Exploratory Acquisition of New Products (EAP)	N/A
2003	Journal of Consumer Marketing	Hirunyawipada and Paswan	Innate, Domain-Specific, and Behavioural	Yes	Acquisition of Novel Information Associated With New Products (AQNIP) and Cross Sectional	10
2003	Journal of the Academy of Marketing Science	Im, Bayus, and Mason	Innate and Behavioural	No	Kirton Adaption-Innovation Inventory (KAI) and Cross Sectional	N/A

2004	Journal of Business Research	Roehrich	Innate and Domain	No	N/A	N/A
2007	Journal of the Academy of Marketing Science	Im, Mason and Houston	Innate and Behavioural	No	Kirton Adaption-Innovation Inventory (KAI) and Cross Sectional	N/A
2010	International Journal of Research in Marketing	Vandecasteele and Geuens	Innate	Yes	Motivated Consumer Innovativeness (MCI)	Hedonic (5) and Social (5) and Cognitive (5) and Functional (5)

Table A1: Summary of Key Empirical Articles on Innovation Adoption Including Scale Development.

Appendix B: Measurement Scales Used in This Thesis

Maximization Scale[18] (Schwartz et al., 2002)

1. When I watch TV, I channel surf, often scanning through the available options even while attempting to watch one program.

2. When I am in the car listening to the radio, I often check other stations to see if something better is playing, even if I'm relatively satisfied with what I'm listening to.

3. I treat relationships like clothing: I expect to try a lot on before I get to the perfect fit.

4. No matter how satisfied I am with my job, it's only right for me to be on the looked out for better opportunities.

5. I often fantasize about living in ways that are quite different from my actual life.

6. I'm a big fan of lists that attempt to rank things (the best movies, the best singers, the best athletes, the best novels, etc.).

7. I often find it difficult to shop for a gift for a friend.

8. When shopping, I have a hard time finding clothing that I really love.

9. Renting videos is really difficult. I'm always struggling to pick the best one.

10. I find that writing is very difficult, even if it's just writing a letter to a friend, because it's so hard to word things just right. I often do several drafts of even simple things.

11. No matter what I do, I have the highest standards for myself.

12. I never settle for second best.

13. Whenever I'm faced with a choice, I try to imagine what all the other possibilities are, even ones that aren't present at the moment.

Maximizing Strategy: Alternative Search Sub Scale (Turner et al., 2012)

1. I can't come to a decision unless I have carefully considered all of my options.

2. I take time to read the whole menu when dining out.

3. I will usually continue shopping for an item until it reaches all of my criteria.

4. I usually continue to search for an item until it reaches my expectations.

5. When shopping, I plan on spending a lot of time looking for something.

[18] It should be noted that the Schwartz et al. (2002) scale was not used in any of the studies of this thesis, but was included for reference given its common reference in this thesis

6. When shopping, if I can’t find exactly what I’m looking for, I will continue to search for it.

7. I find myself going to many different stores before finding the thing I want.

8. When shopping for something, I don’t mind spending several hours looking for it.

9. I take the time to consider all alternatives before making a decision.

10. When I see something I want, I always try to find the best deal before purchasing it.

11. If a store doesn’t have exactly what I’m shopping for, then I will go somewhere else.

12. I just won’t make a decision until I am comfortable with the process.

Maximizing Goal: Maximizing Tendency Scale (Dalal et al., 2015)

1. I don’t like having to settle for good enough.

2. I am a maximizer.

3. No matter what I do, I have the highest standards for myself.

4. I will wait for the best option, no matter how long it takes.

5. I never settle for second best.

6. I never settle.

7. No matter what it takes, I always try to choose the best thing.

Cognitive Innovativeness (Venkatraman & Price, 1990)

1. Finding out the meaning of words I don't know.

2. Trying to figure out the meaning of unusual statements.

3. Thinking about different ways to explain the same thing.

4. Figuring out the shortest distance from one city to another.

5. Analyzing my own feelings and reactions.

6. Discussing unusual ideas.

7. Thinking about why the world is in the shape it is in.

8. Figuring out how many bricks it would take to build a fireplace.

Sensory Innovativeness (Venkatraman and Price, 1990)

1. Being on a raft in the middle of the Colorado River.
2. Having a vivid dream with strange colors and sounds.
3. Riding the rapids in a swift moving stream.
4. Having a strange new feeling as I awake in the morning.
5. Steering a sled down a steep hill covered with trees.
6. Dreaming that I was lying on the beach with the waves running all over me.
7. Walking across a swinging bridge over a deep canyon.
8. Having vivid and unusual daydreams as I was riding along.

Exploratory Information Seeking (Baumgartner and Steenkamp, 1996)

1. Reading mail advertising to find out what's new is a waste of time.
2. I like to go window shopping and find out about the latest styles.
3. I get very bored listening to others about their purchases.
4. I generally read even my junk mail just to know what it is about.
5. I don't like to shop around just out of curiosity.
6. I like to browse through mail reader catalogs even when I don't plan to buy anything.
7. I usually throw away mail advertisements without reading them.
8. I like to shop around and look at displays.
9. I don't like to talk to my friends about my purchases.
10. I often read advertisements just out of curiosity.

Note: Items 1,3,5,7, and 9 require reverse scoring. Items were adapted to include "email" instead of mail where appropriate. For example, "1. Reading ***email*** *advertisements to find out what's new is a waste of time"*

Exploratory Acquisition of New Products (Baumgartner and Steenkamp, 1996)

1. Even though certain food products are available in a number of different flavors, I tend to buy the same flavors.
2. I would rather stick with a brand I usually buy than try something I am not very sure of.
3. I think of myself as a brand-loyal consumer.
4. When I see a new brand on the shelf, I'm not afraid of giving it a try.

5. When I go to a restaurant, I feel it is safer to order dishes I am familiar with.
6. If I like a brand, I rarely switch from it just to try something different.
7. I am very cautious in trying new or different products.
8. I enjoy taking chances in buying unfamiliar brands just to get some variety in my purchases.
9. I rarely buy brands about which I am uncertain how well they perform.
10. I usually eat the same kind of foods on a regular basis.

Note: Items 1,2,3,5,6,7, and 9 require reverse scoring.

Consumer Decision Styles (Sproles and Kendal, 1986)

Perfectionism

1. Getting very good quality is very important to me.
2. When it comes to purchasing products, I try to get the very best or perfect choice
3. In general, I usually try to buy the best overall quality
4. I make special effort to choose the very best quality products
5. I really don't give my purchases much thought or care
6. My standards and expectations for the products I buy are very high.
7. I shop quickly, buying the first product or brand I find that seems good enough
8. A product doesn't have to be perfect, or the best, to satisfy me

Note: Items 5 and 7 require reverse scoring.

Brand Conscious

1. The well-known national brands are best for me.
2. The more expensive brands are usually my choices.
3. The higher the price of a product, the better its quality.
4. Nice department and speciality stores offer me the best products.
5. I prefer buying the best-selling brands.
6. The most advertised brands are usually very good choices.
7. A product doesn't have to be perfect, or the best, to satisfy me.

Hedonic

1. Shopping is not a pleasant activity to me.
2. Going shopping is one of the enjoyable activities of my life.
3. Shopping the stores wastes my time.
4. I enjoy shopping just for the fun of it.
5. I make my shopping trips fast.

Note: Items 1, 3, and 5 require reverse scoring.

Value-For-Money

1. I buy as much as possible at sale prices.
2. The lower price products are usually my choice.
3. I look carefully to find the best value for the money.

Impulsive

1. I should plan my shopping more carefully than I do.
2. I am impulsive when purchasing.
3. Often I make careless purchases I later wish I had not.
4. I take the time to shop carefully for the best buys.
5. I carefully watch how much I spend

Note: Items 4 and 5 require reverse scoring.

Confused by Over-Choice

1. There are so many brands to choose from that often I feel confused.
2. Sometimes it's hard to choose which stores to shop.
3. The more I learn about products, the harder it seems to choose the best.
4. All the information I get on different products confuses me.

Habitual

1. I have favourite brands I buy over and over.
2. Once I find a product or brand I like, I stick with it.
3. I go to the same stores each time I shop.
4. I change brands I buy regularly.*

Note: Item 4 requires reverse scoring.

Market Mavenism (Feick and Price 1987)

1. I like introducing new brands and products to my friends.

2. I like helping people by providing them with information about many kinds of products.

3. People ask me for information about products, places to shop, or sales.

4. If someone asked where to get the best buy on several types of products, I could tell him or her where to shop.

5. My friends think of me as a good source of information when it comes to new products or sales.

6. Think about a person who has information about a variety of products and likes to share this information with others. This person knows about new products, sales, stores, and so on, but does not necessarily feel he or she is an expert on one particular product. How well would you say this description fits you?

