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The Triangulation of Two or More Data Gathering Methods

There is a wide consensus that qualitative research is an *interpretative* approach that tries to understand the meanings people attach to various phenomena (Ritchie and Lewis, 2003). Bryman (1988) states that the “way in which people being studied understand and interpret their social reality is one of the central motifs of qualitative research” (p. 8) while Strauss and Corbin (1998) define qualitative research quite broadly as “any type of research that produces findings not arrived at by statistical procedures or other means of quantification” (p. 11). Qualitative research methods employed include observation, in-depth interviews, group discussions, narratives and document analysis. Explanations at the level of meaning rather than cause are sought by answering the 'why' and 'how'. Samples are typically small in scale, data collection methods usually involve close contact between research participants and researcher, and the data produced is detailed and information rich (Ritchie and Lewis, 2003).

The two data gathering methods we will examine in more detail are unstructured, non-participant observation and focus groups. Both are qualitative in nature.

Observation in qualitative research is often referred to as unstructured, which further distinguishes it from the structured, systematic observation associated with quantitative research. Non-participant observation in particular is where behaviour is recorded as it occurs but the researcher is not part of the study population.

The researcher has the opportunity to document behaviours rather than depending on participant self-reporting which may, or may not be, accurate representations of incidents or actions (Smith, 1998). In that way observation is preferred since in an interview or on a questionnaire a participant may provide inaccurate or incomplete information, or they might answer based on what they understand to be socially desirable rather than on how they would actually behave. In addition observation can provide a permanent record allowing for later analysis or subsequent comparison to other data (Strath.ac.uk, n.d.a).

A principal disadvantage of observation is that it can be resource-intensive and time-consuming. So while it might be a desirable option, a researcher with limited time or resources might be forced to consider other methods. Reliability might reasonably be

questioned if multiple observers were used. Observer bias could undermine reliability and validity if the observer recorded what they thought they saw, expected to see or wanted to see rather than what actually occurred. The non-participant observer attempts to be as unobtrusive as possible. This could be achieved by concealing the observation taking place, i.e. by covert or 'undercover' means, but that raises ethical issues since participants are normally entitled to full information prior to consenting to be part of a study. To counter the reactivity or Hawthorne effect, where the observed change their behaviour based on their awareness of being observed thus calling data validity into question, researchers could spend an extended time in the research setting such that participants become so accustomed to their presence that the effect on behaviour is minimised (Smith, 1998; Strath.ac.uk, n.d.a).

Other possible impacts on reliability and validity include, but are not limited to, observer omissions, faulty memory or attention deficit of the observer, recency effects (most recently observed behaviour more readily recalled), the halo effect (early impressions influencing later observations) and observer drift (Strath.ac.uk, n.d.b).

A focus group is defined as a qualitative research method in which one or two researchers and a number of participants meet as a group to discuss a given topic with the proceedings usually recorded. If there are two researchers one may act as discussion moderator while the second takes notes. Since the questions are open-ended a broad range of views may be obtained over a short period. While the group dynamic can stimulate conversations and identify social norms, focus groups, unlike one-on-one interviews, are not ideal for soliciting highly personal information (Mack & Woodson, 2005). Commonly used by market researchers and political parties, they allow for observation of group interaction in a controlled setting, are helpful in exploratory research, are quick and easy to conduct, and can provide in-depth data. However they do rely on a group chemistry, they are not naturalistic, the discussion is prone to being dominated by a single participant or being steered in unhelpful directions, they can raise questions about confidentiality since everything said is shared and possibly recorded, and they may not be suitable for people lacking in confidence (Deem, 1997). That said they might encourage participation from those uncomfortable with being interviewed on their own and they can extract contributions from people who believe they have nothing to say but are then engaged by group discussion (Kitzinger, 1995).

Smith (1998) addresses the validity and reliability of the focus group format. If participants feel able to express their views and influence the conversation direction

the data should be an accurate reflection of group perspectives and thus possess inherent validity. Reliability refers to the reproducibility of findings but the content of focus groups should reflect the varying experiences of the groups involved and so, in data collection, reproducibility is not a pertinent concern. Consistency between those evaluating focus group transcripts might be an issue however.

It is worth noting that some researchers have rejected the concept of validity commonly accepted in quantitative research (Trochim, 2006). The traditional criteria for judging quantitative research – internal validity, external validity, reliability and objectivity – are replaced by analogous qualitative criteria – credibility, transferability, dependability and confirmability. In brief credibility of the results can only be determined by the participant since it is through their eyes the phenomena of interest is being understood. Transferability refers to the extent to which the results can be generalised or transferred to other settings, and can be enhanced by the level of detail provided on the research context and assumptions. Dependability replaces the quantitative notion of repeatability with one that asks the researcher to account for changing contexts and to adequately describe those changes. Confirmability is the degree to which the results could be corroborated by others. Trochim notes that the legitimacy of alternative qualitative criteria is a matter for some debate among methodologists.

Ritchie and Lewis (2003) note that a 'mixed method' approach to research is often mentioned in the context of combining quantitative and qualitative methods but that the same principles apply to investigations that use more than one qualitative method. Regardless of the choices made, the aim is to promote qualitative research validity through methods triangulation i.e. the use of multiple research methods to study a phenomenon (Johnson, 1997). Denzin (1970) lists four forms of triangulation with methodological being the most commonly understood meaning. Denzin also distinguishes between within-method and between-method triangulation where within-method refers to use of varieties of the same method. Here, having chosen non-participant observation and focus groups, we are concerned with the between-method approach.

Sullivan (1991) discusses the complementarity of laboratory observation and focus groups in a usability study for a user interface prototype. In addition to finding out if the interface was understood, quickly usable and attractive the client wanted feedback on a list of potential future features. Because of the range of questions and the limited resources available a focus group was employed to supplement

laboratory observation and interview. The focus group experienced the interface through demonstration and discussion and questions about possible future developments followed. While Sullivan points out weaknesses in the study design, including the use of different subjects for laboratory observation and focus group, the conclusion reached was that the methods are complementary for usability research. Nielsen (1997) notes that in interactive system development the proper role of focus groups are to discover what users want from the system, not to assess design usability.

This dovetails with this author's experience as a hardware and software engineer. In developing desktop and web-based graphical user interfaces (GUIs), primarily for company employee use, an early stage group discussion was often of value. It was more productive if a 'skeleton' of the software was available, e.g. a menu or site map for a web-based interface, as the group could point out which functions would be most frequently used and should therefore feature prominently, what should be logically grouped together, which data fields were absent, inaccessible or superfluous etc. Often focus group feedback allowed for early modification to an underlying database architecture that would have been considerably more involved post release. Trying to gather this data on an individual basis would have been time-consuming and would not have benefited from the consensus on priorities reached in the group setting. Including actual users was key as their input was grounded in real experience and need and thus most informed. Their involvement also meant they were more positive about later testing of beta releases and about providing feedback. However in addressing specific concerns relative to usability it was generally most helpful to observe someone using a beta interface. Frequently a sequence of observed mouse clicks and/or keystrokes pointed to a sub-optimal design. Sometimes the flaw could be quickly and easily addressed, sometimes not, but it was generally well understood through observation. Very often a compromise solution was uncovered which would not have been obvious to either developer or user if the information exchange had been via email for example. This author's conclusion is that observation and focus groups can be complementary in GUI design.

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