



 **APMG** International

Behavioral Economics

How it helps to explain human biases in programme and project
business case options analysis and decision making



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1. INTRODUCTION

The purpose of this paper is to demonstrate how behavioral economics can provide insight into programme and project business case options analysis and the resulting decisions made by sponsors and commissioning organizations.

Behavioral economics considers how human and social cognitive and emotional biases can influence the decision-making process. These biases can be explored through understanding neuroscience and the brain's propensity for fast and slow thinking (or the dual process theory), cognitive framing, prospect theory (or loss aversion), mental accounting, and anchoring. By understanding behavioral economics we can minimize the psychological bias that can prevent us from making the most informed investment decision regarding the continued funding of both programmes and projects. The good news is that with increased awareness and understanding there are simple techniques that anyone can use to overcome these psychological traps.

2. DECISION MAKING PROCESS

The decision-making process is fairly specific to the decision being made. Some choices are simple and seem straight forward, while others are complex and require analysis to make the decision.

Kahneman and Tversky (1981, p.453) use the term 'decision frame' to refer to the decision maker's conception of the acts, outcomes, and contingencies within a particular choice. The frame that a decision maker adopts is determined partly by the formulation of the problem and partly by the norms, habits and personal characteristics of the decision maker. Decision Education Foundation (2021) assert a decision frame consists of purpose (what we hope to accomplish by the decision), scope (what to include and exclude in the decision); and perspective (our point of view about the decision, consideration of other ways to approach it, how others might approach it).

2.1 THE DUAL PROCESS THEORY (OF REASONING)

Dual process theory or the 'machinery of ... thought' is a framework used to explain how people think which divides the brain into two agents, called System 1 and System 2, which 'respectively produce fast and slow thinking'. Simply, these can be thought of as intuitive and deliberate thought. System 1 (or fast thinking) operates automatically and quickly, with little or no effort and no sense of voluntary control (Kahneman, 2012).

System 1 employs heuristics which are mental shortcuts that allow people to solve problems and make judgments quickly and efficiently. It allows people to function without constantly stopping to think about their next course of action (Chance, 2022). Examples of heuristics include using trial and error, a rule of thumb or an educated guess particularly when estimating programme and project timeframes and costs. Naturally, the reliance on heuristics causes predictable biases (or systematic errors) in our predictions (Kahneman, 2012).

System 2 (or slow thinking), on the other hand, allocates attention to the effortful mental activities that demand it, including complex computations. The operations of System 2 are often associated with the subjective experience of agency, choice, and concentration (Kahneman, 2012).

Humans often favor feeling right over being right. As such, we need to develop the habit of forming our own second opinion.

Systems 1 and 2 are both active whenever we are awake. System 1 runs automatically and System 2 is normally in a comfortable low-effort mode, in which only a fraction of its capacity is engaged. System 1 continuously generates suggestions for System 2: impressions, intuitions, intentions, and feelings. If endorsed by System 2, impressions and intuitions turn into beliefs, and impulses turn into voluntary actions. When all goes smoothly, which is most of the time, System 2 adopts the suggestions of System 1 with little or no modification (Kahneman, 2012).

We like to think of ourselves as rational because System 2 is the mechanism whose workings we are most aware of (Chance, 2022). This is why (Grant, 2021) says we are often swift to recognize when other people need to think again and question the judgment of experts whenever we seek out a second opinion. Unfortunately, when it comes to our own knowledge and opinions (System 1), we often favor feeling right (or intuition) over being right. Psychologists call this phenomenon belief perseverance, where everyone is prone to this inherent way of thinking. As such, we need to develop the habit of forming our own second opinions (Grant, 2021).

2.2 THE FRAMING EFFECT

The framing effect is a well-known example of how context can bias the choice made from the selection of available options (Kahneman and Tversky, 1981). This is a cognitive bias wherein an individual's choice from a set of options (like those stated in a programme or project business case) is influenced more by the presentation than the substance of the pertinent information, particularly regarding the costs, risks and benefits associated with each option being compared (Plous, 1993).