Need to Evaluate (Jarvis and Petty, 1996)

1. I form opinions about everything.

2. I prefer to avoid taking extreme opinions.

3. It is very important to me to hold strong opinions.

4. I want to know exactly what is good and bad about everything.

5. I often prefer to remain neutral about complex issues.

6. If something does not affect me, I do not usually determine if it is good or bad.

7. I enjoy strongly liking and disliking new things.

8. There are many things for which I do not have a preference.

9. It bothers me to remain neutral.

10. I like to have strong opinions even when I am not personally involved.
11. I have many more opinions than the average person.
12. I would rather have a strong opinion than no opinion at all.
13. I pay a lot of attention to whether things are good or bad.
14. I only form strong opinions when I have to.
15. I like to decide that new things are really good or really bad.
16. I am pretty much indifferent to many important issues.

Note: Items 2, 5, 8, 14, and 16 require reverse scoring.

Appendix C: Supplement Reading on Decision Making

The following is supplement literature on the wider body of decision making. This was written, partly, as an effort to better understand and conceptualise maximization as part of the wider literature on decision making.

One of the most seminal and widely adopted approaches to decision making is that of Bettman et al. (1998; 2008). Their "Constructed Consumer Choice Processes" framework can best be summarised as follows: A goal, or a desired end state, becomes salient and of sufficient motivating strength such that a decision on how to attain it must be made. For example, one may have sufficient motivation to attain a desirable end state of being thinner and therefore takes the decision to eat healthier and exercise. In between the goal driving some course of action, a strategy must be employed to identify, evaluate, and choose from alternatives. The goal to be thinner may also be achieved through surgery, for example, and so the course of action to be taken must be selected through some evaluation of options. It may be that healthy eating is a superior choice because the alternatives are too expensive or require too much effort.

Vitally, overseeing this process in which choices are made exist meta-goals. Meta-goals are goals that operate in the plane above goals; they are the *goals of goals* in the sense that whatever goals we have are themselves in pursuit of some higher-ordered goal. Bettman et al. (1998; 2008) outline four meta goals in particular: 1) Maximum Accuracy, 2) Minimum Cognitive Effort, 3) Minimum Negative Emotion, and 4) Maximum Justification. Further, they state:

"*we believe that these four metagoals can explain a wide range of findings in consumer decisions making and capture many of the most important motivational aspects of consumer choice" (p. 590).*

In our example, the goal to be thinner may be formed and driven by our meta-goals of maximum justification ("I can no longer justify being this size to my friends and family") or minimum negative emotion ("My physical appearance causes me negative feelings"); our strategy in how to select and course of action may be swayed by our current processing capabilities and so we may want to select our choice using as effortless a process as possible – minimizing cognitive effort. They (Bettman et al., 2008) consequently endorse Simon's (1955) notion of bounded rationality and like many other approaches, have their roots and

origins in his seminal works. An example of this present in *Figure C1: Meta-Goal Framework and Example*

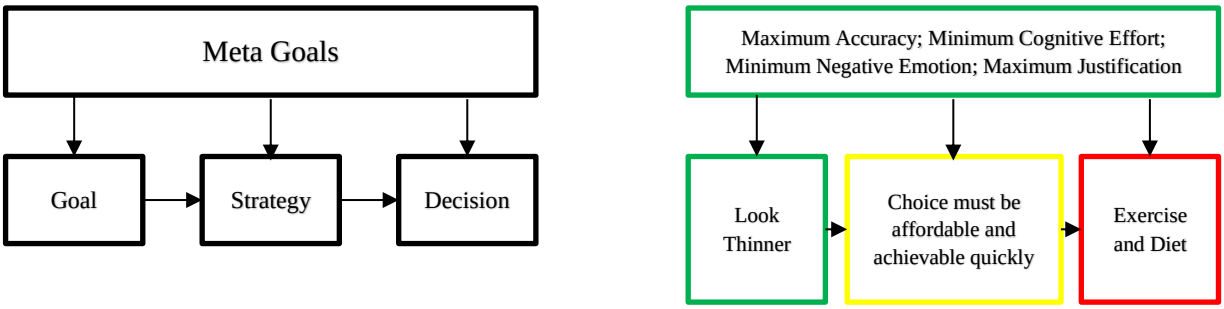


Figure C1: Meta-Goal Framework and Example. Adapted from Bettman et al. (1998)

Interestingly, Schwartz's (Schwartz et al., 2002; Schwartz, 2000) work on maximization does seem to reflect the meta-goals from the Bettman et al. (1998; 2008) framework. The 4-factor structure developed in the scale development in Schwartz et al. (2002) mirrors the 4 meta goals discussed by Bettman, Luce, and Payne. The notion of maximum accuracy and minimum cognitive effort takes the dominant role in the maximization scale developed by them. Furthermore, Schwartz's rich commentary on regret (as an antecedent measure to happiness and another factor in the scale) addresses the minimum negative emotion meta-goal whilst their discussions on social comparisons and socially sought information address the maximum justification goal to an extent. For example, one of the four factors is deemed the regret scale and contains items like "If I make a choice and it turns out well, I still feel like something of a failure if I find out that another choice would have turned out better"; it is plausible that this is reflective of the meta-goal to minimize negative emotion. One of the other four factors contains items such as "Renting videos is really difficult. I'm always struggling to pick the best one" and is plausibly similar to the maximizing accuracy meta-goal. However, where CCCP details how these meta-goals operate independently and interact with one another, Schwartz et al. (2002) attempt to group them into a single *Maximizing Goal*, an approach difficult to agree with given the complexities of the CCCP research. This is of course under the assumption that maximization is a meta-goal and not a lower-ordered goal; alternatively maximizing may actually be a lower-ordered goal that meta-goals are responsible for establishing. It may be that wanting the best is a result of high maximizing accuracy, for example. This approach

may also help better explain why maximizing is conceptualised as part goal and part strategy, too.

Moving tangently, across disciplines such as economics and psychology, value may indicate functional utility or instead more abstract notions of desired states, respectively. Rokeach (1973, p. 5) provided one of the most frequently cited definitions of value as an

"*enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence*".

This is more in line with the psychologist's paradigm of value as oppose to the economists' more quantitative and mathematically derivable notion of value. Certainly Milton Rokeach (1973) would support this approach to decision-making when he argued that social values were the single most important construct in all of social science. The construct of "social values" is an umbrella under which most important goals that people have in life are collated. These ultimate goals are what fuel all decisions in life, including within consumption settings (Kahle and Xie, 2008). Pitts, Canty, and Tsalikis (1985) help in demonstrating, empirically, the effectiveness of values as a choice predictor. They showed how purchase intentions increased when advertisements were value-consistent versus value-inconsistent. Further, Baumgartner and Pieters (2008, p.368) also provide a comprehensive synthesis of research on values (as goals) and choice. In this approach, goals are

"*internal representations of desirable states that people try to attain and undesirable states that they try to avoid.*"

Goals are also different from other motivated constructs such as needs because they tend to be domain-specific and concrete. Goals become relevant when consumers (or individuals in general) need to sacrifice something to get what they want, such as sacrificing money for products. Goals are also hierarchally levelled from low to higher ordered goals and are accessible to the conscious awareness, although they need not be salient during behaviour that is in pursuit of a goal.

This approach also aligns strongly with another powerful theory in consumer research - that of means-end chains (Gutman, 1982; Reynolds and Gutman, 1988) which consistently confirms that value fulfilment is regularly a core reason for the choices made by people. Further, within this framework (Baumgartner and Pieters, 2008), there exists detailed features

of goals that include their 1) content, 2) desirability, 3) importance, 4) feasibility, and 5) abstractedness. They also outline the organization of goals in network terms (i.e. semantic and associative networks) as well as in hierarchical terms as well. Research on values, consequently, is more indicative of the higher-ordered and more abstract goals at play when we are driven to behave. With this in mind, research on values (e.g. Kamakura and Novak, 1992) has sought to understand and explain behaviour from a more abstract position. Although there are other expressions (e.g. Huffman, Ratneshwar, and Mick, 2000), Baumgartner and Pieters (2008) propose 3 levels within a goal hierarchy – the "why" motivational level; the "what" identification level; and the "how" operational level. Put otherwise, the "why" goals are superordinate to the "what" goals which are the focal goals people are concerned with. The subordinate "how" goals are pursued as far as they help achieve the focal goals.

If we return to the previous example of wanting to become thinner, this framework would consider this goal as being the focal goal. The decisions to engage in exercise and diet are subordinate goals that act as the "how" to achieve the focal goal of becoming thinner. However, there are more powerful reasons and motivations for wanting to become thinner. Perhaps the goal to become thinner addresses a more abstract (higher-ordered) goal to look more attractive which in turn actually addresses and seeks to satisfy even more abstract notions of the self, namely feeling confident or establishing self-esteem. Alternatively, becoming thinner will likely result in a longer and healthier life, another value-oriented goal. *Figure C2: Goals as Values Framework (Means-End Chain) and Example* displays how such a framework may lay out.

