IMPLEMENTING A RECOMMENDATION OF THE HEALTH MARKET INQUIRY:
STANDARDISING THE SUPPLEMENTARY BENEFIT PACKAGE

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A NEEDS ASSESSMENT FOR A MARKET SEGMENTATION SURVEY

CMS
Council
for Medical Schemes

EXECUTIVE SUMMARY

Problem Statement

Policy issues

The "bounded rationality" problem is the pivotal reason medical scheme beneficiaries are not able to make optimal welfare increasing decisions when choosing benefit options. The bounded rationality problem, in this context, means that medical schemes beneficiaries' choices are complicated by a proliferation of benefit options, which is also compounded by variations in benefit configurations (differences in benefit design). This is further confounded by incomplete information. Incomplete information impedes a beneficiary's choice in selecting benefit options (choosing one benefit out of a plethora of choices – too much information without knowing which is the most important information).

Incomplete information is also inhibiting knowledge regarding needed healthcare coverage, and choices made during healthcare seeking episodes (not knowing which health benefits are most important at a point in life, or not being able to navigate medical schemes' health delivery networks). This situation also makes beneficiaries susceptible to price discrimination (different prices for similar goods – very prevalent in environments of imperfect information, such as insurance).

Medical schemes submit business plans to register new rules for every financial year. These rules contain a market analysis to motivate changes associated needed to secure the sustainability of their benefit options. The regulator needs to evaluate marketing strategies and assess the validity of marketing material before benefit options are registered to operating each benefit year. The regulator also needs to enable seamless movement of beneficiaries from one medical scheme to another on scheme liquidation or merger. A framework is needed to identify default options to enable market mobility, and thus competition.

The Health Market Inquiry (HMI) findings for the demand side, are that; members do not make decisions based on optimising their preferences but, are at most times prioritizing affordable benefit option decision sets. A standardisation and simplification of benefit options is needed to bring beneficiaries to the centre of the private health financing industry. This could also bring price levels down, as beneficiaries are able to search for value, and even find convenient networks designed by medical schemes to provide discounted premiums and reductions in costs of access quality care.

Enabling interventions

In order to understand the significance and/or necessity of allowing the registration of new or restructured benefit options. The Council of Medical (CMS) has to understand health insurance consumer needs, and market positioning of benefit options within various market segments.

The usefulness of a market segmentation survey is that: i) The differences in the consumer healthcare utilisation behaviour of beneficiaries can be appropriately differentiated, and segmented into valid market segments based on valid criteria (elements of the structural components) that can be used to identify different target markets; ii) these structural criteria can be used to establish what beneficiaries value within benefit options across the market segments that are self-standing/or sustainable and are financially sound (sustainable cross-subsidization across the medical schemes' product-mix); and iii) standardisation can focus on choice sets that matter most to beneficiaries within specific market segment's benefit designs; ultimately iv) the resulting information can used to assess optimal beta-coefficients (discount values) in optimising choice through a Pareto-Optimal multi-objective function across a medical scheme's portfolio of preferences in the product mix offerings. Over time, an optimal intertemporal rate of substitution for incrementally augmenting the supplementary benefit package in a sustainable manner which will not create systemic buy-downs.

The results emanating from a market segmentation could then not only be used to standardise benefit options, but also to make benefit option choices simpler by: i) developing standardised model rules for specific market segment benefit designs; ii) implementing a benefit enrichment ranking based on a composite of identified structural criteria, the rankings can allow the regulator to establish a web portal listing platinum, gold, silver, and bronze choice sets for benefit designs for each market segment (market segments will be associated with a specific type of benefit design); iii) To provide further transparency for beneficiaries, the benefit enrichment rankings could be supplemented with patient experience scores for disease management programs, thus allowing those living with chronic conditions to make simpler choices, and make access easier if the information is supplemented with geospatial data on the locations of disease related practices of service relevant service providers; and iv) A similar approach for option standardisation and simplified information can be used as in Health Insurance Exchanges (HIX) enabled by Obamacare health market exchanges, in the United States of America (USA).

A health insurance exchange on a CMS portal would allow beneficiaries to make comparisons of benefit options for optimising their utility. Choice experiments could be conducted the portal platform to assess whether consumer decisions are optimised/improved by providing respondents with more information (also allowing for experimental analysis to improve benefit designs from a policy perspective). The choice framework to assist in decision making in the experimental surveys is could "choice architecture" (the method is explained in the literature review section). Medical schemes could have access to the platform to see how the benefit designs they offer compare to a composite benchmark. This will allow market agents (beneficiaries and medical

schemes) to work toward an equilibrium on the visited platform, thus increasing information to improve the functioning of the market to an equilibrium with less transaction costs to attain optimal choice (the regulator could enable market efficiency and reduce market failure).

Applying a choice architecture approach to designing market segmentation surveys and choice experiments can eliminate impediments to market efficiency. This is because choice architecture improves consumer decision, particularly when information asymmetries or incomplete information is present. The benefits of conducting a market segmentation survey are discussed in previous paragraphs.

The Health Market Inquiry found that medical scheme beneficiaries are not at the centre of the private healthcare sector. A market segmentation survey using the benefit of choice architecture in choice experiments could provide the information to bring them to the centre of private healthcare financing.

Needs Assessment for Tender: Responsiveness & Feasibility

This document serves as a needs assessment for a market segmentation survey; for the purpose of identifying market segments covering differentiated profiles of beneficiaries. Thus, benefit options can be classified into benefit design groups validated by supervised and unsupervised cluster analyses. The cluster analyses need beneficiary profile information that represent beneficiary behaviour and psychographics. Once this information is incorporated in discriminant and cluster analyses, the Council for Medical Schemes will be able to establish the market position and identify the differences in benefit designs.

The output of the market segmentation will need to be subjected to industry comment, as model rules/standardised model rules will need an established common lexicon to enhance the simplification of rules to optimize beneficiaries' choice. The process will also need to maintain market stability while benefit options incrementally sequence the incorporation of the primary health package or base package that will be the National Health Insurance (NHI) package.

Ultimately, this project is unique, in that it responds to a need to standardize/codify information in an environment with information asymmetries, for a complex merit good. An additional complexity is that the financial sustainability and cross-subsidization principle underlying medical schemes' product mix functions on the basis of collaborative model, rather than a purely competitive model that exists in the medical insurance sector. Which leaves the medical schemes sector at risk of losing young and healthy members as benefits begin to align with the emerging mandate of mandatory primary care cover. Thus; the process of sequencing of interventions to achieve a primary care package, must keep the risk of the health insurance parallel market (Hospital Plans and GAP Cover) in mind.

As we proceed with implementing this framework for assisting beneficiaries to make more optimal decisions regarding benefit option choices, it is important to note that; a platform to conduct such analysis (for merit goods))is not available in the public sector or among regulators, and that AI deep learning is a new technology. Therefore; the output is bespoke and largely unspecified. That said, the regulator has conducted a needs analysis to take market segmentation survey out on tender. The regulator is being responsive regarding the need to implement the Health Market Inquiry's recommendations regarding the standardisation of the supplementary benefits package.

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1. INTRODUCTION

1.1 Background

The CMS would like standardise benefit options, pursuant to have a more limited set of benefit designs for medical schemes to comply with submitting their rules for registration. This requires the implementation of a standardisation framework to assist beneficiaries to make decisions based on a standard set of decision criteria. The framework for the standardisation of benefit options implements the policy recommendations emerging from circular 8 of 2006, which was published by the Council of Medical Schemes (CMS). The present policy agenda for the CMS is to reduce decision complexity, created by having a high proliferation of benefit options to choose from. The stagnant growth in the medical schemes industry also intensifies the impact of option proliferation in a decision complex decision environment. It is envisaged that this goal is conducted within strategy that is carefully sequenced, such that there are standardised benefit designs with gradually fewer options per benefit design.

Circular 8 of 2006 sought to achieve policy objectives regarding the configuration of benefit options, pursuant to having a comprehensive list of essential benefit across schemes which are costed at a community rate (CMS, 2008). Additional to this, the circular recommended a fixed set of supplementary benefits for all medical schemes which members could opt to buy-up to. It was hoped that this would increase transparency in benefit design attributes for better decision option selection by beneficiaries. This was expected to increase competition on premiums and efficiency structuring service delivery arrangements. Rather than having schemes compete of cherry-picking to avoid anti-selection/adverse selection. Cherry-picking is a retaliation strategy that guards against anti-selection, though signalling on benefits that are not mandated, such as supplementary benefits.

The Health Market Inquiry (HMI) report's final findings and recommendations, among many other recommendations, advocate that, there ought to be a standardised set of supplementary benefits that demonstrate transparency in coverage and value and increase competition (HMI, 2019). This would also help to ensure that beneficiaries are at the centre of the healthcare funding.

These reforms would necessitate that efficiencies are instituted as a pre-requisite: i) the base benefit package is as comprehensive as possible; ii) that the supplementary benefit package is standardised, and later allow for risk-rated cover once the supplementary benefit is uniform and standardised across all medical schemes. It was postulated that this mixed bag of reforms ought to allow for reduced adverse selection if supported by a proposed policy of risk-rated contributions for supplementary benefits. That said, these recommendations were made without considering the benefits of a Health Insurance Exchange (HIX) for standardising and improving the decision context of medical scheme beneficiaries. It is hoped that this needs assessment for a market

segmentation survey will further the policy agenda of creating a transparent and accountable medical schemes industry that places beneficiaries at the centre of healthcare.

1.2 Purpose

The purpose of this document is to provide a needs assessment for conducting a market segmentation survey of medical schemes benefit options. A market segmentation survey will enhance the ability of implementing: i) benefit option standardisation; ii) benefit simplification policy directives for model rules and marketing material; and iii) a sequenced policy strategy in the medical schemes industry that is consistent by circular 8 of 2008.

This needs-assessment intends to inform the activities required to establish criteria for developing a benefit analyser for regulatory and consumer information purposes. The needs assessment will therefore provide input on project design and implementation of the survey, to inform the tender specification for outsourcing the market segmentation survey.

The market segmentation survey will build on initial work done in a published research brief to identify benefit design clusters (CMS, 2019). The methodology was validated to be consistent with the research question. That said, the analysis did not include self-reported characteristics or preferences from beneficiaries. It is hoped that the market segmentation analysis will provide this information, so that discriminant and cluster analysis can applied for again for a better differentiation of benefit designs in the medical schemes industry.

The framework we develop in this needs assessment, is a strategy to segment the market of benefit options for an informed assessment of beneficiaries' market positioning by demographic, geographic, behavioural, psychographic characteristics associated selected benefit option consumption bundles. The framework focuses on the supplementary benefit packages offered by medical schemes.

The ultimate purpose of the market segmentation exercise is to establish reliable market segments with homogenous beneficiary characteristics by benefit option design. The output will assist the regulator to implement a framework for the standardisation of a supplementary benefit package, as per the HMI final findings and recommendations. (HMI, 2019).

Therefore allowing for: i) an intertemporal framework for sequencing the gradual inclusion of standardised supplementary benefits within benefit design configurations ; ii) conducting cluster analyses for identifying unique and mutually exclusive groupings of benefit designs -- based on market segmentation target groups that medical schemes signal their marketing messages to; iii) establishing a common glossary of terms by benefit designs, to enable simple choices by beneficiaries through codified model rules which inform marketing material, based on collecting behavioural and psychographic observations from the market segmentation survey; iv) the

incorporation of existing supplementary benefits into a comprehensive basic benefit package, with minimal market instability or unforeseen consequences; and v) to identify criteria for developing a benefit analyser tool.

A well-executed market segmentation survey could provide beneficial input to the development of networks, and health delivery strategies in designing benefit options. Market segmentation techniques such as geographic and psychographic segmentation, can provide good information on preferences regarding access and convenience, and self-perceived which ought to inform patient centered intervention and reasons why beneficiaries purchase specific benefit options. This is important as the HMI recommendation suggest increased prevalence of network plans to enable mandatory cover as a manner of reducing adverse selection.