We might vaguely agree external factors influence our choices, but we do not appreciate that there are significant and systematic ways in which presentation can change what we choose (Johnson, 2021). The salience of certain features over others, as well as the positive or negative connotations pertaining to the information, are more likely than the actual information itself to determine the decision maker's response (Prera, 2021).

This is why decision making involves more than just reacting with an open mind. It means being actively open-minded. It requires searching for reasons why we might be wrong – not for reasons why we must be right – and revising our thinking based on what we learn (Grant, 2021). Many aspects of how a choice or option is posed can be manipulated, intentionally or inadvertently, to influence the decisions we make. The options may even be the same but the presentation can change your choice (Johnson, 2021).

As sponsors and commissioning organizations, our choices are influenced by the way options in programme and project business cases are framed and anchored through different wordings, reference points, and emphasis (The Decision Lab, 2019). The most common framing effect draws attention to either the positive gain or negative loss associated with an option, particularly when a pre-selected option is framed to be the only preferred way forward (The Decision Lab, 2019).

2.3 PROSPECT THEORY AND LOSS AVERSION

Prospect Theory (also known as Loss Aversion) is an important concept and is encapsulated in the expression by Daniel Kahneman & Amos Tversky that 'losses loom larger than gains'. It is thought that the pain of losing is psychologically about twice as powerful as the pleasure of gaining. For example, a business case that is framed in terms of what might go wrong if the programme or project were not to proceed (e.g. cost incurred) appears more compelling than a business case prepared on the basis of the same programme or project positive outcomes (e.g. money saved). Before you make a decision, it's important to recognise that someone has moulded many of the characteristics of the preferred option for you, and these design decisions will in some way affect what you ultimately choose (Johnson, 2021).

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Individual decisions are dramatically susceptible to the frame in which decision-making problems are described. The frame in terms of gains and losses has a remarkable influence on individual decision-making. When people make a choice between a low probability and a high probability option that have equal expected values, they tend to prefer the high probability option in the loss frame, whereas they tend to be risk-averse in the gain frame (Kahneman and Tversky, 1981). Simply put, prospect theory refers to the relative strength of two motives. As humans we are driven more strongly to avoid losses than to achieve gains. This inherent motivation to avoid losses can be explained by mental accounting whereby unviable programmes and projects are continued at considerable expense that often leads to the sunk cost fallacy.

2.4 MENTAL ACCOUNTING

The reason for defining a programme or project lifecycle with phases, tranches and/or stages is to enable clear decision gates to exist that enable selection of the most value for money option or choice to solve the business problem. The gate decision on whether to continue investment in a programme or project should be based on progress to date compared with the ongoing costs, risks and benefits in the business case relative to the lifecycle phase, tranche and/or stage (Dooley, A, 2014). These decisions gates should occur prior to full investment in the programme or project. It is at these early decision gates that cognitive bias comes into play, particularly mental accounting and the sunk cost fallacy.

Mental accounting is a behavioural economics concept that states that humans place different values on money, leading to irrational decision-making. In simple terms, the concept states that individuals and organizations classify money differently based on subjective criteria, and it often leads people to make irrational spending and financially counterproductive investment decisions. Mental accounting happens mostly because we perceive the value of objects or options relative to other reference points, rather than in absolute terms. For example, the format and presentation of the choice set of available options in a programme or project business case and how those choices are framed can impact our perceptions of them (Raymond James Financial, 2022).

Mental accounting can distort our perceptions of money which is fungible and lead us to spend based on intuition (or feeling right), rather than reason. Although money has consistent, objective value, the way we go about spending it is often subject to different rules, depending on how we obtained the money, how we intend to use it, and how it makes us feel. For these reasons, mental accounting alters our perception of finances that contributes to the sunk cost fallacy. That is, the tendency to continue with an unviable programme or project for longer than we should, because we feel like we need to make the initial investment worth it (Raymond James Financial, 2022).

System 1 (or fast thinking) can explain why the sunk cost fallacy is allowed to occur through the iterative development of the programme or project business case. The sunk cost fallacy is a cognitive bias in which the programme or project sponsor and/or commissioning organization continue to invest money, time, or energy into a bad deal because of the effort that they have already put into it (i.e. loss aversion). Massimo Piattelli Palmarini once said, "*once we have actually committed a large sum, for example in a project or programme, we are inclined to add to it more than we would ever have accepted to spend at the beginning*" (Jenner and APMG International, 2014).