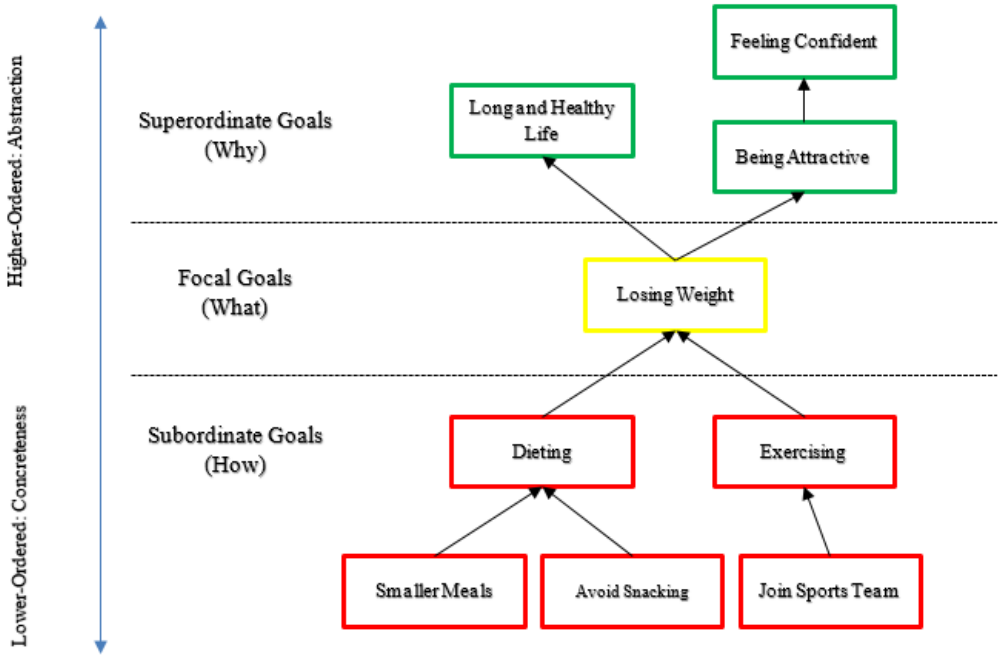


Figure C2: Goals as Values Framework (Means-End Chain) and Example. Adapted from Pieters, Baumgartner, and Allen (1995)

If high-standards are simply low-levelled criterion for subordinate goals, then perhaps maximization is low-levelled and not a powerful choice driver. For example, high standards may be a means of achieving a focal goal, such as attaining a high GPA. Alternatively, if taking the approach that maximizing is actually more abstract, say of "wanting the best", then instead it may actually be more reflective of a value. The motivations to lose weight, to become attractive, to feel more confident is actually in pursuit of an even higher-ordered goal of "wanting the best". We know that maximization encompasses a social comparison element (Schwartz et al., 2002); and recently Weaver et al. (2015) already signalled the potentially abstract nature of this when they showed how maximizers sought positional standing, a much more abstract notion, over objective standing.

Indeed, there are many ways in which the lack of conceptual clarity (of maximization) may lead one down a paths of very different interpretations as to what maximization truly is when considering extant literature.

Appendix D: RQ1 Repeated Measures ANOVA results

Source			Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta2
Time	MG1	Greenhouse-Geisser	1.161	1	1.161	1.351	.247	.007
Error	MG1	Greenhouse-Geisser	162.339	189	.859			
Time	MG2	Greenhouse-Geisser	.011	1	.011	.014	.907	.000
Error	MG2	Greenhouse-Geisser	143.989	189	.762			
Time	MG3	Greenhouse-Geisser	.042	1	.042	.054	.817	.000
Error	MG3	Greenhouse-Geisser	147.958	189	.783			
Time	MG4	Greenhouse-Geisser	3.800	1	3.800	3.986	.047	.021
Error	MG4	Greenhouse-Geisser	180.200	189	.953			
Time	MG5	Greenhouse-Geisser	2.695	1	2.695	2.973	.086	.015
Error	MG5	Greenhouse-Geisser	171.305	189	.906			
Time	MG6	Greenhouse-Geisser	4.211	1	4.211	4.260	.040	.022
Error	MG6	Greenhouse-Geisser	186.789	189	.988			
Time	MG7	Greenhouse-Geisser	.674	1	.674	.895	.345	.005
Error	MG7	Greenhouse-Geisser	142.326	189	.753			
Time	MGAVG	Greenhouse-Geisser	.074	1	.074	.242	.623	.001
Error	MGAVG	Greenhouse-Geisser	57.304	189	.303			

Table D1: RQ1 Repeated Measures ANOVA Table (Maximizing Goal)

Source	Variable		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	MS1	Greenhouse-Geisser	.379	1	.379	.285	.594	.002
Error	MS1	Greenhouse-Geisser	251.621	189	1.331			
Time	MS2	Greenhouse-Geisser	1.779	1	1.779	1.307	.254	.007
Error	MS2	Greenhouse-Geisser	257.221	189	1.361			
Time	MS3	Greenhouse-Geisser	1.779	1	1.779	1.349	.247	.007
Error	MS3	Greenhouse-Geisser	249.221	189	1.319			
Time	MS4	Greenhouse-Geisser	1.645	1	1.645	1.335	.249	.007
Error	MS4	Greenhouse-Geisser	232.855	189	1.232			
Time	MS5	Greenhouse-Geisser	.445	1	.445	.295	.588	.002
Error	MS5	Greenhouse-Geisser	285.055	189	1.508			
Time	MS6	Greenhouse-Geisser	.592	1	.592	.448	.504	.002
Error	MS6	Greenhouse-Geisser	249.908	189	1.322			
Time	MS7	Greenhouse-Geisser	1.779	1	1.779	1.070	.302	.006
Error	MS7	Greenhouse-Geisser	314.221	189	1.663			
Time	MS8	Greenhouse-Geisser	.318	1	.318	.196	.659	.001
Error	MS8	Greenhouse-Geisser	307.182	189	1.625			

Continued

Source	Variable		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	MS9	Greenhouse-Geisser	1.779	1	1.779	1.297	.256	.007
Error	MS9	Greenhouse-Geisser	259.221	189	1.372			
Time	MS10	Greenhouse-Geisser	.095	1	.095	.077	.782	.000
Error	MS10	Greenhouse-Geisser	233.905	189	1.238			
Time	MS11	Greenhouse-Geisser	6.063	1	6.063	3.808	.052	.020
Error	MS11	Greenhouse-Geisser	300.937	189	1.592			
Time	MS12	Greenhouse-Geisser	.168	1	.168	.112	.738	.001
Error	MS12	Greenhouse-Geisser	283.832	189	1.502			
Time	MSAVG	Greenhouse-Geisser	.492	1	.492	.776	.379	.004
Error	MSAVG	Greenhouse-Geisser	119.682	189	.633			

Table D2: RQ1 Repeated Measures ANOVA Table (Maximizing Straegy)