1.3   Objectives

The objective of this needs assessment is to specify project activities and outputs of a market segmentation survey which is to be outsourced via tender, to a competent provider. More specifically; the objectives are to:

i)   Conduct a literature review on key themes for developing a framework for implementing the standardisation of the supplementary benefit package, a standardised supplementary benefit package was recommended by the HMI Final Findings & Recommendations Report.

ii)   Recommended a method for framing benefits design information to make information simple and accessible for beneficiaries, thus bringing beneficiaries at the centre of the private health insurance industry – this will optimise choice and improve services from the members' perspectives whilst disciplining the supply side.

iii)   Develop a project design and implementation plan for developing tender specifications to outsource the technical work related to rolling out

- Identify compact sets of distinguishable benefit design characteristics which are uniquely attributable to mutually exclusive groups of benefit designs, using cluster and discriminant analysis.
- a Choice Architecture approach to simplifying information related to benefit option designs/configurations within different market segments.

2.   LITERATURE REVIEW

The purpose of this literature review is to provide a theoretical unpinning to this needs assessment, by propping up the program theory and project evaluability of market segmentation survey. The market segmentation survey is for targeting standardisation interventions for benefit options within identified homogenous sub-markets. The literature review will cover five themes from peer reviewed literature. It will then conclude with a lessons learned section, that we will use to formalise the design and implementation processes of the option standardisation and market segmentation project.

2.1   Themes of the Literature Review

The literature review will be provided within the following themes:

i)   *Benefit standardisation and health insurance exchanges*.

The health insurance exchanges (HIX) in the United States (USA) are health insurance market-places available on state and federal websites. The eligibility criteria for insurers to make sell their benefit options, is that the options are standardised, all marketing material is standardised in terms of language used. HIXs in the US are thus a meaningful point of departure for designing and implementing a standardisation framework for the medical schemes industry ibn South Africa (SA).

ii)   *Conceptual framework –decision process and decision context*

Deciding on which benefit option to purchase is a complex decision. In order to frame information to assist with complex decisions, a conceptual framework of analysis for health insurance decisions as a theoretical basis for modeling decision outcomes. Being able to transform a beneficiary's decision context into a process that utilizes decision strategies that optimise beneficiaries' decisions, requires an understanding of specifically; the health insurance decision process and how it relates to the attributes of benefit design.

iii)   Market segmentation

The purpose of standardising benefit options and benefit option information is to be able to assist beneficiaries through complex decisions. To able to do this effectively, interventions need to be appropriately targeted at sub-populations that are similar in beneficiary characteristics. If similar interventions are directed at groups with different characteristics, standardisation and the design of messaging will not create effective market outcomes. A market segmentation exercise will divide the market into segments for benefit options, where beneficiaries have similar characteristics and profiles. Thus, allowing more effective option choices and signalling through targeted information. This will allow

for relevant standardisation interventions per market segments, which minimise market instability and lack of buy-in from beneficiaries and other industry stakeholder.

iv) <u>Health insurance experiments</u>

To be able to assess the effectiveness of option standardisation and information messaging interventions, we will have to conduct experimental analysis using discrete choice models. The literature reviewed provides an insight into the effectiveness of enabling interventions that help reduce complexity in making decisions.

v) <u>Conjoint analysis</u>

Conjoint analysis is an extension for discrete choice modeling techniques. The usefulness of this type of analysis, is that we are able to understand preferences that beneficiaries reveal on choosing benefit option service entitlements. Conjoint analysis can also tell us the perceived importance of each service entitlement, relative to all the other benefits on a benefit option from the perspective of beneficiaries. This is useful information for sequencing the roll out of the essential primary care package.

2.1.1 Theme 1: Benefit option standardisation & health insurance exchanges

Campbell and Shore-Sheppard (2020) say the Patient Protection and Accountable Care Act (ACA or Obamacare) was signed into law in 2010. The purpose of the law is to enhance access, affordability, and quality of healthcare (Campbell, and Shore-Sheppard, 2020).Among the many enablement clauses of Obamacare, health plans that are available on the health insurance marketplaces, are to be provided on one of five permissible benefit designs. Each type of benefit design is limits or standardises the variation of cost-sharing within pre-determined bands (Campbell, and Shore-Sheppard, 2020). The benefit designs are colloquially called bronze, silver, gold, and platinum (Campbell, and Shore-Sheppard, 2020). The order of generosity in benefits ranges from bronze plans with the lowest enrichment, and platinum plans have the highest enrichment (Campbell, and Shore-Sheppard, 2020).

Carman et al. (2015) examined the impact of the Obamacare on health insurance enrolment, before and after its initiation. Enrolment occurring on health insurance exchanges grew by 11.2 million people between 2014 and 2015 (Carman et al., 2015) . This is significant as part of the health insurance reform involved the standardisation of health insurance plans, and standardised information for health plans participating on health insurances exchanges (Carman et al., 2015).

Enthoven, Fuchs, and Shortell (2019) provide a solid basis for conducting a market segmentation analysis for the purposes of standardising medical scheme benefit options. Enthoven et al. (2019) argue for a market design that will empower beneficiaries to drive market failures and cost inefficiencies out of health systems through managed

competition. Managed competition is intended to incentivise health cost reduction and stable premiums through providing information to beneficiaries that assists them in optimising health insurance decisions (Enthoven et al, 2019). The authors refer to standardised benefit options that are made available on the Obamacare health market exchanges. The authors advocate that standardised plans will lead to market segmentation that focuses insurers on competing on premiums and quality health delivery networks, as opposed to signalling for preferred health risk profiles (Enthoven et al., 2019).

The next section cover research theme for conceptualising the beneficiaries' decision process in a health insurance context. We then provide literature on how to segment the market for targeted and effective policy interventions regarding standardisation, framing decision contexts to bring beneficiaries at the centre of healthcare. Bringing beneficiaries to the centre of healthcare was a highlight recommendation in Health Market Inquiry report HMI (2019).

2.1.2   Theme 2: Conceptual framework -- decision process & decision context

Ericson and Starc (2013a) looked at characteristics of enrolees' decisions on the Massachusetts health exchange, to draw-out helpful lessons for federal and state health care marketplaces, which were to be mandated under the Obamacare Act. They recommended that "choice architecture" should be used on the exchanges to reduce choice biases made by enrolees (Ericson and Starc, 2013a). The authors argued that health insurance choices are complex decisions, and people apply heuristics (rule of thumb methods) to make decision (Ericson and Starc, 2013a). Something like price could be used as the primary criteria for choosing a benefit option, such that other important considerations like benefit entitlements may be overlooked when deciding on benefit options. This mistake leads to perpetual mistakes that led to making default choices that would hinder adequate health coverage (Ericson and Starc, 2013a). The authors suggested that information ought to be framed in such way that reduces the bias introduced by the "bounded rationality" (inability to integrate too much information) problem emanating from poor health literacy (Ericson and Starc, 2013a). They say that information on benefits should first be listed by order of benefit enrichment and degree of cost-sharing, before asking enrolees to choose a benefit option (Ericson and Starc, 2013a). Ericson and Starc (2013a) also make mention of a separate health market exchange for young people between the ages 18 to 26. Benefit mandates are more relaxed on these exchanges, as there are benefit ceilings for essential and mandated benefits, and benefit enrichments are lower than on the minimum benefit bronze options of the Massachusetts health insurance exchange (Ericson and Starc, 2013a).

The differential platform for young people is an important consideration for providing cover for the financial vulnerability of low-income groups. It is not only relevant for Low-Cost Benefit Options and health insurance products that want to be regulated in the medical schemes regime. The platform for younger groups is also relevant when considering the recommendation from the Health Market Inquiry (HMI) Report. Among other

finding made by the panel's HMI (2019), the medical schemes industry ought find a way to cover age groups falling in the late joiner penalty age group.

Chandra, Handel, and Schwartzstein (2019) explain that behavioural economics can be incorporated into a framework for identifying and diagnosing causes of bad consumer choices, particularly in environments where there are choice complexities, and co-payments are used to reduce the incidence of moral hazard. Chandra et al. (2019) say that varied co-payments across benefit designs results in enrolees unknowingly paying excessive out of pocket amounts, also leaving similar cover at less premium levels "on the table" (Chandra et al., 2019).

These incremental out of pocket amounts ultimately make beneficiaries price sensitive with increased healthcare consumption, and not insensitive to added consumption (Chandra et al., 2019). This observation is consistent with the findings of Burger et al (their work is covered later in this review), they found that South African households with health insurance are sensitive to price changes, in all but the highest income band analysed. The price sensitivity of health insurance enrolees contradicts the accepted notion that health insurance creates moral hazard, because members are to not feel the full expense of healthcare utilisation, due to health insurance payments on behalf of beneficiaries' (Chandra et al., 2019).

Chandra et al. (2019) explain that standardising benefit options in market segments that have beneficiaries with similar characteristics, increases the benefit (welfare) of beneficiaries, particularly in health insurance markets with large variances in premiums across different benefit options having similar benefits. The authors (Chandra et al., 2019) cite healthcare market experiments that report findings that healthcare markets with fewer benefit options, are more beneficial to beneficiaries than healthcare markets with a lot of choice. These experience are based on the numerous provincial healthcare exchanges (healthcare markets) introduced by Obamacare in 2014.

Chandra et al. (2019) say that behavioural health economics should not only be used to identify instances of bad choices by beneficiaries, but that behavioural economics should be used to establish frameworks of analysis to explain the reasons behind bad choices in the selection benefit options. In fact, work should be done in the following areas:

i) Measing the extent to which information improves benefit option choices,
ii) Identifying and describing the types of information, and the ways of communicating this information to help beneficiaries make better benefit option decisions,
iii) Finding the optimal configuration of benefits, co-payments, and benefit ceilings for standardised benefit options in specific market segments; for a regulator to identify as a default option for beneficiaries that are switching benefit options.
iv) How health insurance regulators can establish a platform to assist beneficiaries to choose benefit options, as a supplementary function to existing options available to beneficiaries.

These recommendations by Chandra et al. (2019), are consistent with Enthoven et al. (2019) approach to keeping health costs down through managed competition. Chandra et al. (2019) are advocating managed competition though empowering beneficiaries with the structuring of choice sets ("choice architecture"), and information in a way that reduces bounded rationality through a behavioural economics research agenda.

Loewenstein, Asch, Friedman, Melichar and Volpp (2012) provide commentary on the use of behavioural economics in public policy settings, particularly for healthcare administration in both the US and the United Kingdom. Loewenstein et al. (2012) say that growing popularity of behavioural economics is that it "nudges" the behaviour of individuals to better social outcomes, without having to implement expensive regulation or threats to bad behaviour.

Mullainathan and Thaler (2000) describe three concepts which are fundamental to behavioural economics, they then explain how these concepts can be applied to a consumer's decision environment. These three concepts provide a nuance to traditional microeconomic decision theory (Mullainathan and Thaler, 2000). The nuance is that latter approach does not allow for intrinsic "human limitations or complications" that may result in decision error (Mullainathan and Thaler, 2000).

The first concept is "bounded rationality" (Mullainathan and Thaler, 2000), which means for example that; beneficiaries are not able to consider all possible alternative configurations of benefit option attributes to choose one specific option. The second is "bounded willpower" or "bounded self-control" (Mullainathan and Thaler, 2000), which can be explained with this analogy; a beneficiary may discount the benefit of purchasing supplementary benefits in the immediate future, and thus procrastinate only to purchase these benefit when he/she is older or needs them. The third phenomenon is "bounded self-interest" (Mullainathan and Thaler, 2000), which can be explained this way; members of medical schemes allow ex-gratia payments to be made, to beneficiaries who need them, that up and above routine benefit limits because beneficiaries believe it improves all members' welfare when ex-gratia is granted.