The causes are, according to psychologists, the over-generalization of the 'don't waste' rule; organizational pressures against admitting mistakes; and project managers' over-confidence that they can turn things around. This can lead to what Flyvbjerg et al (2020) calls the 'blank cheque syndrome'. Tim Banfield (Director, National Audit Office, UK) calls it the 'conspiracy of continuation', where unviable programmes and projects are rarely stopped once they are started, even if sunk costs are incurred and true whole of life costs including ongoing maintenance and support are known and outside organizational budgets (Jenner and APMG International, 2014).

Humans tend to rely too heavily on the first piece of information offered (the 'anchor') when making decisions.

Humans tend to compare things that are easily comparable, and avoid comparing things that cannot be easily compared.

2.5 ANCHORING EFFECT

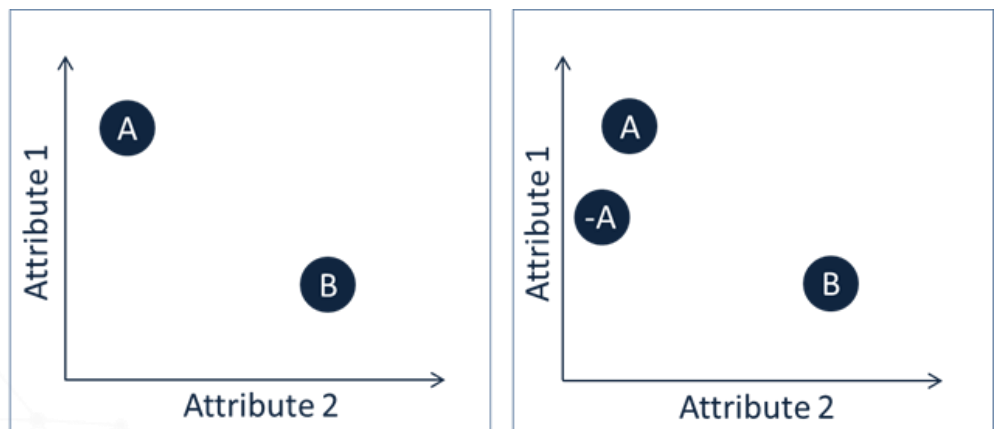
Another form of human bias and framing is the Anchoring Effect. Staff (2019) asserts the anchoring effect is a bias that describes the common human tendency to rely too heavily on the first piece of information offered (the "anchor") when making decisions. This can occur, for example, when the preferred option is read prior to fully understanding the business problem to be solved by the organization.

During decision making, anchoring occurs when individuals and organizations use an initial piece of information to make subsequent judgments. Once an anchor is set, other judgments are made by adjusting away from that anchor, and there is a bias toward interpreting other information around the anchor. For example, the way the recommended option is presented in comparison with the other options particularly the business as usual (or do nothing) option to influence making a change.

2.6 THE TRUTH ABOUT RELATIVITY

Humans rarely choose things in absolute terms. As such, when reviewing a choice set of options, particularly with programme and project business cases, we don't generally have an internal value meter that tells us how much things are worth. Rather, we focus on the relative advantage of one option or choice over another and estimate value accordingly. Furthermore, most people don't explicitly know what they want unless they see it in context, particularly in relation to strategic objectives. This means everything is relative, and that's the point (Ariely, 2008).

Relativity is fairly easy to understand, but there's one aspect to be cognizant of. Namely, we not only tend to compare things with one another but also tend to focus on comparing things that are easily comparable - and avoid comparing things that cannot be compared easily. People do not make judgments and decisions in a vacuum. They make them against a choice set of available options. An important aspect of the decision-making context is the choice set of what the options are and how they relate to each other (Ariely, 2008). To better understand how relativity works, consider the following illustration:



The Options Framework ensures programmes or projects have properly considered whether there may be better value for money alternatives to preferred value for money proposal.