Appendix E: RQ1 Measurement Models

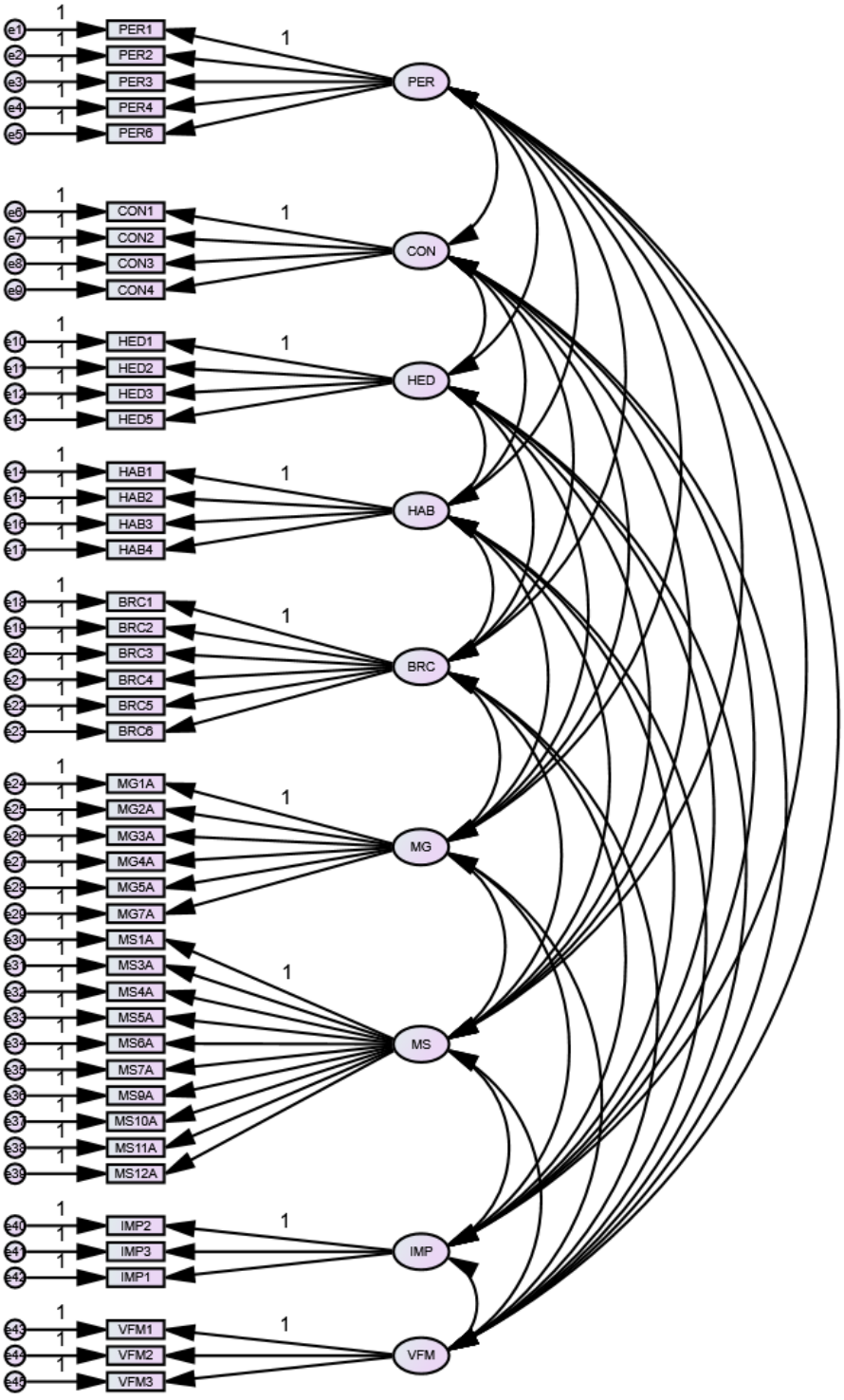


Figure E1: RQ1 Amos generated CFA measurement model for T=0 survey.

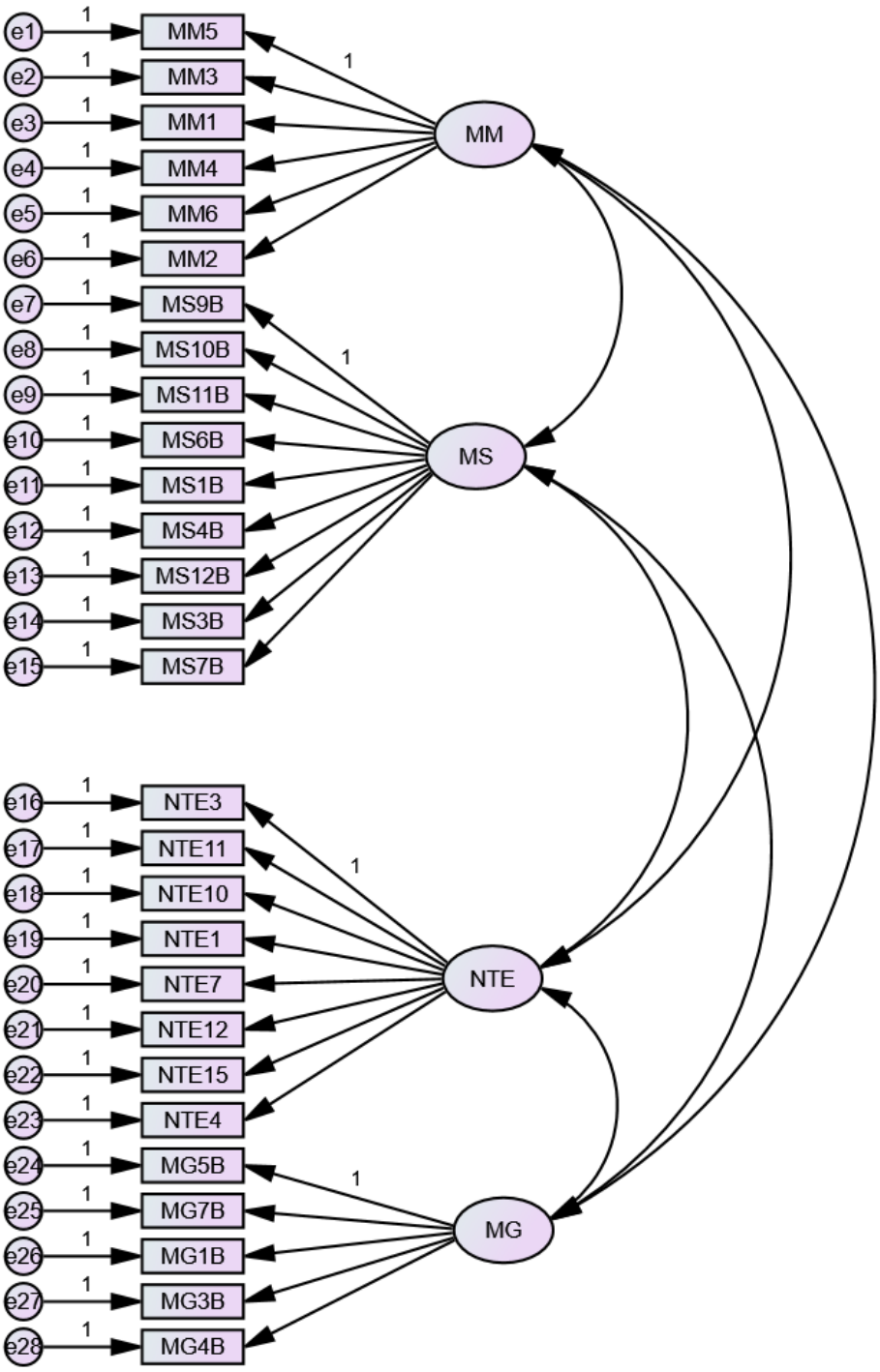


Figure E2: RQ1 Amos generated CFA measurement model for T=1 survey.