The standardisation of benefit option attributes is hoped to resolve the bounded rationality problem. Bounded self-interest can be achieved, if relatively young and healthy profiles acknowledge the benefit of doing away with perceptions about health that create bounded self-control. Currently, healthcare administrators use interventions to deal with bounded self-control problems through providing incentives for going to the gym. That said, the bounded rationality problem, which emanates from observations made by the same behavioural economics that promotes healthy lifestyles, is not acknowledged to resolve choice complexity. In fact, the stance taken by some medical schemes and administrators is to rely on the hedonistic rational expectations approaches to designing benefit options. Interestingly enough, some medical schemes see creating more benefit options (choices) as good for bounded rationality.

More importantly, Earl (2018) says that Richard Thaler's Nobel Prize winning (in 2017) contribution to the social science of choice theory, is augmenting rational expectation with an approach for helping with complex choices. Thaler's "choice architecture" framework "nudges" consumers out of repeated choice mistakes through framing information such that intrinsic bias is taken out of decisions (Earl, 2018). In this way, Thaler's perspective to behavioural economics has closed a gap in rational expectations theory, in that behaviour which does not explain self-interest (rational behaviour) can be corrected for better Pareto-optimal (efficient) outcomes (Earl, 2018).

The principles discussed by Mullainathan and Thaler (2000) and (Earl, 2018), can be super-imposed onto the conceptual framework designed by Berki and Ashcraft (1980). The framework by Berki and Ashcraft (1980) refers to conceptual framework for health insurance decision which will introduced later in this section. Super-imposing behavioural economics principles to the decision framework, allows policy researchers to evaluate the efficacy of "choice architecture," on health insurance experiments. Ericson and Starc (2013) conducted an experiment on the Massachusetts health insurance exchange, to see how framing complex decisions in easier way improved the welfare of enrolees.

The Ericson and Starc (2013b) experiment on health insurance choices on the Massachusetts HIX (to be discussed later in this review), showed that Thaler's "choice architecture" helped to deal with the bounded rationality problem, and also induced more generous benefit option choices as cost-sharing was standardised. The standardisation of cost-sharing meant that younger people reduced choice bias and "bounded willpower", such that procrastination was reduced (Ericson and Starc, 2013b).

Bounded self-interest occurred as enrolee welfare on the Massachusetts HIX increased, due to the consolidation introduced by market share growth of more generous health plan options. Including psychographic components to a market segmentation survey will provide insight into how altruistic attitudes and preferences underlying beneficiaries' decision-making process. Whether people or the covered community on a scheme believe cross-subsidization. This is relevant for keeping young people on medical schemes.

Thaler, Sunstein, and Balz (2013) explain that the purpose of "choice architecture" is to assist people to make choices that link their decision to optimal satisfaction. The authors call this process mapping, it is best achieved by transcribing technical information into an understandable format (Thaler et al., 2013).

Thaler et al. (2013) say that as a decision becomes more complex, and choice alternatives take on a multi-faceted form, the framing of the decision context must take on a simplified strategy to yield unbiased decisions. An example in benefit option decisions is deciding between benefit options with differences in cost-sharing, benefit ceilings and numerous levies to access select benefits. Thaler et al. (2013) suggest that a process of "collaborative filtering" is an ideal process to assist with such complex decision.

An example of how "collaborative filtering" was applied by Ericson and Starc (2013b), on analysing choice patterns related to benefit option standardisation on the Massachusetts health insurance exchange. Enrolees were asked to rate the importance of specific benefit attributes relative to all benefits on an option.

The implication is that people that prefer similar benefit options, which have been rated by experienced users, have a reference group to validate their decision. This approach will also be useful for identifying default benefit options for specific market segments. Identifying default options this way will simplify mergers.

Dellaert, Johnson and Baker (2019) explain how "choice architecture" can be used on a user platform for health insurance enrolees. Dellaert et al. (2019) say the choice architecture should be designed such that choice processes improve consumer choice outcomes and welfare. Dellaert et al. (2019) advocate that decision processes can be designed to the benefit of health insurance consumers through: i) "informed ordering" of benefit design choice sets from most important attribute to the least important attribute, which will help consumers focus their attention on benefit design attributes that will improve health outcomes; and ii) "choice set partitioning" of the basket of benefit of health services in a benefit option, such health service benefits are represented in smaller choice sets; i.e., choice sets of the basket of services are placed in consumption bundles.

Partitioning will improve the decision strategy of health plan enrolees, as compensatory trade-offs between alternative health plan benefits are easier to make (Dellaert et al., 2019). This way people are less prone to make decision errors that lead to unplanned movements (churning), and inertia (buy-down which lead to the spiral effect).

Partitioning also allows for the framing of the designed decision process to integrate the selection of plan attributes across consumption bundles, so that decisions or not based on a singular plan attribute. Decisions that are based on single benefit option attribute, are dominated by other plan options (Dellaert et al., 2019). This is due to the bias introduced by decision heuristics (simplistic decision strategy based on rule of thumb when facing complex choices). Heuristics causes the overweighting insignificant criteria in the decision process (Dellaert et al., 2019). An example would be exclusively having optometry and dental benefits as salient desirable plan attributes, thus leaving important health interventions "on the table."

Dellaert et al. (2019) say it is extremely important when a user platform ("user model") is used to make health insurance decisions, that the designers of the choice architecture do not introduce flawed assumptions to the user platform. They also suggest that platform designers should be aware of the differences in the characteristics of health insurance enrolees, otherwise the user platform may introduce bias when identifying a default option to evaluate enrolee decisions or select an incorrect default option for policy purposes (Dellaert et al., 2019).

This is why it is important to do a market segmentation survey for market positioning by beneficiary profiles from demographic, geographic, behavioural, and psychographic perspectives. A conjoint analysis is also useful to

understand the relative importance of salience attributes of a benefit option, from the perspective of beneficiaries in market segments.

Berki and Ashcraft (1980) published an article that provided a framework of analysis on consumer decision processes when making a benefit option choices. Berki and Ashcraft (1980) postulated that family economic characteristics (or economic vulnerability), risk factors (health risk vulnerability), and family beliefs and attitudes about medicine are factors that contain variables that informed expected healthcare utilisation. Family psychosocial expectations on patient centered care, their need for convenient access to physicians and freedom of physician choice, determine a family's preference for health plan delivery systems and networks (Berki and Ashcraft, 1980).

Berki and Ashcraft (1980) say; health plan characteristics are evaluated by potential enrolees for: i) benefit content; ii) degree of cost-sharing; iii) benefit ceilings; and iv) premium levels. The characteristics of the health plan's delivery system are assessed by potential enrolees in terms of: i) geographical access; ii) continuity of care (e.g., ability to develop relationship with provider, and ability to choose provider); iii) the comprehensiveness of services received from a health facility; iv) quality of care; and v) social quality (e.g., physical attraction and professionalism staff.

The conceptual framework provided by Berki and Ashcraft (1980) is valuable input on the types of variables that would need to be incorporated in a market segmentation survey. The framework also speaks to the socio-economic consideration relevant to households' decision making, this is useful for considering budgetary impacts of benefit option standardisation on existing medical schemes beneficiaries. More importantly, socio-economic considerations are also at the heart of the types of decisions low-income households will make regarding the new primary care package; the development of the (Low-Cost Benefit Option (LCBO)/demarcation process; and alignment with the NHI primary care package. Geographic access, patient centered care, and continuity of care dimensions; suggest that unique applications exist pertaining geographic market segmentation regarding health care networks and health delivery consideration in beneficiaries' decision-making processes.

Juba, Lave, Shaddy (1980) developed a framework of analysis on health insurance enrolees' decision process in choosing between a network plan, and a comprehensive path with fee-for-service and co-payments. Like Berki and Ashcraft (1980), the Berki and Ashcraft (1980) framework of analysis distinguishes between two components of risk vulnerability ("vulnerability hypothesis") and economic vulnerability . Juba et al. (1980) say that allowing for risk hypothesis in the decision framework, de-emphasises the overstated role of adverse selection in health plan decisions; and emphasises the role that signalling plays in designing health plans (Juba et al., 1980). According to Juba et al. (1980), the two components of the risk vulnerability hypothesis can be described as follows:

i)   Economic vulnerability is defined as the expectation of having healthcare costs, and the affordability of covering such as an expenditure. Under this factor, they identify the following variables as important determinants of health insurance decisions: 1) Household income – determines the premiums that are

affordable; 2) Level of education – determines the extent to which a new innovative health insurance package is understood; 3) Family size – this determines the affordability of a comprehensive plan for a large family.

ii) Health risk vulnerability is determined by the predisposition a potential enrolee regarding their health condition. Health risk vulnerability specifically related to health needs and their impact on health seeking behaviour. Juba et al. (1980) identify the following variables as emanating from health risk: 1) the number of family members that fall a health risk age category; 2) the age of the health plan decision maker; 3) previous healthcare expenditure; and 4) self-reported health status levels.

Mattke, van Busum, and Martsolf (2014) prepared a report to help employer groups (restricted schemes), which provide insurance in the USA, to develop a framework for assisting employers and employees to select benefit options. This framework explains the structural attributes of a benefit option (Mattke et al., 2014). The framework was developed using a focus group of experts and a systemic review on enrolees' health plan decisions (Mattke et al., 2014). The work was also augmented by focused interviews with employer groups, as a snow-balling research methodology (Mattke et al., 2014).

The Mattke et al. (2014) report also identifies tools and metrices to assist employer groups to differentiate between different design configurations. The report identifies interventions made in terms of the Obamacare Act. The Obamacare Act requires health insurers to standardise all benefit communication material (Mattke et al., 2014). This is known as the 'summary of benefits and coverage' (SBC), which standardises the language used for describing health insurance options and explains these attributes in a standardised glossary of terms (Mattke et al., 2014).

The Mattke et al. (2014) report is useful for the standardisation process in the South African medical schemes environment. The dimensions on which to standards options can be identified through the structural attributed mentioned in the Mattke report. The collection of benefit information to develop model rules specific to benefit design, can also benefit from a codified dictionary for terms used to describe the attributes of benefit options.

To be able to design a platform to assist members to make optimal decisions regarding benefit design attributes, it is important that policy interventions are appropriately designed and targeted at intended groups of beneficiaries. This is because the medical schemes population is heterogenous (highly differentiated in terms of covered profiles). Therefore, market segmentation is required to understand how the message information for intended healthcare behaviours, and how to standardise benefit options for specific market segments. Market segmentation is the next theme we cover in the review.

2.1.3 Theme 3: Market segmentation

Goyat (2011) provides a generic definition of market segmentation, explains the conventional steps to conduct market segmentation, and lists variables for the four different approaches to market segmentation. According to Goyat (2011), conventionally, the four approaches to segment markets are i) demographic (variables would descriptive characteristics of the population of interest, such age, gender, education etc…); ii) geographic (domain of residents and associated characteristics); iii) behavioural (described by the product attributes demanded, and frequency of use); and iv) psychographic (the variables that describe this dimension would be interests, opinions, values, attitudes, and lifestyle). Seven steps for conducting a needs-based market segmentation are provided, but the author says that the appropriateness of the steps is wholly determined by the kind of product market that is being segmented (Goyat, 2011). Ultimately, the purpose of market segmentation is to meaningfully break-down a heterogenous market into homogeneous sub-segments, so that targeted market strategies are applied on homogenous groups (Goyat, 2011).

Goyat (2011) raises a pertinent point, and that is market segmentation should be driven by an underlying rationale and strategy. A market segmentation survey conducted by a regulator in the private health industry ought to be geared to optimising consumer choices, through interventions targeted reducing complexity or framing the decision context in such a way that reduces complexity. More specifically the CMS ought to be guided by sections 7(a) and (f), and according to the business model described in section 33(2).

