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The 6 Arcs of the Survey Wheel

What makes a good survey? The answer is one that asks the right people in sufficient numbers the right questions that elicit honest answers that are easily collated and summarised in such a way that actionable insights can be obtained enabling organisations to make the right decisions.

What makes a bad survey? The answer is one that asks the wrong people in insufficient numbers the wrong questions that are difficult to answer, difficult to collate and summarise and give no insight and result in organisational paralysis.

Consider the last survey you were involved in. Using these two paragraphs as a spectrum, where would you place it? Did it mostly satisfy the requirements of a good survey or did it contain one or more elements of a bad survey?

Producing a good survey is harder than producing a bad survey since a good survey needs to meet the requirements of all 6 Arcs of what we call the Survey Wheel. Get one of the arcs wrong and the wheel can break and you end up with a bad survey.

So what are the 6 Arcs? They are the "steps" you need to go through in order to complete a survey. Each Arc contains a number of Spokes which represent the tasks that have to be undertaken to complete the "step". Unlike ordinary steps which normally go in a straight line and have a recognisable start & end point, surveys do not have a clear start & end point which is why we combine them into a wheel rather than a line.

This might sound surprising. Surely the starting point is Objectives and the end point is Decisions? Actually, based on our extensive experience of carrying out surveys in numerous disparate industries including healthcare, we have long since learnt that the starting point can come in any one of the 6 Arcs.

For example:

- **DECISIONS** – A hospital has designed a new care pathway which will cut costs by 50%. In order to go ahead, the trust wants proof that patient satisfaction with their care will be unaffected. A clear decision is the starting point and the survey arises out of this as the means by which proof can be garnered.

- **OBJECTIVES** – A CCG is floundering in the dark as to what are the medical needs of a large influx of immigrants in their area. Do they differ from the existing population? The starting point is a clear question with a defined target population and a survey is the way to answer it.

- **DESIGN** – A new profiling technique has been developed to measure mental health of children and a trust is keen to try out this method. Ethical considerations mean that only trained professionals can carry out the survey and they are only available for 5 days in October. During that time, the trust can expect about 60 children to pass through their doors. The starting point is the sample size and measurement method and so any objective & decision has to take this into account.

- **FIELDWORK** – Department of Health requirements mean that all responses must be collected by the 1st of December. If a face-to-face survey is undertaken then budgets only allow 100 in-depth interviews or 200 short interviews. More responses can be collected using an on-line survey but there is a chance of missing the target population. The starting point is the budgetary & time constraints imposed on the survey and all other arcs must adapt to this.

- **RESULTS** – The care regulator has specified that the 95% confidence interval for measurements of patient satisfaction must be +/-2%. Patient non-response has been an issue in the past especially for some demographics. This is a statistical starting point that will drive the nature of results needed and in turn the sample size requirements of the survey.

- **INSIGHT** – Another trust has uncovered some fascinating insights into their patients using statistical segmentation methods. Your trust is keen to replicate this in their area. The starting point is the method of analysis and so the results collected must be in suitable format that allows this method to be used.

What is the meaning of the Arc colours (Blue, Red & Green)? These denote the nature of the work involved:

- **Blue Arcs** (Decisions & Objectives) require extensive dialogue with the commissioners of the surveys and the users of the results and insights. They call for skills in the field of management consulting, facilitation and decision support in order to uncover the key decisions and objectives. These arcs cannot be automated in any way.

- **Red Arcs** (Design & Insight) represent the statistical aspects of the survey. They call for skills in sample size calculations, questionnaire design, multivariate analysis and statistical modelling. Whilst there are many software packages that can do all the necessary calculations, choosing the right calculation at the right moment really requires the advice of a statistician who is familiar with the requirements of the blue arcs and the constraints of the green arcs. This means that the red arcs cannot be automated either unless you have a very simple survey.

- **Green Arcs** (Fieldwork & Results) represent the market research aspects of the survey. They call for skills in interviewing, data collection, and data coding and cleaning in the Fieldwork arc and for skills in data presentation and summaries in the Results arc. In many cases, these arcs can be automated and Captive Health can offer many solutions in these arcs.

So let's now go through the 6 Arcs in more detail. What do you need to ask yourself in order to end up with a good survey? What are the common pitfalls to be aware of? We will start with **Objectives** and go clockwise around the wheel but let us emphasise again that the starting point can be anyone of the 6 Arcs.

Objectives

There are 2 parts to the Objectives arc:

1. **What do I need to know? (Goals)**
   a. Is this linked to a decision that is pending?
2. **Who do I need to ask? (Target Population)**
   a. How many sub populations are needed?