Appendix F: RQ3 Additional Mapped Protocol Analysis Sequences

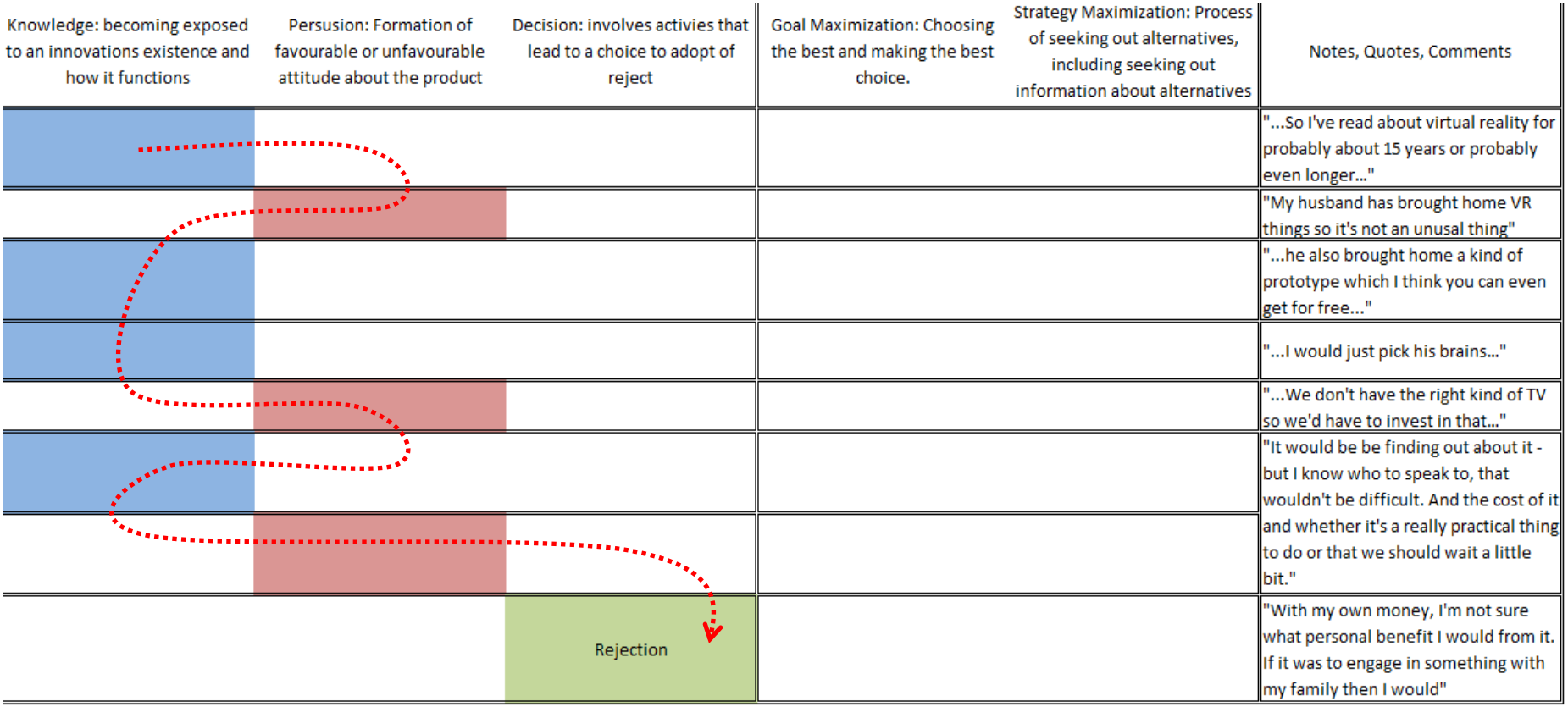


Figure F1: RQ3 Mapped Sequence, Gabriella

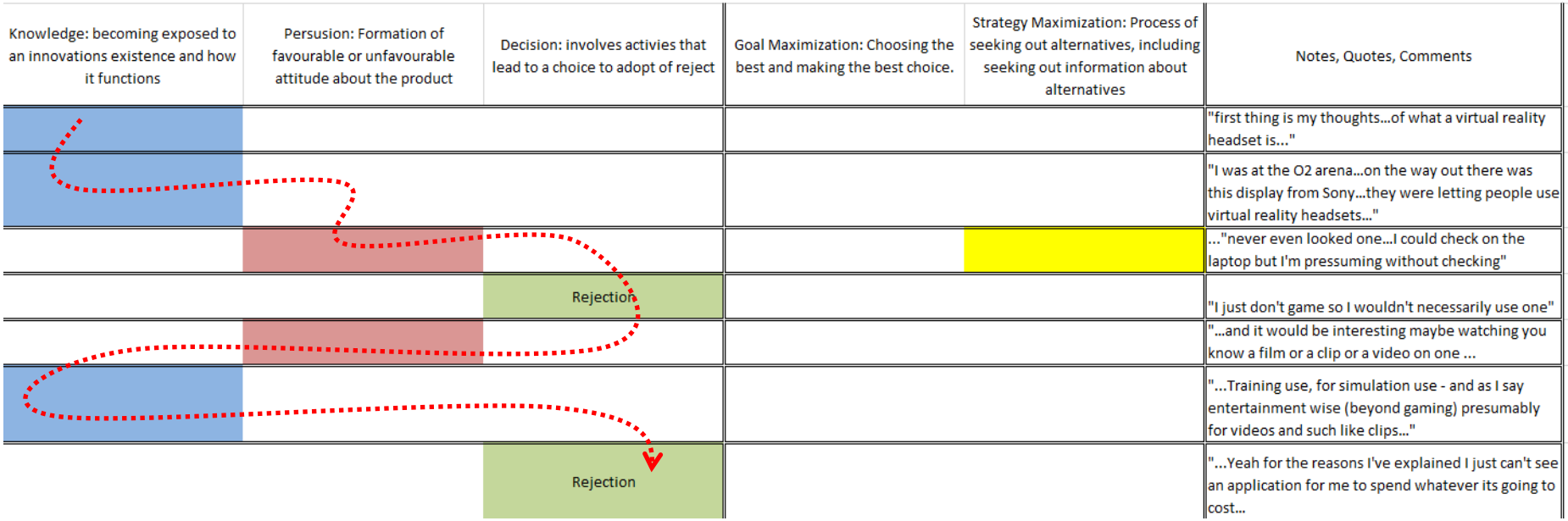


Figure F2: RQ3 Mapped Sequence, George

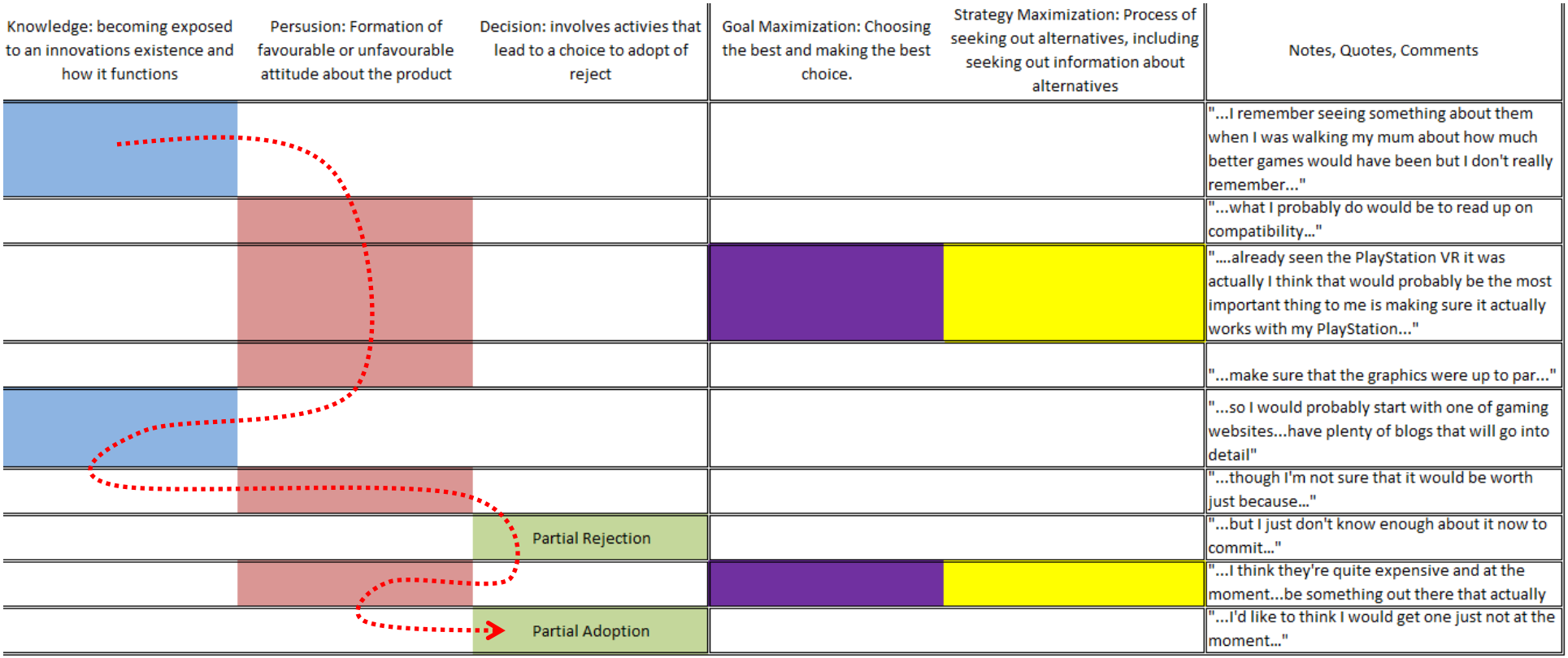


Figure F3: RQ3 Mapped Sequence, Michelle

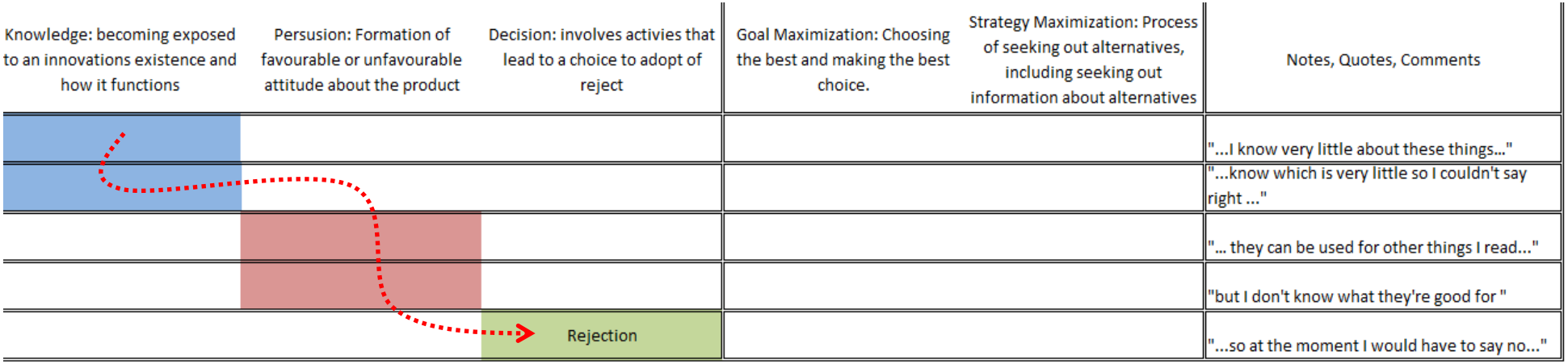


Figure F4: RQ3 Mapped Sequence, Sarah

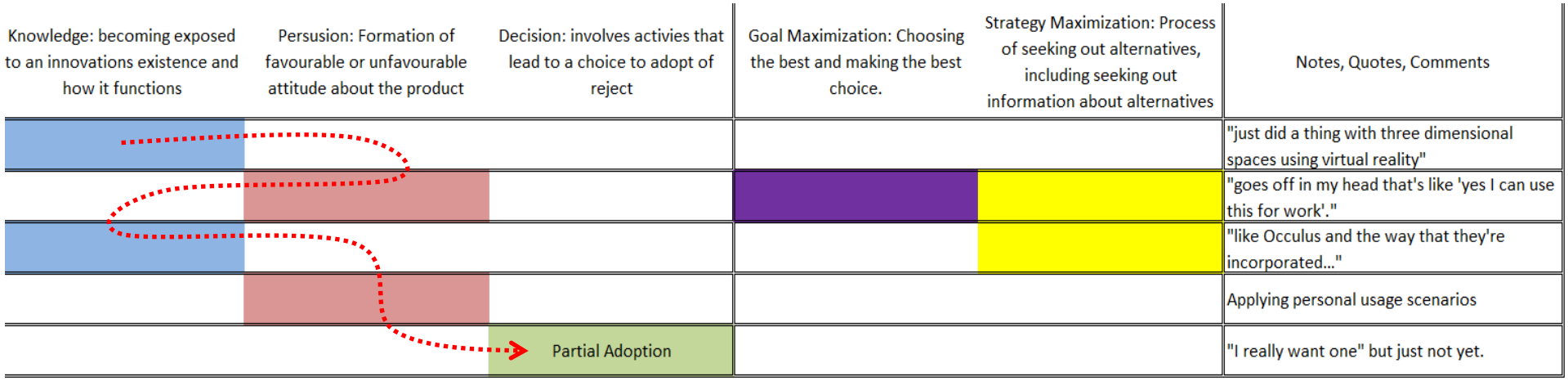


Figure F5: RQ3 Mapped Sequence, Simon

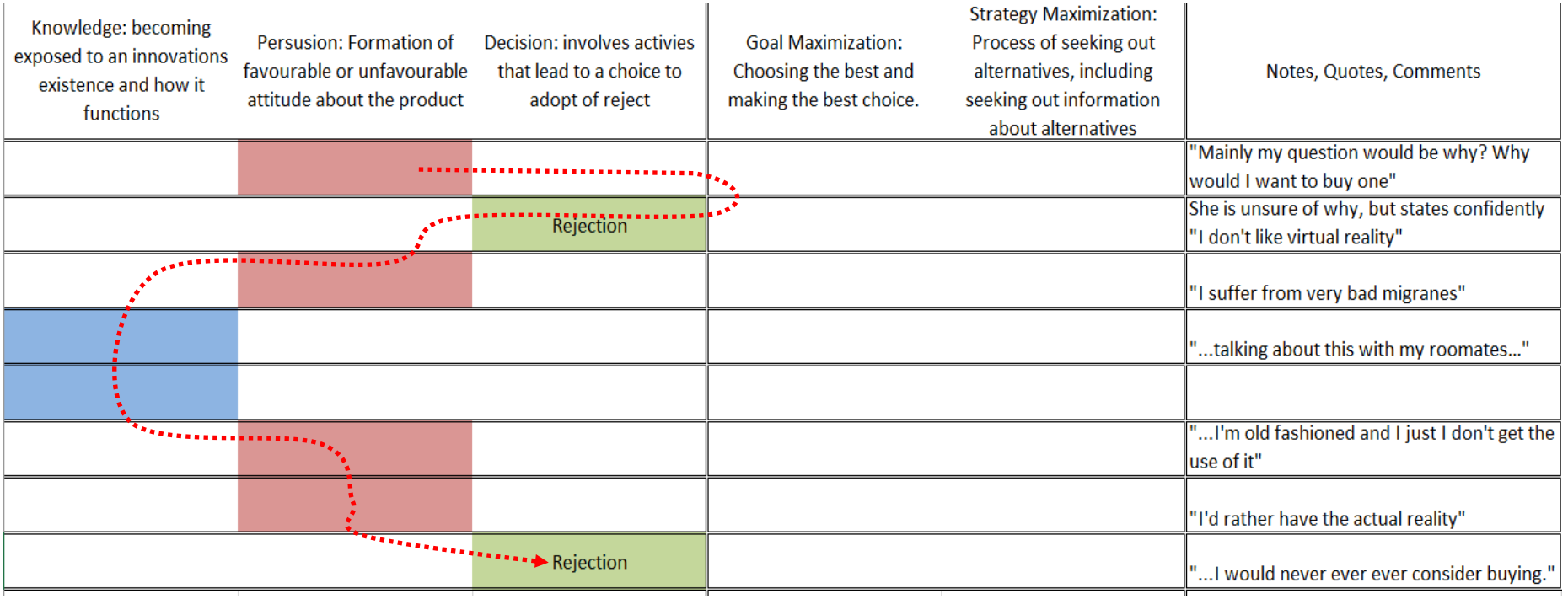
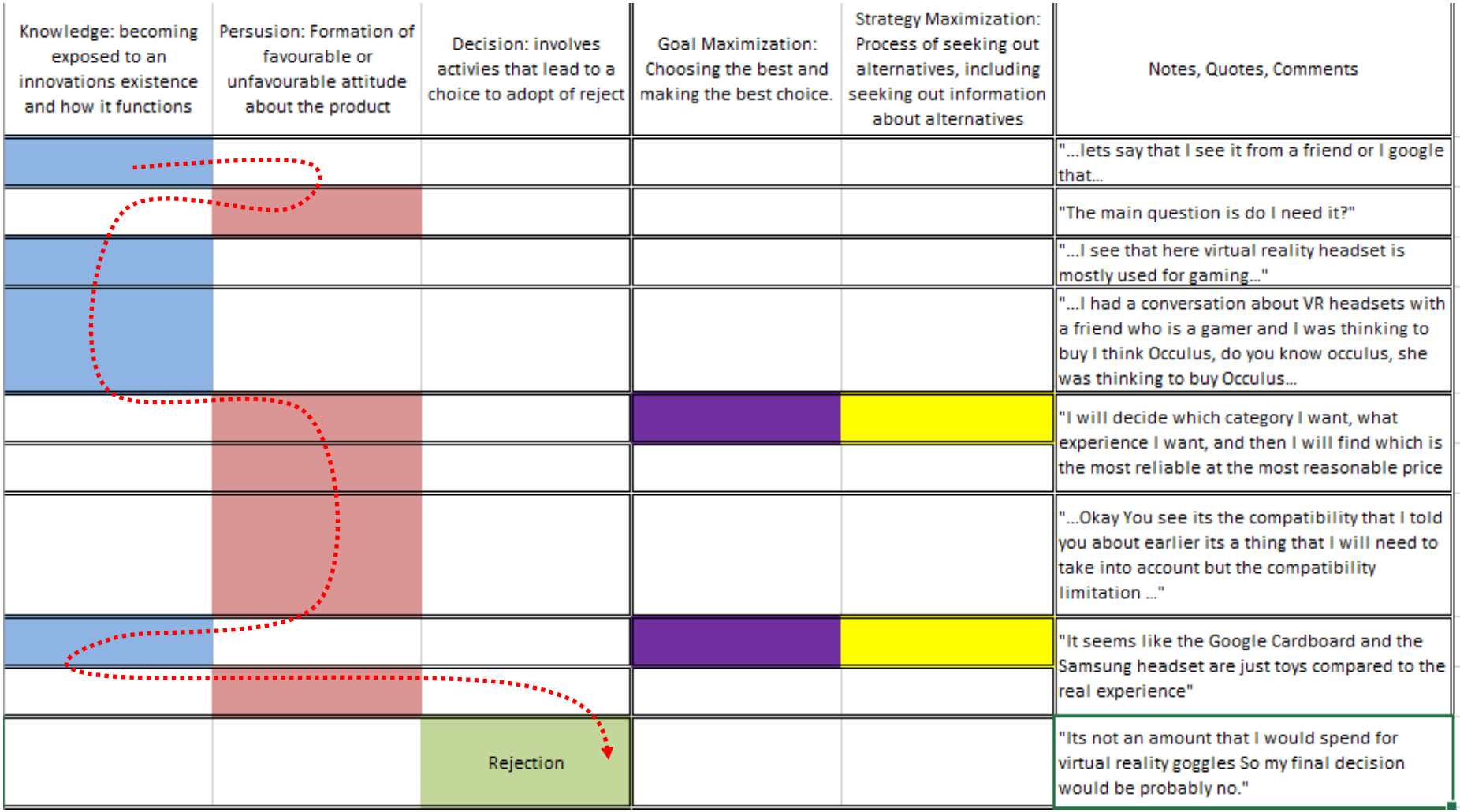


Figure F6: RQ3 Mapped Sequence, Mary



Knowledge: becoming exposed to an innovations existence and how it functions	Persusion: Formation of favourable or unfavourable attitude about the product	Decision: involves activies that lead to a choice to adopt of reject	Goal Maximization: Choosing the best and making the best choice.	Strategy Maximization: Process of seeking out alternatives, including seeking out information about alternatives	Notes, Quotes, Comments
					"...lets say that I see it from a friend or I google that...
					"The main question is do I need it?"
					"...I see that here virtual reality headset is mostly used for gaming..."
					"...I had a conversation about VR headsets with a friend who is a gamer and I was thinking to buy I think Occulus, do you know occulus, she was thinking to buy Occulus...
					"I will decide which category I want, what experience I want, and then I will find which is the most reliable at the most reasonable price
					"...Okay You see its the compatibility that I told you about earlier its a thing that I will need to take into account but the compatibility limitation ..."
					"It seems like the Google Cardboard and the Samsung headset are just toys compared to the real experience"
		Rejection			"Its not an amount that I would spend for virtual reality goggles So my final decision would be probably no."