Yankelovich and Meer (2006) write about the importance of using psychographic segmentation for the proper purposes it was intended, that is to identify consumer needs, and change consumer behaviour. More importantly, if the segmentation drive is to inform product development, both data and attitude surveys ought to be used (Yankelovich and Meer, 2006). It is not enough to identify mechanisms to change behaviour through geographic and demographic segmentation, as the rationale should focus on changing consumer behaviour (Yankelovich and Meer, 2006). Not changing the identities of consumers. Identifies are not appropriate for messaging and product development (Yankelovich and Meer, 2006).

Yankelovich, and Meer (2006) say, if consumers are shopping around for "life-altering choices, you will want to inquire into their most deeply held beliefs." These are the fundamental principles underlying for example, a decision to purchase a health insurance plan option. The decision process associated with health plan decision cannot be compared with convenience goods or routine purchases (Yankelovich, and Meer, 2006).

Changing decisions based on a process of standardising benefit attributes, and framing decision information to guide beneficiaries through complex decisions; requires a deep probe into variables that explain why people make decisions. There is literature which has asked probing questions on the psychological aspect of making complex decisions. Their recommendations point to the use of psychographic market segmentation to develop audience message for different health seeking behaviours.

Slater (1996) provides a qualitative descriptive analysis on the importance of designing audience segmentation strategies for public health interventions directed to improve knowledge, attitudes, and the behaviour of targeted sub-populations. He advises that research teams that intend to provide meaningful information that target how audiences will respond, need to identify factors that influence the knowledge, attitudes, and behaviour of healthcare consumers (Slater, 1996). Then, based on this information, to determine patterns of behaviour associated with these determinants (Slater, 1996). This will help create homogenous groupings of sub-populations for effective policy interventions that are target at creating behavioural shifts in healthcare decision and utilisation (Slater, 1996). Slater (1996) says that all market segmentation efforts should not instinctively segment markets by demographic information as though demographic information alone explain attitudes and behaviour.

Bloem, Stalpers, Groenland, van Montfort, van Raaij, and de Rooij (2020) conducted a factor analysis from survey responses on variables describing self-reported health experience. The authors were able to implement a theoretical construct that identified the determinants of perceived subjective health (Bloem et al., 2020). The authors advocate that this approach should be used as a baseline for conducting market segmentation for healthcare populations (Bloem et al., 2020). Their efforts are justified by their view that purely data driven market segmentation processes should not be used for market segmentation exercises (Bloem et al., 2020). The authors feel that these approaches' are not reliable for extrapolating outside the analysed dataset (Bloem et al., 2020). Most importantly "segments are not stable over samples and over time" (Bloem et al., 2020).

The Bloem et al. (2020) analysis finds that the factors that determine self-reported health status are acceptance and self-control. These factors have a positive relationship with health status, and if median cut-offs are used in the factors' range scores, then four market segments can be used to describe health status profiles of respondents (Bloem et al., 2020). If criteria for psychographic and behavioural market segmentation are also used, then the self-reported health status profiles will add further qualitative information to appropriately segment healthcare markets (Bloem et al., 2020). Bloem et al. (2020) say that if perceived subjective health is used to develop profiles for market segmentation, this information could be integrated in designing patient centered innovations for health delivery network.

The observation made by authors about the unreliability or external validity of observations made from data driven methods is extremely important. The implications resonate in what Dellaert et al. (2019) also have to say about getting profile right for choice models. Because the nature of study population in health financing markets is extremely heterogenous; designers of choice architecture need to make sure they apply the correct assumptions when developing decision support interventions for users (Dellaert et al., 2019). The approach used by Ericson and Starc (2013b) to conduct an analysis on the standardisation of health plans on the Massachusetts health insurance exchange, becomes relevant at this juncture. Since the market segmentation outcomes need to be externally valid, and the intervention groups must be consistent through time and place; the

researchers used a difference-in-differences approach for their discrete choice experiment (Ericson and Starc, 2013b).

The HMI report requires that more work be done to enrol young groups that may fall in the late joiner penalty cut-off age group (HMI, 2019). Incorporating psychographic segmentation questions in the market segmentation survey, and linking these to socio-economic, geographic, and demographic values; may assist in targeting young groups to increase solidarity in market segments.

Vuik, Mayer and Darzi (2016) propose the notion that patient segmentation could be used to support integrated care strategies for market segments. The reason for this is that the purpose of patient segmentation is to identify patient needs for the informed targeting of discrete patient groups (Vuik et al., 2016). Their approach to segmentation looks at the population as a whole, and then groups the population segments based on a risk stratification scoring system (Vuik et al., 2016). The stratification is conducted at primary care level, and then coordinated healthcare delivery interventions are used to manage healthcare needs (Vuik et al., 2016). The patient segments are then targeted based on specific health needs (Vuik et al., 2016). The system is used by the English National Health Services in London (Vuik et al., 2016).

Engelberg and Neubrand (1997) provide a taxonomy of market segmentation criteria within the health industry context. The authors (Engelberg and Neubrand, 1997) make an appeal that the basis of conducting a market segmentation exercise ought to be based on strategic objectives, and segmentation should not be driven by methodology or sticking to conventional segmentation criteria or theory.

Engelberg and Neubrand (1997) explain that the types of available benefit options and self-care behaviour are useful variables for conducting a behavioural segmentation. They also introduce a segmentation criteria related to the benefit package differentiation (Engelberg and Neubrand, 1997). The authors say that the specific attributes of a benefit options are by their very nature market segmentation criteria (Engelberg and Neubrand, 1997).

Using self-care behaviour as a behavioural segmentation criterion as suggested by Engelberg and Neubrand (1997), concurs with what Vuik et al. (2016) and Bloem et al. (2020) say about the usefulness of patient centered and integrated care interventions for market segmentation. Although the letter suggest that patient centered approaches fall under psychographic techniques (Vuik et al., 2016) and (Bloem et al., 2020).

Once market segmentation has been conducted, and the concerns and needs of beneficiaries are targeted with homogenous market segments, it means that standardisation and message signalling can be applied on the unique market positions of benefit designs. If this is true, then it is possible to design standardisation around what will benefit medical schemes beneficiaries. It would also be meaningful to measure the outcomes of standardisation, and audience segmentation for each type of benefit design. We discuss the relevant literature in the next section of the review.

2.1.4 Theme 4: Household consumption shares & health consumption experiments

The first two papers we discuss employ systems of household consumption functions using national household survey data. The intention is to provide an understanding of health insurance and healthcare budget allocations made by households. This information is both useful for two reasons: i) to get an understanding on how standardising benefits and cost-sharing, impact household budgets of households on medical schemes; and ii) to get an understanding of to what extent, low-income households and health insurers wanting to be medical schemes, are sensitive premiums and are constrained by affordability issues.

The rest of the of this section of the review discusses research methods that have been used to: i) measure the impact of standardisation, and information messaging on health plan choices; and ii) deal with the non-random nature of self-selection in health plan choices, to estimate the true effect of standardisation.

2.1.4.1 The use of linear expenditure systems

Burger, Coetzee, Kreuser, and Rankin (2015) use a linear expenditure system (LES) method, to estimate the relative price sensitivity, and income sensitivity of South African households. The analysis analysed the distribution of households' expenditure within household budgets for all South African income groups (Burger et al., 2015). The Burger et al. (2015) analysis sort to capture the consumption behaviour of households, relative to income spent on goods and services in the Statistics South Africa (STATSSA) that are captured in the Household Income and Expenditure Survey. The authors' analysis established that South African households found health insurance (included in financial services product category) to be a commodity they would buy more of if their incomes increased (health insurance has a high-income elasticity of demand) (Burger et al., 2015). South African households were price sensitive (sensitive to the premium changes) in two of the five reported income bands (the lowest and the top two income bands were not price sensitive to premium changes). The findings of the authors begin to capture the behaviour associated with the financial risk vulnerability of health insurance decision making across South African households.

Koch and Bosch (2009) use an Almost Ideal Demand System (AIDS), to estimate household expenditure parameters across all income bands. The parameters were than used to simulate a required level of subsidisation to compensate households for the impact of inflation negatively impacting household budgets. Although the analysis was focused on the impact of inflation on household budgets, it is promising when considering how much low-cost benefit options ought to be subsidised to become full blown medical schemes.

An interpretation of the Burger et al. (2015) and (Koch and Bosch, 2009) findings, relative to the policy agenda in the South African health insurance environment, could be that: i) if a subsidy were awarded through a special tax credit for targeted income groups, than it could assist the viability of a LCBO market. ii) since lower-income

households are sensitive to premiums and out pocket health expenditure, it may mean that LCBO benefits ought not to have any form of cost-sharing or levy.

2.1.4.2 Health insurance experiments & quasi-experimental approaches

Hsu and Fung (2016) assessed of how the financial vulnerability of low-income Californian's improved as a result of the Patient Protection and Affordable Care Act (ACA), which prescribed premium and cost-sharing subsidies on eligible plans. These premium and cost-sharing subsidies were allowed for benefit options that were provided on the health insurance market exchanges (Hsu and Fung, 2016). The criteria for accessing premium and cost-sharing reductions on health plan options were based on income eligibility based on the federal poverty line thresholds. Hsu and Fung (2016) say that subsidies would be available only on silver plans (silver plans are a standardised benefit designs that are available on health insurance exchanges). The authors found that a majority of eligibles enrolees on the individual (open medical schemes) health insurance market, did not enrol on health insurance market exchanges, which meant they were not able to access premium subsidies and cost-sharing reductions (Hsu and Fung, 2016). That said, the majority of health insurance enrolees that actually used health market exchanges, enrolled onto the silver plans and were thus able to lock into subsidies (Hsu and Fung, 2016). Those that accessed benefits on eligible plans on the health insurance exchange, found healthcare and insurance relatively less expensive than those who did not choose a silver plans (Hsu and Fung, 2016). Also, enrolees that were eligible for subsidies but did not access plans on the health exchange, paid much more for health insurance than relatively similar plans on the health market exchange. Hsu and Fung (2016) find that information promotion drives should be used to educate low-income health insurance enrolees, and better tracking of enrolment among this cohort will assist in monitoring access as per ACA policy intentions.

The implications of subsidies for cost-sharing can be positive, when taking consideration of delayed utilisation of needed care on patient health. The policy intervention discussed by Hsu and Fung (2016), makes mention that the ACA provisions were targeted at vulnerable income groups. Out of pocket payments or deductibles can have a detriment impact on low-income groups' health outcomes, this should be seriously considered for the standardisation of benefit options in the South African Medical Schemes industry.

Agarwal, Mazurenko and Menachemi (2017) weigh in on the detrimental effect of high cost-sharing requirement in benefit options. Agarwal et al. (2017) reported the results of their systematic review on enrolment plans with high cost-sharing for enrolees. The research was spurred on by a high enrolment of high deductible (cost-sharing) health plans, which raised public policy concerns about their implication on health and expenditure (Agarwal et al., 2017). The authors found that that these high cost-sharing benefit options reduced healthcare expenditure, but also created a reduction preventive care and adherence to chronic medication (Agarwal et al., 2017). The reduction in healthcare obviously came at the cost of poor adherence and health maintenance. This seems to point to the concerns raised by Ericson and Starc (2013a). In that, if enrolees place too much value on price, they are likely to forgo critical healthcare, as they will almost certainly select a high deductible health plan.

This also has far reaching implications for the inclusion of preventive cover in standardised benefit option in South African medical scheme environment.

Berkman, Sheridan, Donahue, Halpern et al. (2011) conducted a systematic review to establish the impact of health literacy programs on improving health literacy among patients. This systematic review may be saying more about the effect of literacy programs on compliance, rather than the ability of literacy programs to enable meaningful health outcomes. Patients seemed to be activated by attempts to improve their awareness and knowledge of health conditions. The authors report evidence of improved understanding when assessing causal outcomes of mixed intervention strategies for disease management programs (Berkman et al., 2011). That said, the evidence on the impact that literacy programs have on self-efficacy and psycho-social behaviour, seemed either sparce or inconclusively mixed (Berkman et al., 2011). This perhaps explains the growing interest in psychographic market segmentation in order to capture attitudes, perceived norms and beliefs, and preferences that inform behaviour in healthcare markets. This is pertinent considering the analytical framework for health plan making, which was conceptualised by Berki and Ashcraft (1980). It is also extremely relevant in the sense that the HMI recommendations see networks and pay-for-performance as central to reducing costs in the medical schemes industry. The Berkman et al. (2011) findings suggest that a lot work needs to be done to understand the true effect of disease program interventions, using program evaluation (experimental) methods.