Ariely (2008, p.24) asserts that in the left side of this illustration we see two options, each of which is better on a different attribute. Option (A) is better on attribute 1 - let's say quality. Option (B) is better on attribute 2 - let's say cost. Obviously these are two very different options and the choice between them is not simple. Now consider what happens (see the right side of the illustration) if we add another option, called (-A). This option is clearly worse than option (A), but it is also very similar to it, making the comparison between them easy, and suggesting that (A) is not only better than (-A) but also better than (B).

In essence, introducing (-A), the decoy, creates a simple relative comparison with (A), and hence makes (A) look better, not just relative to (-A), but overall as well. As a consequence, the inclusion of (-A) in the set, even if no one ever selects it, makes people more likely to make (A) their final and preferred choice. Once you identify the decoy effect in action, you realize that it is the secret agent in more decisions than we could imagine (Ariely, 2008). The truth about relativity becomes apparent when only two or three options are offered in a business case, and where the preferred option is the only perceived 'real' choice, particularly where a long list of options has not been analyzed.

3. BETTER BUSINESS CASES AND THE OPTIONS FRAMEWORK

A programme or project business case is recommended best practice that should be prepared following the approval of a new strategy designed to resolve a clear business problem. The strategy provides the context and direction for the programme and/or project which is important because HM Treasury have found that a spending proposal begins most effectively when it is launched as part of a clear strategy and driven by the benefits to be realized from that investment (HM Treasury, 2018).

The iterative development of the programme or project business case - from initial options analysis to investment appraisal and finally portfolio prioritization - plays a critical part in any project or programme lifecycle. As Smallwood (2020), CEO of the Infrastructure and Projects Authority asserts 'it has been proven that projects (and programmes) that have focused on front-end loading (in the development of the business case) take time and cost out of the schedule. That is, there is clear correlation between early stage thinking (of the business case options to best resolve the business problem) ... and its eventual successful delivery'.

HM Treasury's Guide to Developing the Programme or Project Business Case for Better Outcomes includes a robust options framework for analyzing a long list of options to resolve a clear business problem. It's a useful tool for analyzing options within any business case in terms of scope, solution, service delivery, implementation and funding. The use of the options framework provides sponsors and commissioning organizations with a single page summary of the options that have been assessed against the business as usual (or do nothing) option.

Most importantly, the options framework takes the framing effect into account by how the preferred way forward is presented (see overleaf) by analyzing a minimum of four options through the three-stage business case development process from strategic outline case, outline business case and final business case, using the gated review process to inform investment decision making (HM Treasury, 2018).

3.1 OPTIONS FRAMEWORK

The Options Framework provides decision makers with a structured approach to identifying and filtering a broad range of options or choices for delivering programmes and projects. It considers the creation of options as a series of choices to be made in sequence. The 'Why' provides the rationale for the programme or project and the potential scope for change.

Once the potential scope for the investment has been agreed, the next stage is to identify and appraise the choice set of options to be made in relation to the 'what', 'where', 'how', 'who', 'when' and 'funding' (HM Treasury, 2018). The following example outlines how the preferred option was derived from a range of different options proposing variations to aspects of the programme or project to deliver an improved road network.

Summary of the long list using the Options Framework:

Project	Business As Usual	Do Minimum	Intermediate Option	Intermediate Option	Do Maximum
1. Service scope – as outlined in strategic case	1.0 All Cities	1.1 Linking Cities A and B.	1.2. Linking Cities A, B and C.	1.3 Linking Cities A, B, C and D	1.4 Linking All Cities, A, B, C, D and E
	Carried Forward	Carried Forward	Preferred Way Forward	Carried Forward	Discounted
2. Service Solution – in relation to the preferred scope	2.0 Current services: for road maintenance etc	2.1 Core: Refurbish existing highways	2.2 Core & Desirable: Combination of refurbish & new highways	2.3 Core & Desirable: Completely new highways	2.4 Core, Desirable and Optional: New highway & facilities
	Carried Forward	Carried Forward	Preferred Way Forward	Carried Forward	Discounted
3. Service Delivery – in relation to preferred scope and solution	3.0 Current arrangements	3.1 Local Contractor	3.2 National Contractor	3.3 International Contractor	
	Carried Forward	Discounted	Carried Forward	Preferred Way Forward	
4. Implementation – in relation to preferred scope, solution and method of service delivery		4.1 Phased over 3 years	4.2 Phased over 2 years	4.3 Big bang over 1 year	
		Carried Forward	Preferred Way Forward	Discount	
5. Funding – in relation to preferred scope, solution, method of service delivery and implementation		5.1. Public funding	5.2 Mixed public & private funding	5.3 Private finance – annual service charge	5.4 Private finance – toll on new roads
		Discount	Preferred Way Forward	Discount	Discount