Figure F3: RQ7 Mapped Sequence, Mark

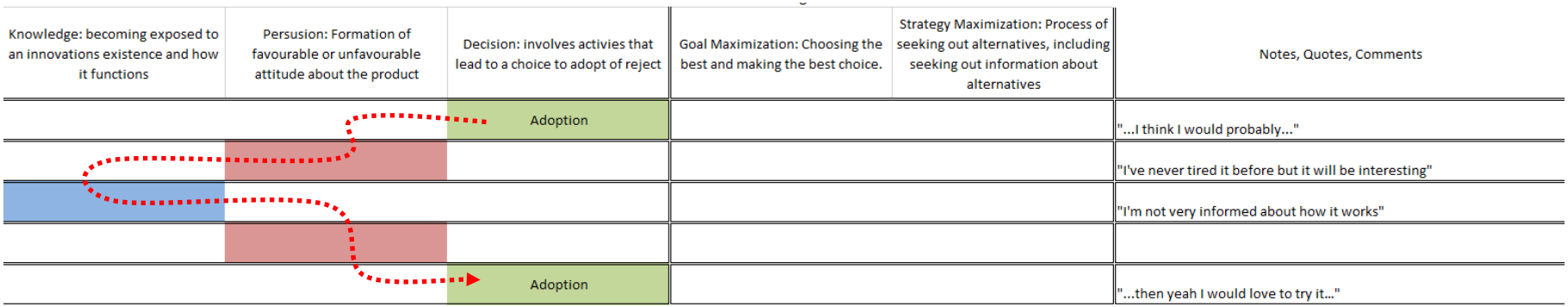


Figure F3: RQ8 Mapped Sequence, Grace

Appendix G: Initial Efforts at Future Questions - Maximization's Manifestation

The further research discussed as part of this research urged a focus on maximizing behaviours – both operationally, to ensure that concurrent validity was present, and conceptually, to examine the role of goals on maximization. A question, should one be generated, may read as "Do trait maximizers behaviourally maximize".

The following is an initial methodological effort towards tackling the question as to whether trait maximization reflects behavioural maximization. This appendix chapter lays out the rationale for the question, a methodological consideration as to how it may be approached, as well an initial study design.

Appendix G1: Introduction

Rossiter (2002, pp. 316), in his popular primer on construct operationalisations and scale development, states that a trait is:

"a type of attribute, according to its theoretical function," and "causes the responses to its measurement items…The items are indicative manifestations of the trait or state."

Maximizing is often considered to be more cognitively taxing, requiring additional effort and time on the part of the processor (Schwartz et al., 2002; Parker 2007; Iyengar et al., 2006). More specifically, it is often assumed that maximizers seek out additional information and options when making their decisions, another less often attempted area of study.

If the items used to measure maximization cannot predict maximizing behaviours, such spending more time making decisions (e.g. Polman, 2010), then the scales become poor tools in maximization research. Excluding rare instances (Dalal et al., 2015), maximizing behaviour is not operationalised effectively. Some previous instances, such as Dar Nimrod et al. (2009) do indeed attempt to match certain behaviours against trait measures, yet do so using flawed measurement scales (c.f. Dalal et al., 2015 for critique of Schwartz et al., 2002 scale).

Of the scales available, few attempt to ensure that the conceptualised and hypothesised maximizing behaviours actually manifest in their trait maximizing participants. Behaviours such as increased time in decision process (Polman, 2010) or evaluation of more options (e.g. Chowdhury, Ratneshwar and Mohanty. 2009) are rarely examined and validated alongside valid scales that should reflect these behaviours (except Dalal et al., 2015).

Therefore, it should also be assured that scales that claim to measure maximization, a trait with associated behavioural responses, does indeed maintain concurrent validity in predicting those behaviours. This question helps in supporting the previous questions raised as part of the further research, namely the extent of maximization's validity and conceptual clarity in the form of its concurrent validity. Secondly, the importance of this question, more broadly, contributes to the larger discussion at hand, namely as to whether maximizers actually maximize. Furthermore, trait-maximizers would need to behaviourally-maximize more than trait-satisficers in order for current operational claims to hold. Secondly, whether maximizing behaviours are moderated by certain factors, namely higher-order goals (e.g. traits), as was suggest from RQ3 wherein goals seemingly stimulated maximization behaviour.

Essentially what is being questioned here is "*Do trait maximizers engage in theorised maximizing behaviours?"*

Appendix G.2: Methodology

Fundamentally, researchers should be concerned with understanding whether the trait of maximizing provides a causal explanation for maximizing behaviours. Experiments, over surveys, provide the methodological platform in which to answer this type of question (Malhotra et al., 2012; Saunders et al., 2009).

Experiments can take on many design forms, with the two major designs being true (or randomised) experiments and quasi experiments. Shadish et al. (2002 pp. 12) wrote that a randomised experiment was:

"An experiment in which units are assigned to receive the treatment or an alternative condition by a random process such as the toss of a coin or a table of random numbers." whereas a Quasi-Experiment was "An experiment in which units are not assigned to conditions randomly."

Other designs include pre-experimental and statistical, according to Malhotra et al. (2012). Further, experiments can be conducted in the field or in a lab. The controlled nature of a lab allows for a careful examination of the variables, but limits real-world generalizability. Field experiments are more generalizable, however, given the data collection takes place in concern environment, but are held back by their inability to control for and measure all other variables. The nature of experimental design benefits researchers in

that they are easily replicable and appreciate the theory that forms the basis of the literature concerned.

However, they are not without their limitations. Most broadly, experiments can be time consuming, costly, and challenging to administer (Malhotra et al., 2012). More specifically, within a lab setting, experiments may not be able to capture and study certain phenomena given how controlled they are. Further, the artificial nature of a lab setting limits the generalizability of the findings as they are bound by the environment of the lab (Cervone and Pervin, 2013). Outside of the lab (i.e. field experiments), however, this is less of a concern. Nevertheless, field experiments are also disadvantaged as they are unable to account for and control all other environmental factors that may impact the results.

Experiments are also weakened by their reliance on a researcher for design and execution– that is, human error. Data and conclusions from experimental designs can be contaminated by researchers that fail to account/control for other variables, inappropriately attempt to manipulate variables with checks, or conduct inappropriate statistical analysis (e.g. Creswell, 2007). This human error also extends to the participants. In fact, the term "Hawthorne Effect" (Bryman and Bell, 2011) is used to describe the effect of the experimenter and experiment on the participant being studied. Therefore, experiments, are at risk of human error on both fronts.

Appendix G.2.1: Managing the Limitations

The cost, time, and administrative limitations of using experiments may be mitigated somewhat by the use of certain data collection tools. For example, sourcing participants from an online panel (e.g. mTurk) can reduce the time and cost associated with traditional lab and field experiments. A centralizing data collection platform (e.g. Qualtrics) can also lessen the burden of administrative factors such as synthesising and recording data.

Regarding the limitations associated with lab vs. field design, there is little that can be done to fully limit either's approach. For lab experiments, it may be that more environmental factors could be replicated. For example, instead of a shopping choice experiment being conducted on a computer in a lab, it may be conducted in an artificially reproduced shopping environment. Field experiments, similarly, may be more appropriately designed so as to take additional measurements that are theoretically relevant to the hypothesis that may help to control for other effects.

Finally, in order to address the issue of human error, several efforts may be made to limit the potential impact of this. For example, conducting pre-tests and pilots to refine the design, ensuring manipulation checks are embedded so as to confirm the received effect of the manipulation, considering and understanding the data analysis technique to be used before hand, and finally becoming highly familiar with the literature so as to consider potential high-impact variables on the study (such as knowledge levels). Regarding how to militate against a Hawthorne Effect mentioned above, the fact that the experimenter will not be physically present will likely have a positive influence on any bias that results from participants feeling observed. Further, designing a study in which an experiment is not obvious may also help to guise the scenario and, possibly, limit the feeling of being experimentally examined.