Common pitfalls we encounter are:

- **Surveys with imprecise objectives**. Suppose a CCG wanted to know "Are people in Bath sleep deprived?" That sounds like a clear question but in fact it lacks precision. What do we mean by People? Children, Parents, Elderly? Where is Bath? City only or including surrounding area? What does sleep deprivation mean? If the objective has arisen out of the Decisions arc then it is even more important to be precise on Objectives.
- **Surveys with too many objectives**. You should adopt the mind-set that each objective is a separate survey (e.g. each sub population target constitutes a separate objective). The fact that you are carrying these "multiple" surveys at the same time does not necessarily help matters as one objective may have an optimal survey design which is incompatible with the best design for another objective. The net effect of too many objectives is a sub optimal Design, unnecessary burdens on Fieldwork, overload of results to process which inhibits Insight and Decisions.

Design

This arc has two very distinct spokes, **Sampling** & **Measuring**.

The Sampling spoke seeks to answer these two questions:

1. **How many people should be measured?**
   a. What are the objectives?
2. **How should they be selected?**
   a. What are your sampling cells?
   b. How random is your selection?
   c. What biases may be inherent in your sample selection?
   d. Do you need to weight your results?
   e. Do you have good quality external data to allow you to weight?

For the Measuring Spoke, there are 3 questions to answer:

1. **Do you need to use a questionnaire to take measurements?**
2. **Are your measurements repeatable, reproducible & unbiased** (whether taken by questionnaire or instrument)
3. **Have you tested your measurements prior to the full survey?**

Common pitfalls we encounter are:

- **Choosing the same sample size as last time** – sample is intrinsically linked to clear objectives. It might feel like you are repeating the same survey as before, but in reality the objectives are likely to have changed. If so, then the sample size needed will have changed. All in all, when it comes to sample size calculation, there is really no substitute for clear, prioritised objectives and a qualified statistician making the calculation. Anything else is a recipe for trouble.

- **Using a weighting model based on poor quality data** - Weighting can only be applied if you have accurate information on the target population in the first place. If you don't have this, you cannot weight! A very good example we experienced was a survey of people buying motor insurance. The DVLA can give you information about the demographics of those who drive in the UK but this was no good to us. Why? Because the objective was a survey of motor insurance PURCHASERS not DRIVERS and young drivers are much more likely to be on their parent's insurance policy and it is their parents who make the purchase. Consequently, we advised our client that they could not weight.

- **Defaulting to a questionnaire when alternatives would give better results** - The only reason for using a questionnaire as our measurement instrument is when we are trying to measure human perception, opinion and attitudes i.e. stuff that goes on in our head. Anything else should be possible to measure using instruments in theory. The time and cost of taking instrumental measures might be higher for each respondent but if this yields more accurate responses then a smaller sample size may be possible which could result in a lower overall cost.

- **Too many closed questions** – closed questions undoubtedly make it easier to collate the data and produce quick results but they constrain what respondents can say. Open questions give respondents more freedom but can be difficult to code and analyse in the Results arc. However, advances in text analytics mean that you should be more open (sic) to open questions these days as there are more and more software packages than code open responses according to sentiment, etc.

- **Failure to test questionnaire before full survey** – Are your questions easy to understand? Have you chosen appropriate ordinal scales for satisfaction scores? Will respondents suffer from survey fatigue? The only way you can find answers is to test your survey to iron out the kinks. For some reason, people don't want to test surveys yet the benefits in avoiding problems further down the road are undeniable.

FIELDWORK

The key questions are:

1. **How will you collate the responses? Web, text, face to face, other?**
2. **How will you ensure data collation is free from error?**
3. **How will you code the responses? (if needed)**

Common pitfalls we encounter are:

- **Failing to determine whether sample selection and/or responses need to be supervised** – The attractions of web surveys are obvious. They are low cost, have a large reach and are quick to do. But all of these advantages will be pointless if you end up with a biased sample from reaching too many of the wrong people or if the measures being taken require respondents to

be supervised to some degree. For us, this is the main value of face to face interviews these days which is the ability to screen out inappropriate respondents and to ensure that respondents understand what is being asked of them.

- **Failing to automate recording of responses** – Even with a face to face survey, there really is no need for the fieldworker to be writing with pen and paper these days. With tablet computers, responses can be recorded and then uploaded straightaway. The advantages of doing it like this is that it is easier to program the software to catch incorrect responses e.g. putting words in a numerical field. Some demographics may still require a paper questionnaire but not everyone.