Brooske, Sainfort, and Hundt (1999) conducted a choice experiment on employees from an employer group (restricted scheme) in Wisconsin. The experiment asked employees to select an option and rate the benefit items by order of importance three times, employees had one pre-test, and two post-test opportunities to make a health plan choices (Brooske et al., 1999). Employees were given sets of information at two post-test incidence, before they were allowed to review their initial choices. The experiment was simulated using a computer programme that guided employees through provided information when they were making their choices (Brooske et al., 1999). The authors found that employees adjusted or changed their choices at both post-test incidences (Brooske et al., 1999).

Brooske et al. (1999) concluded that it is not enough to provide information to consumers, but consumers must be assisted to understand the information, and they should be guided through to the point of making a choice. The significance of the timing of the experiment is that it occurred before the implementation of Obamacare health insurance markets in 2013/14.

The finding that enrolees changed their decision when more information was given, is indicative of the bounded rationality problem, and that health insurance decisions are complex. It would be interesting to compare these findings with experiments conducted on a platform where participating health plans are standardised; and communicated information on benefits is standardised.

Loewenstein, Friedman, McGill, Ahmad, Linck, Sinkula, and Beshears (2013) provide the results of two surveys that sought to: i) elicit whether consumers understand traditional health insurance; ii) establish whether simplified plans with co-payments result in lower health utilisation than on traditional plans with some deductibles; and iii) quantify the preferences of consumers on traditional and simple plans. Loewenstein et al. (2013) found that although simplified health plans were simpler to understand than traditional options; preference measures did not suggest that consumers on traditional plan options would switch to simpler plans.

It is evident from the results of the Loewenstein et al (2013) study, that enrolees still do not use the new information they are given to make decisions. However, Berki and Ashcraft (1980), and Juba et al. (1980) have explained, in the reviewed literature regarding conceptual framework theme, that an analysis on healthcare decisions needs to disentangle economic vulnerability from health risk vulnerability. So, although it may have been cheaper to move to the simpler network plan on the basis of economic vulnerability, those requiring open access at fee-for-service reimbursement, may be exposed to risk vulnerability.

Additionally, in considering the conceptual framework theme of this review, Chandra et al. (2019) could be used to weigh in on the implication of experiments conducted like in Loewenstein et al. (2013). Chandra et al. (2019) said that in instances of identifying default options to refer prospective enrolees to, the relative welfare effects on individuals should be considered. As an example, a relatively simple network plan might not be beneficial to someone with multiple chronic conditions when considered against a comprehensive traditional plan.

Ericson and Starc (2013b) conducted an experiment on the Massachusetts health exchange, to identify the impact of standardising cost-sharing and reframing the decision context of enrolees when making decision on a benefit option. The experimental design was similar to a dose response experimental trial with three control arms: including pre- and post-test stages. At each stage members were provided with information of benefit options and were then asked to rank the benefit option attributes by order of importance, followed by a decision of which benefit option to choose (Ericson and Starc, 2013b). The enrolees were presented with a choice at pre-test (before option standardisation and adjusting the choice context), and at post-test (after option standardisation and adjusting contextual information).

Ericson and Starc (2013) also conducted a difference-in-differences analysis, to adjust for selection bias. They also applied propensity score matching to balance enrolee characteristics that were allocated to the three experimental control arms (Ericson and Starc, 2013b). For the purposes of identifying the true effect of standardisation, a two-stage model with instrumental variables was used (Ericson and Starc, 2013b). The instrumental variable was to adjust for enrolees who were given information to improve their decision-making context; but were either unable to internalise the information or were members who simply retained their default choice from the previous year (meaning they adjusted for non-compliance) (Ericson and Starc, 2013b). Simulations were also carried out to assess to what extent standardising benefit option options' cost-sharing

mechanisms had on market share (Ericson and Starc, 2013b). A simulation was also carried out to assess whether standardisation had a positive effect on enrolees' welfare (Ericson and Starc, 2013b).

Ericson and Starc (2013b) found that standardisation had a positive effect on enrolees welfare, and enrolees were able to select more generous health plans or changed health plans. Standardisation also had an impact on health plan market shares (Ericson and Starc, 2013b).

2.1.5   Theme 5: Conjoint Analysis

Chakraborty et al. (1994) and Gates et al. (2000) used discrete choice models to assess the choices preferences of employees provided cover from two separate employer groups. They were able to estimate part worth elasticities (preference measures), for each benefit entitlement that employees selected. They were also able to establish the importance of each selected benefit, relative to the other benefits in a benefit options.

The significance of their analyses is that we will be able to assess the relative importance of benefit option attributes across all benefit options in all market segments. The benefit of being able to so, is that we will be able to understand how to sequence benefit standardisation, taking into consideration the unique behaviours of each market segment. We will also have an idea on how to sequence the process of turning supplementary benefits into essential primary care benefits.

2.2   Relevance of review for Charting Way Forward

2.2.1   Lesson Learned

2.2.1.1   Establishing affordability of benefit content for households

Two papers we reviewed showed how using income and expenditure household surveys can explain household budget allocations for healthcare expenditure. Price sensitivity (additional out-of-pocket payments and premium changes), and financial vulnerability (financial exposure to healthcare events and the propensity to seek coverage) of households can be derived by using household expenditure models. This information is useful for informing standardisation could potentially impact households price sensitivity and financial vulnerability. This type of analysis on household budget allocations can also assist with low-cost benefit options (LCBOs), and the viability of default options for a network of umbrella schemes.

2.2.1.2   Framework for health insurance decision

The conceptual framework health insurance decisions provides a good baseline for developing a standardisation framework simplifies decision making. By offering a decision strategy that obviates critically salient dimensions of

benefit options attributes will increase transparency, through increasing the decision focus and benefit partitioning of benefit option consumption bundles.

2.2.1.3   Health insurance portal & benefit analyser

Health insurance exchanges (HIXs) can further the objectives of managed competition in private health insurance markets, as they enable the features that Enthoven et al. (2019) say managed competition market are designed to do. Enthoven et al. (2019) prescribes that the features of a managed competition environment include, but are not limited to: i) all premiums differences being the result of informed consumer choices that reveal the preference for more, relative to, less cover; ii) standardised benefits that allow consumers to observe quality and premium differences, and thus reducing benefit proliferation due to choice complexity and bounded rationality (difficulty of choice due to too and much varying information); and iii) provide health insurance enrolment guidance through a health market exchange, which is sponsored by a regulator; to avoid the impact of principal-agent problems in markets with information asymmetry. This portal can also be used to conduct health insurance market experiments to identify default options for mergers, or appropriate fits for an umbrella scheme network.

2.2.1.4   Basis for developing market conduct guidelines

In terms of the objectives underlying a component of the twin peaks model (market conduct), is the necessity of product simplification and product transparency. A market segmentation aids the simplification of beneficiaries' decisions through collecting relevant data on consumer demographics, geographic location, consumer behaviour, and the psychographic attributes such as values and attitudes. The variables used market segmentation criteria can be used to develop behavioural profiles of beneficiaries which are unique to specific benefit designs. This will allow us to standardise benefit options appropriately for each market segment, and frame information such that beneficiaries choices are optimised. Choice architecture can also be used to develop a choice strategy to make the many dimensions benefit design attributes easier for beneficiaries to navigate. The output of psychographic segmentation can assist with marketing material and developing model rules for benefit designs in specific market segments.

2.2.1.5   Regulatory supervision and policy development

We have also discovered how health insurance experiments have been used to estimate the effectiveness of benefit option standardisation, and the choice architecture on health market portals designed to make easier benefit option decisions. The CMS could use these learnings as baseline to design and implement a portal for such purposes, pursuant to establishing criteria to develop a benefit analyser. A decision support tool could also

be developed, to assist the Benefit Management Unit with analysing medical schemes marketing plans, on applying for the registration of their benefit options.

2.2.2   Relevance for project design & implementation

We will use what we have learned from the literature, as principles that inform the project design and implementation of a very much needed market segmentation survey.

3.   PROJECT DESIGN & IMPLEMENTATION

This section covers the project design and implementation plan. It is divided into the following sections:

i)   The project design this cover:
- The program theory -- the underlying assumptions behind why we need to conduct a market segmentation survey, and also provides resources and activities to obtain project outcomes, and
- Project evaluability -- this presents the ways and how, and feasibility of having various outputs conducted.

ii)   Project implementation section, which provides finer details of work activities and output.

3.1   Project Design

3.1.1   Program Theory

Figure 1 below is taken from Chandra et al. (2019), she used this to describe welfare that can be gained from implementing a risk equalisation framework for health insurance beneficiaries. The same analogy could be used to assess the impact that having standardised market segments for benefit option benefit designs. This is on the assumption that standardisation increases the likelihood of optimal decisions, at the most efficient premium due to increased competition, from having medical schemes compete equally on homogenous behaviour profiles within each market segment.

 When Chandra et al. (2019) explained the analogy in their work for risk equalisation, the horizontal marginal costs curve is assumed to be horizontal as marginal costs are equalised for beneficiaries on a risk equalisation scheme. The same effect can occur in an environment where market segments have a common community rate faced by beneficiaries having similar behavioural profiles and characteristics.

Due to standardisation with improved decision context and information for beneficiaries, members do not overweight the importance of certain salient benefit entitlements. As a results they do not leave quality offerings that are provided at cost efficient rates "on the table." Therefore, the demand curve moves to the left, and as a result welfare is increases.
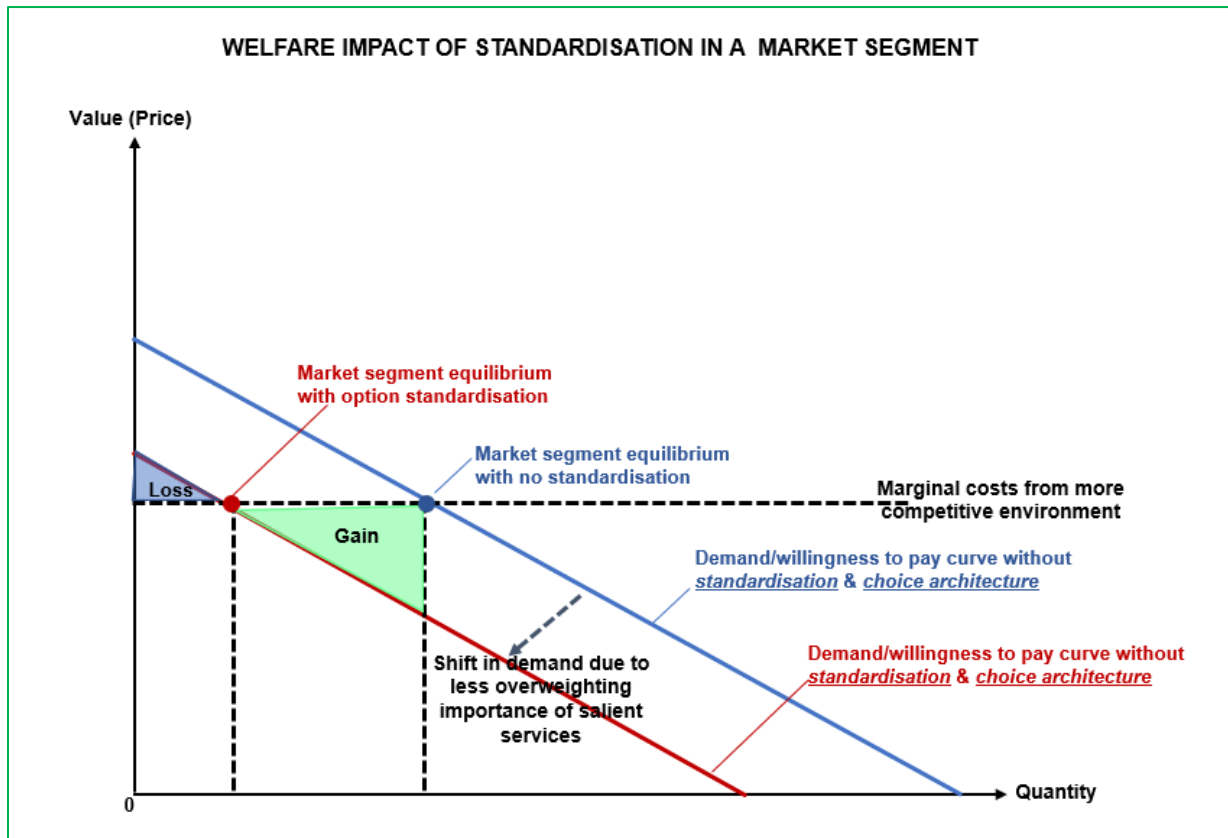
Figure 1: Welfare impact of standardisation in a market segment
Modification: Chandra et al. (2019), fig.1, p. 478