Drafting the shortlist

HM Treasury (2018) assert the shortlisted options should be described and a further assessment of their strengths, weaknesses, opportunities and threats undertaken, as required. The format used for drafting the long-list above can be used to illustrate the summary assessment of shortlisted options using a simple RAG status. Green denotes the option is fully aligned with the spending objective or critical success factor, while Amber denotes it is only partially aligned and Red denotes the option does not align at all.

Description of Option	Business As Usual	Do Minimum	Intermediate Option	Intermediate Option	Do Maximum
Spending Objectives					
1.	Red	Yellow	Green	Green	Green
2.	Red	Yellow	Green	Green	Green
3.	Red	Yellow	Green	Green	Green
4.	Yellow	Yellow	Green	Green	Green
5.	Red	Yellow	Green	Green	Green
Critical Success Factors					
Business Need	Red	Yellow	Green	Green	Green
Strategic Fit	Red	Yellow	Green	Green	Green
Benefits Optimisation	Red	Yellow	Green	Red	Green
Potential Achievability	Red	Yellow	Green	Yellow	Red
Supply-Side Capacity and Capability	Red	Yellow	Green	Yellow	Red
Potential Affordability	Red	Yellow	Green	Green	Yellow
Summary	Discounted	Possible	Preferred	Discounted	Discounted

Option development is critical during the early stages of business case decision-making. However, alternatives should always be retained in a value for money assessment until programme and project sponsors are sufficiently confident that the preferred option offers the best value for money and achieves the stated strategic objectives and forecast benefits. This process ensures the programme or project has properly considered whether there may be better value for money alternatives to a preferred value for money proposal (HM Treasury, 2018).

HM Treasury (2018) assert that the programme or project business case should identify a minimum of four shortlisted options for further investment appraisal to overcome relativity, neuroscience (fast and slow thinking), the framing effect, prospect theory (or loss aversion) and anchoring.

These should include:

1. **Business As Usual (BUA)** – the benchmark for Value for Money comparison
2. **Do Minimum** – a realistic way forward that acts as a further benchmark for Value for Money, in terms of cost, risks and benefits justifying further intervention
3. One or more other possible options based on realistic 'more ambitious' (monumental) and 'less ambitious' (manageable) choices that were not discounted at the long-list stage
4. **Recommended** - the preferred way forward at this stage

A business case must never be perceived or used as mere governance hurdle for gaining full capital investment

Care should always be taken to avoid 'rigging' and 'retro-fitting' business case options from the strategic outline case, outline business case or final business case that have been pre-determined to expedite delivery. The programme and project sponsor and commissioning organization should always seek guidance particularly from independent and objective assurance reviewers if they find themselves in this position. This is why the iterative development of any business case must never be perceived or used as a mere governance hurdle for gaining full capital investment approval and why staged release of funding by the gated review process is so important to continually assess initial and ongoing business justification (HM Treasury, 2018).

4. WHAT CAN YOU DO ABOUT IT?

A poorly framed problem or business case option can undermine even the best-considered investment decision. Hammond et al (1998) assert any adverse effect of framing can be limited by taking the following precautions:

- ❑ Avoid automatically accepting the initial frame. Always try to reframe the business problem and business case options in various ways. Look for distortions caused by the frames.
- ❑ Try posing business problems and business case options in a neutral, redundant way that combines gains (strengths) and losses (weaknesses) or embraces different reference points.
- ❑ Think hard throughout your investment decision-making process about the framing of the business problem and proposed options. At points throughout the iterative business case development process, particularly prior to full investment, ask yourself how your thinking might change if the framing changed?
- ❑ When others recommend decisions, examine the way they framed the business problem and options in the business case. Challenge them with different frames.