- **Letting the fieldworker categorise responses** – In our opinion, it is the analyst who should categorise the raw responses rather than the fieldworker. Their job is to collect the raw responses and pass them on to the analyst. With database and text analytic technology these days, it should be simple for an analyst to devise an appropriate categorisation. The only exception is if data protection issues mean that the analyst should not be seeing the raw response.

RESULTS

The key questions are:

1. **How will you handle non-response?**
2. **How will you summarise the responses?**

Common pitfalls we encounter are:

- **Failing to determine whether non-response is an issue** – non-respondents can only be ignored if you are sure that there is no systematic pattern to the probability of someone not responding. For example, suppose a survey targeted men and women equally but twice as many women responded as men. If it could be shown that dissatisfied men were just as likely not to respond as satisfied men, then weighting can be used to correct this issue. But if dissatisfied men are less likely to respond then we have a bias that has to be corrected for. This can be done using a statistical approach known as Imputation but this is not always easy to do and statistical advice should be sought in this instance.

- **Lack of thought with charts and tables** – we are big believers in the saying "a chart is worth a thousand words" but although people may agree they don't back that up with their deeds and the end result are appalling charts and tables. We take the attitude that the time it takes to write a thousand is the sort of time you should be spending on the design and impact of your chart.

- **Not giving end users the ability to query the results** – the single most useful tool that Microsoft ever developed with Excel was the pivot table. We continue to be astonished as to how few analysts know about this and yet this is a simple solution to the issue of how many charts and tables should be given to the end users. Shower them with too many and they get overloaded. Give too few and they complain. Tools like pivot tables, pivot charts and more advanced software allow you to give a manageable set of charts to begin with and then allow the user to quickly create the additional charts needed for their specific questions.

INSIGHT

The key spokes are:

1. **What are the key drivers of the key questions?**
2. **Do these drivers differ by segments within the target population?**

Common pitfalls we encounter are:

- **Failing to identify which questions are key questions and which are key drivers** – this is something that should have been done in the Design arc once Objectives have been specified. If by the time you reach this arc and you are not clear as to which is which, you are in danger of being unable to deliver Insight. The key questions are typically performance related questions that can be used to hold an organisation to account and the driver questions are clues as to how the key questions can be influenced. Good Insight will always seek to link the two using appropriate statistical modelling methods.

- **Focusing too much on individual questions and not enough on question themes** – How often have you filled out a questionnaire where you asked to choose from a like/dislike scale in response to 20 or more questions? What tends to happen in such cases is that the 20 questions can be grouped into themes and people will respond to question themes rather than the detail of the question. This will show up if multivariate statistical methods are used. We are not against this kind of questionnaire as it can be useful to ask essentially the same question in different ways but you must be prepared to overlay a multivariate thematic analysis on top of any analysis of individual questions. Such approaches can be very effective in yielding actionable insight.

- **Not looking for segments that crossover your predefined sub populations** – Your Objectives may well have called for a survey designed around certain sub populations but it is a mistake to think that everybody within each sub-population respond in the same way. Our experience tells us that you are much more likely to get multiple groups with different attitudes where the groups crossover multiple demographics and sub populations. We believe that the best Insight comes from ignoring the predefined sub populations & demographics and instead dividing the sample into segments based on how they respond to the survey, not who they are. Subsequently you then look at each demographic & sub population to see if they are more likely to be segment A or B or C, etc.

DECISIONS

The key spokes of this arc are:

1. **What are the constraints on any action that the organisation can take?**
2. **What are the capabilities of the organisation to take action?**

Common pitfalls we encounter are:

- **Failing to distinguish between internal & external constraints** – All organisations face constraints on their ability to take actions. Some constraints are internally derived such as internal pathways. In theory, the organisation can take action at some point to the remove these constraints. Other constraints are externally derived and mean that the organisation has little influence on removing these. Thus if a survey is commissioned to validate a course of action, there is little point undertaking this if an external constraint inhibits that course of action. In such cases, the purpose of the survey will be support lobbying efforts to remove that constraint.

- **Failure to comprehend the triggers for the actions that an organisation can take** – this is probably the biggest pitfall of any survey and avoiding this requires strong skills in management consulting. Fundamentally, this is about identifying the decision makers and the triggers (emotional & rational) that will prompt them to take action. If a survey is needed to validate a decision, then if the triggers are clearly understood, then these can be incorporated into the Objectives and thus the Design arcs. If a survey started out as a research project and has uncovered Insights that call for action, then the reporting should focus on matching the insights to the triggers rather than creating a large report which will be read and quickly forgotten.