Figure 2 explains the assumptions behind the need to conduct a market segmentation survey. The assumption is that benefit options are too many, and the many dimensions of benefit design make it difficult to make decision. When the market is segmented, similar profiles are targeted though benefit design characteristics they value, then standardisation can focus on those key benefit attributes of value. These salient characteristics of benefit design can be made easier beneficiaries to select with information provided on portal for assisting benefit design decisions. Thus, parameters for a benefit analyser can be identified through a market segmentation questionnaire that is administered by a chatbot on a CMS portal. If beneficiaries are able to make optimal decisions, competition by medical schemes will be on premiums, and in creating value in healthcare delivery networks and arrangements.

The inputs that will be required are key internal stakeholder, who will provide valuable advice to a hand-picked panel of experts. The panel of experts are to assist in developing the standardisation and market segmentation project outputs.

The impact of the market segmentation survey is that Benefits management Unit (BMU) will have standardised rules for each benefit design, and benefit option dictionary of commonly used terms to develop marketing material. If the market segmentation collects data on beneficiaries profiles, then this information can be used to evaluate the feasibility of medical schemes marketing strategies at rule registration.

The market segmentation survey will also provide critical information on beneficiary characteristics and preferences. This information can be incorporated into further cluster analysis and discriminant analyses. By doing this, the CMS will have a better idea of number of benefit designs that exist which represent independent market segments. As a result, better policy research support can be provided.
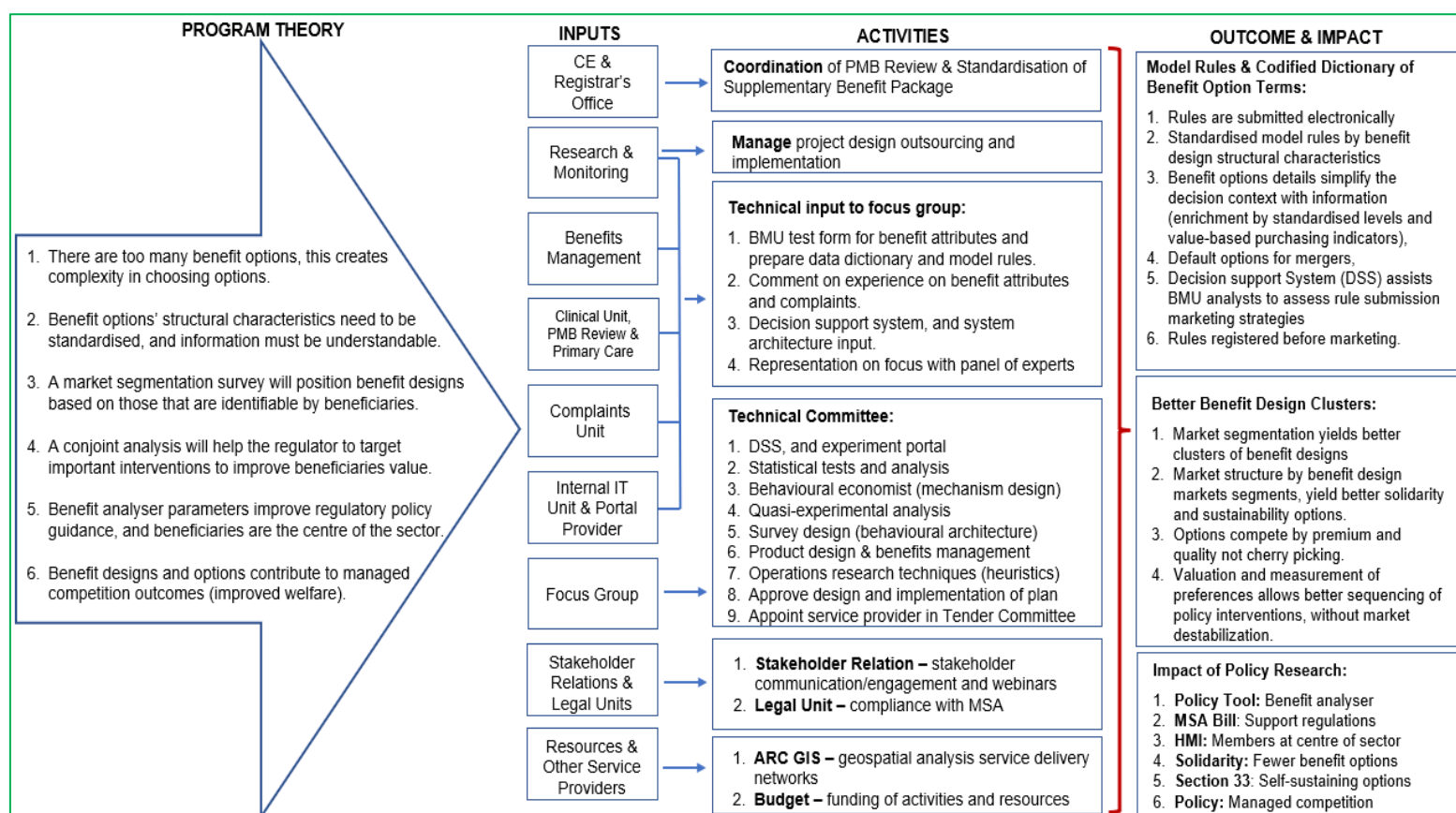
Figure 2: Program theory logic model
Source: Author, Policy, Research & Monitoring, CMS.

3.1.2   Project Evaluability

Figure 3 provides a conceptual framework of how beneficiaries make benefit option choices in a health insurance environment. Household economic vulnerability and risk factors determine the utilisation behaviour of beneficiaries. Preferences on access to healthcare services, and households' expectations regarding patient centered healthcare interventions inform the healthcare delivery arrangement they more prefer. The structural characteristics or dimensions of benefit options which beneficiaries must choose from are: i) health services in the benefit package; ii) benefit ceiling levels; iii) premium levels; and iv) the level of cost-sharing.

The variables that are illustrated in figure 3 can be collected by way of different market segmentation questionnaires. There are different types of market segmentation questionnaires, they are: i) demographic segmentation; ii) geographic segmentation; iii) behavioural segmentation; and iv) psychographic segmentation.

All these different types of segmentation surveys could be conducted with one generic survey which takes all the segmentation criteria into consideration. This type of market segmentation method is called a hybrid segmentation.

Once all this information on healthcare decision processes, and market segmentation profiles are collected, then the targeting and market positioning process begins. Targeting makes sure that one focuses on key needs of beneficiaries in market segments, and position is focused on designing appropriate market intervention, taking vary specific needs int account.
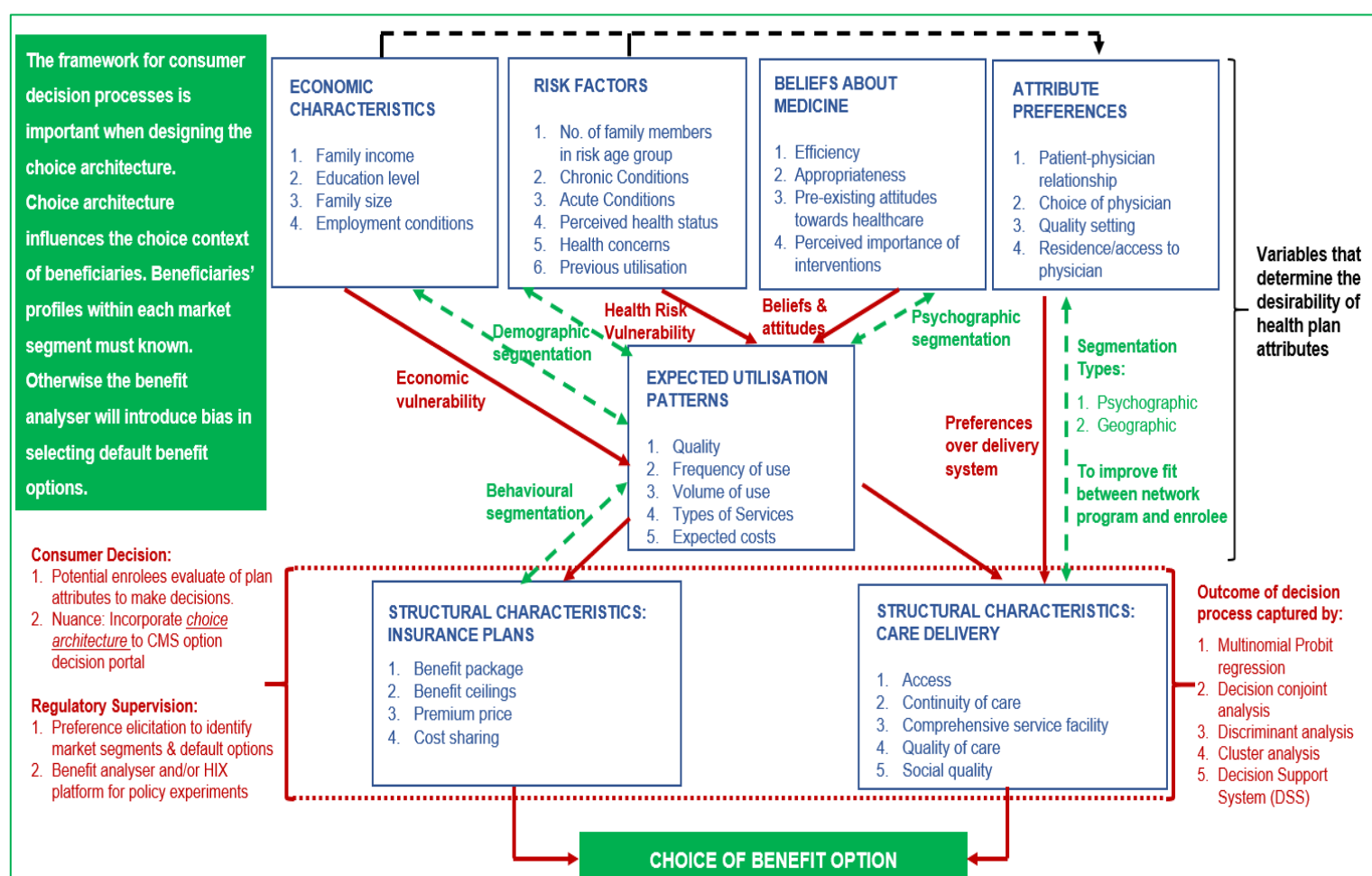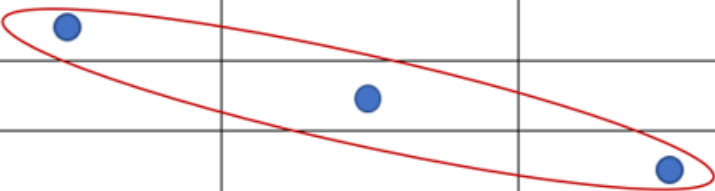
Figure 3: Logic model on decision making process in health insurance
Modification of: Berki & Ashcraft (1980), p.591

Once market segmentation is done properly, then the relationship between products and their market segments can expressed in a market segmentation matrix. This is illustrated in table 1, and what the table shows is that products ought to have a diagonal relationship with market segmentation matrix. If the relationship is vertical or horizontal and not diagonal, it means there is an overlap in product targeting and products could cannibalise each other. In the medical schemes environment this could lead to member churning, and death spiral effects.