Appendix G.3: Conductive Methodology

Appendix G.3.1: Introduction

An experiment for this question would require several components. Most basically, it would require the variables trait maximizing and behavioural maximizing in order to observe whether a relationship existed. Further, this experiment would also require a choice task so as to observe these behaviours beyond self-report means. Additionally, it would also require a goal variable in order to address the concerns raised in RQ3, namely as to whether or not a goal would have an effect on maximization. These factors are addressed in more detail below.

Appendix G.3.2: Sample

Any sample sourced would need to ensure sufficient size as the design of the experiment would necessitate this. Therefore, the use of student samples or online panel samples may be an attractive option.

Appendix G.3.3: Design

Starting broadly, the experiment should employ a 2(Maximizer vs. Satisficer) x 2(Control vs. Primed) between groups design (see *Table G1: Possible Experimental Design*). The primed group will undertake a treatment to prime the goal of innovative behaviour, whereas the control group should undertake a similar but neutral task. All participants should then also take part in some form of choice activity (in which maximization behaviours may be observed) which is detailed below. Participants must also be administered maximization scales during the experiment. Further, the flow of the experiment should be randomised so as to control for any bias or effects. One way to randomise may be to ensure some participants

be administered the trait measures at the beginning of the survey whilst other participants be administered the trait measures at the end.

		Trait Status	
		Maximizer	Satisficer
Condition	Goal Primed	1	2
	Controlled	3	4

Table G1: Possible Experimental Design

Appendix G.3.4: Measures

As part of the experiment, several measures, stimuli, and checks are needed. This includes maximizing measures, the development of a choice task, the development of a prime, and other appropriate checks (e.g. manipulation checks).

Maximizing Measures: Recall that this question is primarily concerned with whether trait maximizers engage in maximizing behaviours. In order, therefore, to measure **trait** maximization, *Maximizing Goal*, operationalised by Dalal et al (2015) and *Maximizing Strategy*, operationalised by Turner et al. (2012) should be selected. These, as already justified in the literature review, are the most appropriate choices available. In order to measure **behavioural** maximization 2 key variables should be considered – time and cognitive effort (operationalised through amount of information sought). These measures reflect the generally discussed and accept theorized behaviours of maximizers, namely that they take longer (e.g. Schwartz et al., 2002; Misuraca and Teuscher, 2013; Polman, 2010) and that they consider more options/more attributes (e.g. Schwartz et al., 2002; Chowdhury et al., 2009; Dar-Nimrod et al., 2009). Therefore, time should be operationalised as the number of seconds spent on the choice activity page and effort operationalised as the number of rows of information "unlocked" on the activity page (see proposed choice task below).

Developing a Choice Task: A choice task could be designed in which participants have to select an innovation (or any other product, for that matter) as part of a scenario in which they had decided to buy one for themselves. They are presented with a blank information matrix (e.g. 5 options by 10 attributes) with all information left blank. As part of this choice task, they have to "unlock" information from matrix by clicking on the attributes they are interested in learning about.

They are informed that in order to unlock attribute information (the rows in the matrix) they would have to click on the attribute. Once they were happy with the quantity of information made available, they then make a choice to complete the choice task. *Table G2: Sample Choice Matrix for Experiment* gives an example of how the matrix would have operated as seen by the participants, with the information left blank until participants click on an attribute to unlock information for all options on that attribute. In this example, it is assumed that only attribute 4 and 5 have been "unlocked" and therefore only their information made available.

	Option 1	**Option 2**	**Option 3**	**Option 4**
Attribute 1				
Attribute 2				
Attribute 3				
Attribute 4	X	X	X	X
Attribute 5	X	X	X	X
Attribute 6				

Table G2: Sample Choice Matrix for Experiment

The actual option they select should have little impact on any analysis as it is the amount of information sought and time spent that would be of most interest. Once more, this question is firstly concerned with whether goals stimulate maximization. If this is shown to be the case, *then* it becomes of interest to understand their selection choice and what drove them to their best option. It would be possible to observe goals impacting maximizing as the hypothesis would be that when goals were activated, maximizing tendency (operationalised by time spent/ information unlocked) increased. If proven, this could also be contrasted against trait maximization and how predicative it was of behavioural maximizing behaviours.

Developing a Goal Prime: Part of this experiment depends on whether goals have any effect on maximizing behaviours. RQ3 suggested that goals were highly involved in stimulating maximizing as it manifested. In order, therefore, to examine whether a goal (a mental representation) could impact maximization, a goal prime is required. Priming attempts to alter and manipulate internal (or mental) representations with the same intent of effecting decision-making and behaviour (c.f. Forster, Liberman and Friedman, 2007).

Priming extends even as far as to priming individual traits; for example, priming helpfulness (Macrae and Johnston, 1998) and conformity (Epley & Gilovich, 1999) results in helpful and conforming behaviours, respectively. There are three types of priming: 1)

semantic-construct: that of words and associations, 2) procedural: that of ways of thinking, and 3) goals: that of desirable end-states and traits. Semantic priming increases an individual's access and processing facility for related constructs; it assumes a semantic network in which the activation spreads (Forster et al., 2007). For example, someone reading the word "light" may become quicker at reading the word "lamp" compared to someone without the priming. Procedural priming refers to priming certain strategies and ways of processing. As is detailed above, Ma and Roese (2014) made use of procedural priming in their work on maximization. Procedural priming is also free from semantic content, too (Heckhausen and Gollwitzer, 1987) and so the two approaches to not converge or conflate. Finally, goal-priming is a variation in which goals or traits (representations of desired end-states) are activated, and thereby elicit action consistent with goal attainment (Forster et al., 2007). Forster, Liberman, and Friedman (2008) argue that all the actualised behaviours that semantic and procedural primes draw out are actually as a result of activated goals. A semantic construct may unintentionally activate a goal; for example, a semantic prime of "achievement" may activate semantic associations of achievement, but also activate a goal to compete more (Bargh, Gollwitzer, Lee-Chai, Barndollar, and Trotschel, 2001). Goals (e.g. to enact some innovative behaviour) and traits (e.g. consumer innovativeness) alike are mentally represented constructs and are believed to be activated by simple perception and cues which typically lead to behaviours and choices associated with those constructs (Sela and Shiv, 2009). Further, goal-directed behaviours can also be automatic and do not rely on an assumption of conscious processing. However, once a goal is set in motion automatically by situational cues it appears to operate just as if it had been consciously intended (Bargh and Chartrand, 1999).

A summary of the literature, however, agrees that three specific factors are required for successful goal activation and adoption when priming (Bargh, Gollwitzer, Lee-Chai, Barndollar and Trötschel, 2001; Custers and Aarts, 2005; 2007; Sela and Shiv, 2009; Forster et al., 2007). 1) Goal activation is contingent on the activation of a mentally represented end state; 2) That the activated end state is perceived as desirable in that its attainment is associated with moving towards a positive end state or moving away from a negative end state; and 3) That an individual perceives a discrepancy between their current state and a constructed end state. Moreover, the extensive work on goal priming by Forster, Liberman, and Friedman (2007) is a good example of the depth in which goal priming as has been studied and understood in recent years.

Further, the use of experiments in maximization research is not uncommon (e.g. Ma and Roese, 2014; Iyengar et al., 2006; Dalal et al., 2015). However, what is less common is the use of experiment to investigate the relationship between the maximizing trait and maximizing behaviours. Aside from Dalal et al. (2015) other researchers have failed to validly examine trait maximizer behaviours to a meaningful degree.

Appendix G4: Next Steps

Following this discussion, several steps are needed to design and implement the experiment. Firstly, the choice task must be designed further. Whether the experiment takes place physically (e.g. in a lab) or not (e.g. online), there requires a choice activity to be made available to participants so as to observe their behaviours (amount of information sought and time taken). This would require, at least, some effort in ensuring that the choice task is perceived by participants in the way the research desires, and that the choice task is manageable for participants (e.g. clear instructions)

Assuming that measurement scales are confirmed, an additional next step would be developing a series of testable hypotheses, ensuring to including key positions and contentions of the literature are considered (e.g. maximizers taking longer). This thesis would recommend testing 1) the impact of an activated goal on maximizing propensities and, 2) testing the concurrent validity of key maximizing scales in the literature.

Finally, before the experiment is administered, a series of pilots should be conducted. Pilots would need to ensure that 1) the goal primes are actual goal primes and not semantic, 2) that the goal fulfils the criteria as laid out by Forster, Liberman, and Friedman (2007) as perceived by the participants, 3) that the experiment is easily understood (including the choice task), 4) that any information about the experiment is accurate (e.g. expected duration, fair compensation, technical issues, etc.)