Making capital investment decisions is the most important job of any programme or project sponsor and commissioning organization. It's often challenging and complex particularly when alternative business case options are not clearly defined, the right information was not collected, and the costs and benefits have not been accurately articulated. But sometimes the fault lies not in the decision-making process but rather in the mind of the decision maker at no fault of the individual.

This is why behavioral economics views humans as irrational and emotional beings who are influenced by biases and personal experience when making decisions (B2B International, 2022). Like Ozark's Marty Byrde (Jason Bateman) once said, "*People make choices. Choices have consequences.*" After all, the purpose of decision making is not to affirm our thinking; it's to evolve our thinking. Like Grant (2021) said "*rethinking is a skill set, but it's also a mindset*" and "*if knowledge is power, knowing what we don't know is wisdom*".

A poorly framed problem or business case option can undermine even the best considered decision.

5. SUMMARY

French philosopher, René Descartes once said “*I think, therefore I am*” in his Discourse on Method (1637) as a first step in demonstrating the attainability of certain knowledge. However, according to behavioral economics, most of our choices or thoughts are not the result of careful deliberation. We all like to believe that we make decisions rationally and objectively particularly regarding programme and project business cases. But the fact is, we all carry biases, and those biases influence the choices we make when objectively weighing evidence in a programme or project business case (Hammond et al, 1998). This is despite knowing that decision making is an inherently complex process that involves a significant amount of cognitive effort or system 2 thinking.

The fact is we all carry biases, and those biases influence the choices we make.

Describing the choice set of available options as gains or losses can often change choices. When making investment decisions, we all rely too heavily on intuition (or feeling right) and use flawed reasoning (or system 1 thinking). That is, those automatic judgments or heuristics that stem from associations stored in memory based on past experiences - instead of logically working through the information that is available within the business case. At every stage of the business case decision-making process, misperceptions, biases, and other tricks of the mind can influence the choices we make. By understanding behavioral economics, we can minimize the psychological bias that can prevent us from making the most informed investment decision when presented with a set choice of options in a programme or project business case.

Early on in the programme or project lifecycle, we have to decide which options and information to focus on and how to process the information in front of us. More importantly, we need to decide what to ignore. Thankfully, it is possible to fight these pernicious sources of human bias particularly when developing business case options and decision making by learning how to spot them (Kahneman, 2012). As such, the use of the Options Framework will open your thinking about the ‘what’, ‘where’, ‘how’, ‘who’, ‘when’ and ‘funding’ which will ultimately lead to better options and choices. Like Scottish chemist and physicist Sir James Dewar once said, “*Minds are like parachutes. They only function when they are open*”.



ABOUT THE AUTHOR



Milvio DiBartolomeo is a Delivery Office Manager in the Queensland Public Sector providing best practice benefits, governance, assurance and risk management and workforce planning advice to a delivery portfolio. Over his project portfolio management career, he has worked on a number of transformational change ICT initiatives across the entire programme and project lifecycle as a business and process analyst, software tester and project manager. He has spent the past 10 years in a hub and spoke PMO model in various roles as a Portfolio Manager, Capability Support Manager and a Workforce Planning Manager. His specialist areas also include portfolio, programme and project management methodology, PMO model re-design, procurement and strategy implementation.

With a lifelong passion for learning, Milvio is the first person in the world to simultaneously become a Strategy Implementation Institute Professional, registered Better Business Cases Practitioner (at trainer level) and Managing Benefits Practitioner (at trainer level). His credentials also include a Bachelor of Commerce (Industrial Relations, Organizational Change and Human Resource Management) and Management of Risk v4, Management of Portfolios (MoP®), Portfolio, Programme and Project Office (P3O®), Managing Successful Programmes (MSP®), PRINCE2®, PRINCE2 Agile®, AgileSHIFT®, ICAgile®, International Software Testing Qualifications Board (ISTQB) software testing and ITIL®.

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