Table 1: Market segmentation matrix

Benefit Option Name	Hospital Plans	Partial Cover Plans	Comprehensive Plans
Standardised Option 1	●		
Standardised Option 2		●	
Standardised Option 3			●

Source: Author – Policy, Research & Monitoring, CMS

Table 2 shows the situation in open schemes for the 2015 rule year. The market segmentation survey will collect information to assess whether there are more distinguishable market segments, and whether the vertical spread of benefit designs can be concentrated in fewer rows. This way, the standardisation of benefit designs can be used to do this by focusing non-salient product attributes that can standardised across product lines.

Table 2: market segmentation matrix with benefit designs in open schemes (2015)

Benefit Option Design	Number of Benefit Options per Market Segment		
	Hospital Plans	Partial Cover Plans	Comprehensive Plans
Hospital Plan	19		
New Generation Plan 1	13		
Traditional Plan 2		16	
Network Plan 1		22	
New Generation Plan 2		10	
Traditional Plan 1			18
Network Plan 2			5
New Generation Plan 3			12
Threshold Plan 1			16
Threshold Plan 2			6

Source: Author-- Policy, Research & Monitoring, CMS

Figure 4 shows how a market segmentation, targeting and positioning analysis can be implemented to in the medical schemes environment to achieve product standardisation. The objective of market segmentation in for profit markets is to create market positioning that is different from competitors in order to improve profits.

That said, the strategic objective of the CMS and medical schemes are different. The business model of medical schemes is to balance out section 24(2)(e), and section 33(2) of the Medical Schemes Act. The objective of Council is to meet is statutory function of section 7 (a) and (f). Therefore, segmentation for CMS ought to focus on implementing appropriate standardisation to meet the criteria of section 33(2) feasible without discriminating

against beneficiary profiles in terms of section 24(2)(e). Thus, requiring the standardisation of consumption bundles to cost sharing to be focused on sub-market level, to appeal to all market segments in totality. Initiating standardisation in the same way for all options may be destabilising.
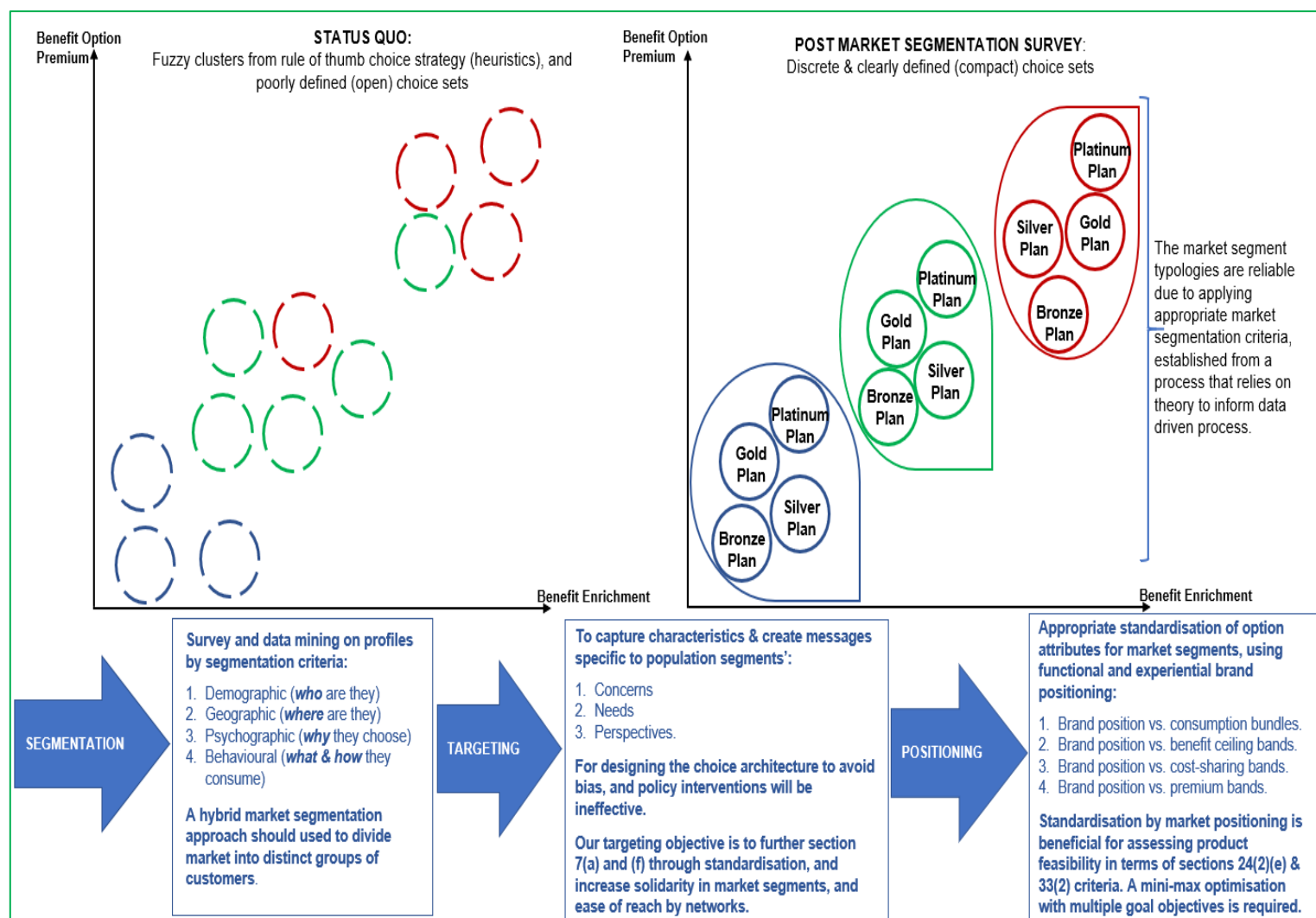
Figure 4: Logic model for market segmentation, targeting and position of benefit options
Source: Author, Research & Monitoring, CMS

Figure 5 illustrates the many dimensions and sub-dimensions a benefit option's structural characteristics. The structural characteristics are: i)the benefit option consumption bundles; ii) different types of cost-sharing; iii) benefit ceilings; iv) network plan and service delivery arrangements; v) disease management networks; and vi) utilisation management monitoring and evidence based clinical interventions.

In the care delivery system dimension, there are processes that can be monitored by supplementary surveys, to generate performance scores of disease management programs and medical schemes services. The performance scores can supplementary information that is given to beneficiaries to make their benefit option

decision more informed. The literature review makes mention of segmentation approaches that use patient experience surveys to profile beneficiaries healthcare seeking behaviour.

In order to assist beneficiaries to make process all this information on benefit option attributes, the survey can be on a CMS portal with a chatbot to administer the survey.
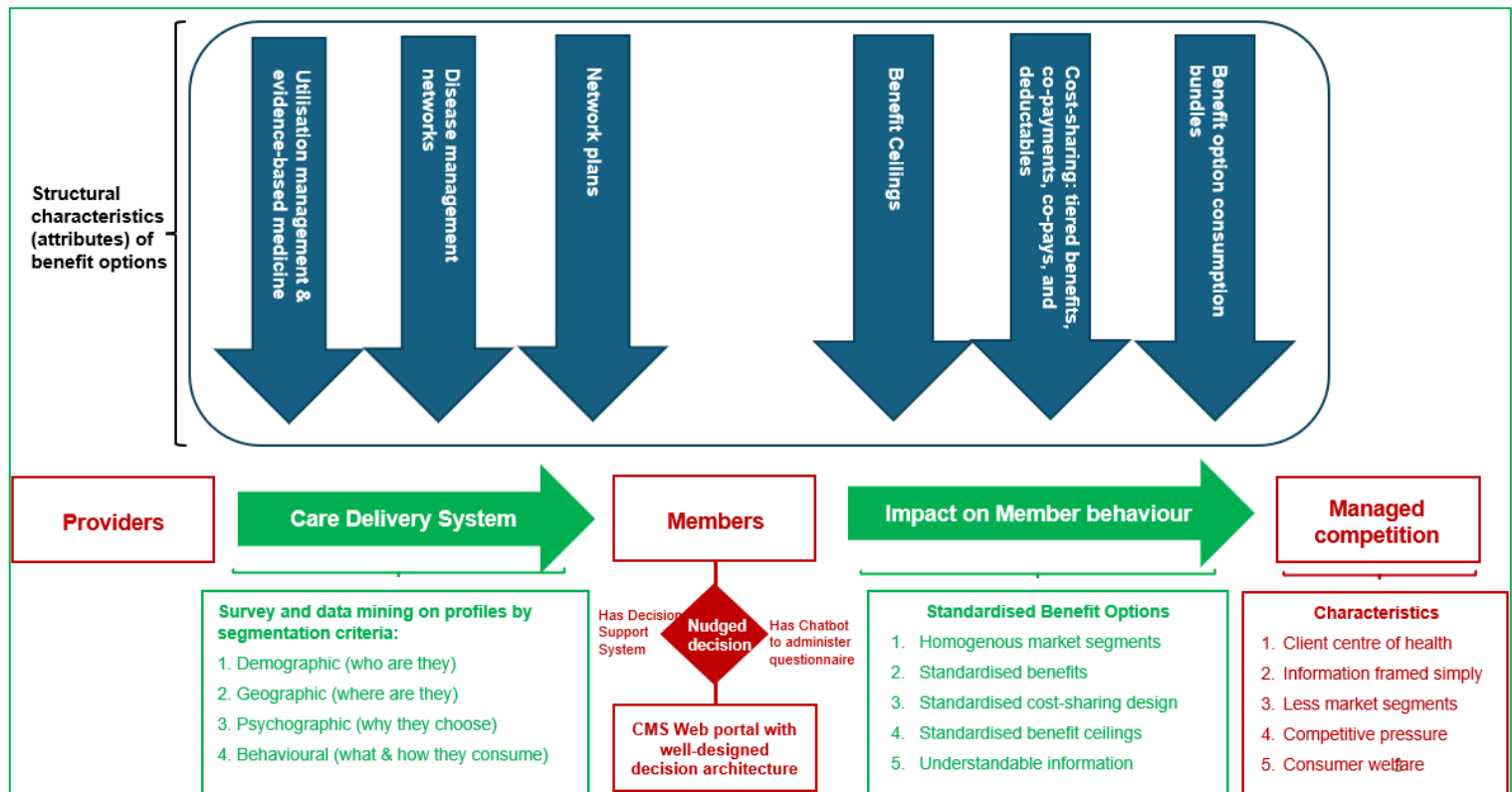
Figure 5: Logic model of benefit option attributes
Modification of: Mattke et al (2014), p.7

Figure 6 illustrates how benefit option attributes can be presented to enable the execution of a decision strategy to assist beneficiaries to make decisions easier, while responding to benefit preference section of the market segmentation survey. The decision strategy is based on the choice architecture principle, which is covered in the literature review section.

Because benefit option consumption bundles are partitioned (compartmentalised) and are ordered from mandatory to most expensive supplementary benefit it means that: i) the listing of the choice sets can ordered from most important to least important, depending on the respondent filling the questionnaire (this will improve the choice focus and reduce survey time); ii) the partitioning of choice sets means that benefit designs are more comparable, and trade-off or "compensatory" decision strategy can assist to make a decision that is beneficial to the beneficiary; and iii) an integrated decision strategy can be effected by allowing the respondent to navigate across all consumption bundles, this reduces the probability of overweighting the importance of a specific consumption bundle.
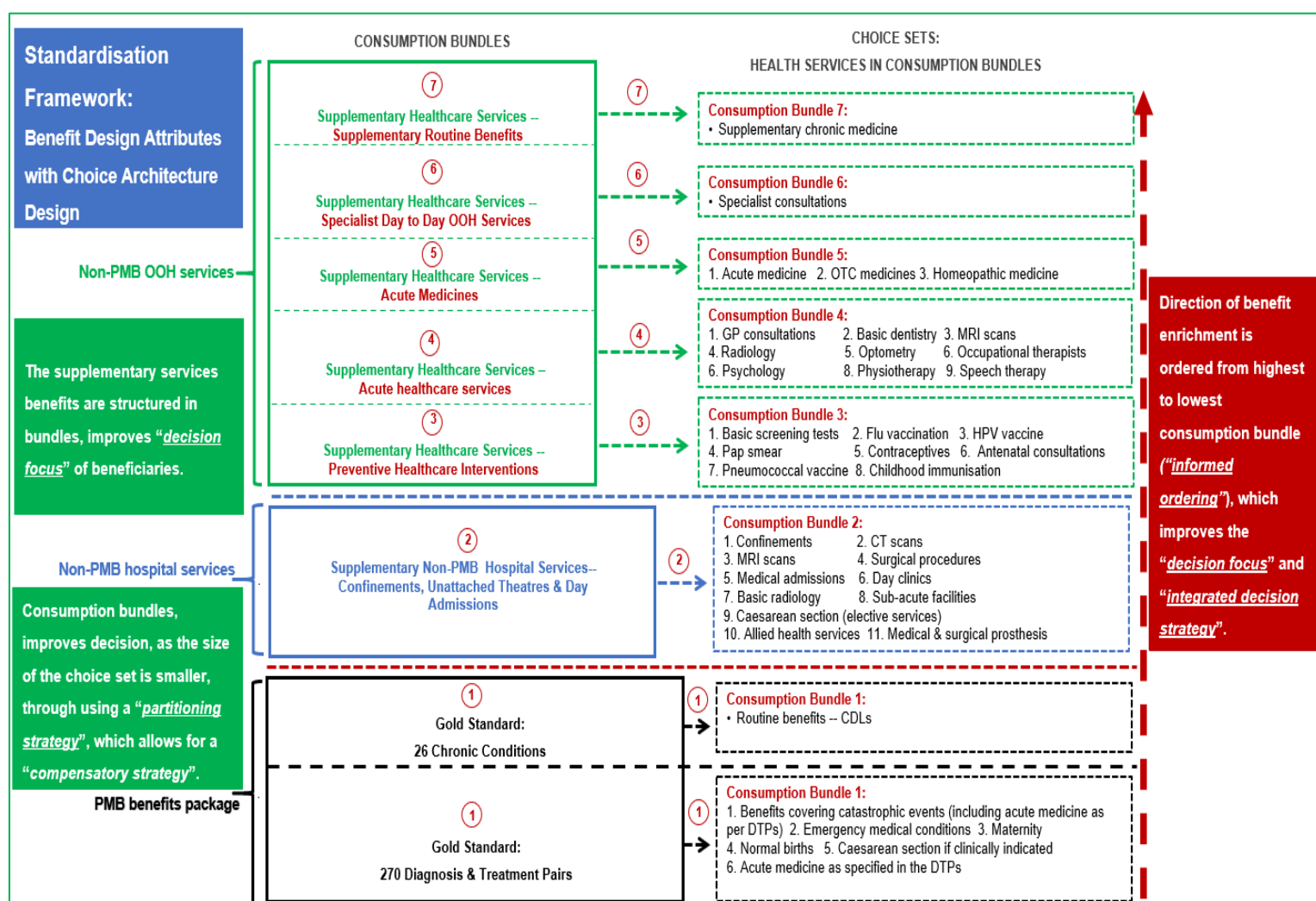
Figure 6: Framework for benefit standardising benefits with choice architecture dimensions
Source: Author, Research & Monitoring, CMS

3.2   Project Implementation

Figure 8 provides a detailed description of the market segmentation activities and outputs.

INPUTS

Internal stakeholders are engaged in focused group, they provide relevant experience to technical discussions

Panel of Experts in Focus Group are engaged in focused group, they provide relevant experience to technical discussions

Research & Monitoring has drafted a needs analysis detailing the project design and implementation plan

Financial Resources
1. Fees for expert panel have been approved.
2. Financial resources for tender have been approved
3. All software requirements are approved

Stakeholder Relations Unit is aware, and well-resourced to conduct:
1. Stakeholder communication
2. Webinars
3. Stakeholder engagement

ACTIVITIES

Pretender activities:
1. Develop dictionary on benefit option terms.
2. Electronic form on benefit option attributes is developed and sent to schemes to populate.
3. Develop and implement methods for benefit enrichment
4. Develop generic patient experience survey and develop scores for patient empowerment for most prevalent chronic conditions.

Approval & Selection of Supplier
1. Project design and implementation plan reviewed and approved.
2. Selection of provider on Tender Committee
3. Pre-tender outputs approved.
4. Announce project to industry on approval of project design and implementation plan
5. R&M and expert panel monitor achievement of milestones by successful tender candidate.

Tender procurement process
1. Fees for expert panel have been approved.
2. Financial resources for tender have been approved.
3. All software requirements are approved.

Stakeholder Relations
1. Announces project via circular to industry & media.
2. Publishes circulars on project updates.
3. Arranges for webcasts to disseminate results.

OUTPUT

Develop survey tool & portal:
1. Snowball determinants of knowledge, attitudes, and behaviour for segmentation survey.
2. Purposive sampling.
3. Response rate must be appropriate for conducting nested models and two-stage models used for discrete choice experiments.
4. Provide report on sampling methods.
5. Develop CMS Web Portal for market segmentation & standardisation survey.
6. Chatbot to administer survey (use choice architecture for behavioural economics).

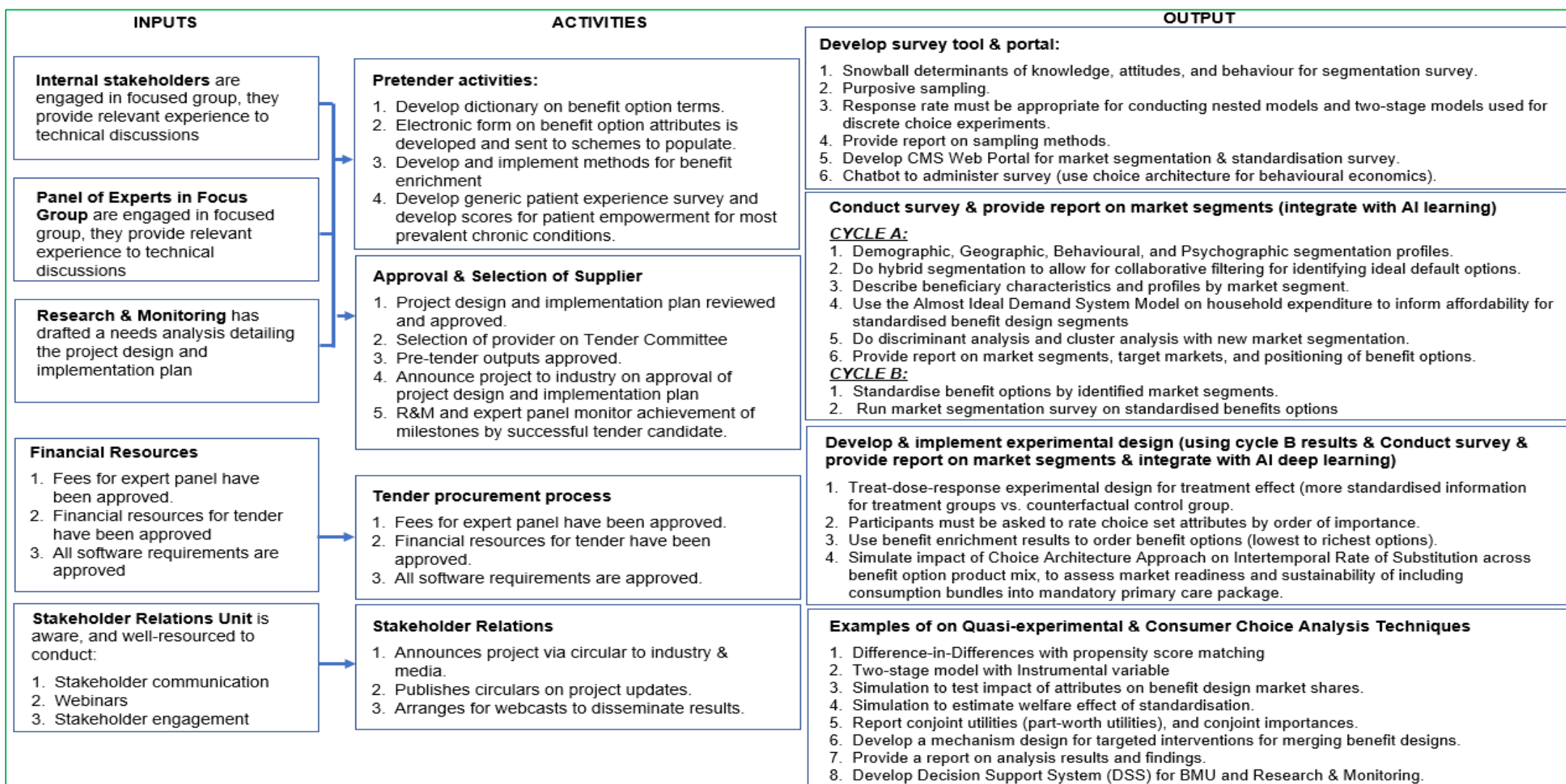**Conduct survey & provide report on market segments (integrate with AI learning)**

CYCLE A:
1. Demographic, Geographic, Behavioural, and Psychographic segmentation profiles.
2. Do hybrid segmentation to allow for collaborative filtering for identifying ideal default options.
3. Describe beneficiary characteristics and profiles by market segment.
4. Use the Almost Ideal Demand System Model on household expenditure to inform affordability for standardised benefit design segments
5. Do discriminant analysis and cluster analysis with new market segmentation.
6. Provide report on market segments, target markets, and positioning of benefit options.

CYCLE B:
1. Standardise benefit options by identified market segments.
2. Run market segmentation survey on standardised benefits options

Develop & implement experimental design (using cycle B results & Conduct survey & provide report on market segments & integrate with AI deep learning)
1. Treat-dose-response experimental design for treatment effect (more standardised information for treatment groups vs. counterfactual control group.
2. Participants must be asked to rate choice set attributes by order of importance.
3. Use benefit enrichment results to order benefit options (lowest to richest options).
4. Simulate impact of Choice Architecture Approach on Intertemporal Rate of Substitution across benefit option product mix, to assess market readiness and sustainability of including consumption bundles into mandatory primary care package.

Examples of on Quasi-experimental & Consumer Choice Analysis Techniques
1. Difference-in-Differences with propensity score matching
2. Two-stage model with Instrumental variable
3. Simulation to test impact of attributes on benefit design market shares.
4. Simulation to estimate welfare effect of standardisation.
5. Report conjoint utilities (part-worth utilities), and conjoint importances.
6. Develop a mechanism design for targeted interventions for merging benefit designs.
7. Provide a report on analysis results and findings.
8. Develop Decision Support System (DSS) for BMU and Research & Monitoring.

Figure 7: Project implementation logic model
Source: Author, Research & Monitoring, CMS.

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