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Multimethod Research. Multimethod research entails the application of two or more sources of data or research methods to the investigation of a research question or to different but highly linked research questions. Such research is also frequently referred to as *mixed methodology*. The rationale for multimethod research is that most social research is based on findings deriving from a single research method and as such is vulnerable to the accusation that any findings deriving from such a study may lead to incorrect inferences and conclusions if MEASUREMENT ERROR is affecting those findings. It is rarely possible to estimate how much measurement error is having an impact on a set of findings, so that monomethod research is always suspect in this regard.

MULTIMETHOD RESEARCH AND MEASUREMENT

The rationale of multimethod research is underpinned by the principle of TRIANGULATION, which implies that researchers should seek to ensure that they are not overreliant on a single research method and should instead employ more than one measurement procedure when investigating a research problem. Thus, the argument for multimethod research, which in large part accounts for its growth in popularity, is that it enhances confidence in findings.

In the context of measurement considerations, multimethod research might be envisioned in relation to different kinds of situations. One form might be that when one or more constructs that are the focus of an investigation have attracted different measurement efforts (such as different ways of measuring levels of job satisfaction), two or more approaches to measurement might be employed in combination. A second form might entail employing two or more methods of data collection. For example, in developing an approach to the examination of the nature of jobs in a firm, we might employ structured observation and structured interviews concerning apparently identical job attributes with the same subjects. The level of agreement between the two sets of data can then be assessed.

THE MULTIMETHOD-MULTITRAIT MATRIX

One very specific context within which the term *multimethod* is frequently encountered is in relation to the multimethod-multitrait matrix developed by Campbell and Fiske (1959). Let us say that we have a construct that is conceptualized as comprising five dimensions or “traits” as they are referred to by Campbell and Fiske. We might develop subscales to measure each dimension and employ both structured interviewing and structured observation with respect to each trait. We can then generate a matrix that summarizes within- and between-method correlations between the different traits. The matrix allows two concerns to be addressed. First, it allows a test of the DISCRIMINANT VALIDITY of the measures, since the within-method correlations should not be too large. Second, of particular importance to this entry is that the CONVERGENT VALIDITY of the between-method

scores can be examined. The larger the resulting correlations, the greater the convergent validity and therefore the more confidence can be felt about the findings. Table 1 illustrates the resulting matrix.

[TABLE 1 ABOUT HERE]

In this matrix, a correlation of, say, $r_{i4,o2}$, indicates the correlation between trait T4 measured by a subscale administered by structured interview (i) and trait T2 measured by a subscale administered by structured observation (o). The five correlations in bold are the convergent validity correlations and indicate how well the two approaches to the measurement of each trait (e.g., $r_{i1,o1}$) are consistent.

Care is needed over the successful establishment of convergent validity within a multimethod research context. It is easy to assume that measurement validity has been established when convergent validity is demonstrated. However, it may be that *both* approaches to the measurement of a construct or research problem are problematic. Convergent validity enhances our confidence but of course does not eliminate completely the possibility that error remains.

COMBINING QUANTITATIVE AND QUALITATIVE RESEARCH

The account of multimethod research so far has been firmly rooted in the tradition of measurement and of the triangulation of measurements in particular. However, the discussion of multimethod research has increasingly been stretched to include the collection of qualitative as well as quantitative data. In other words, increasingly multimethod research includes the combination of quantitative research and qualitative research. In this way, the discussion of multimethod research and indeed

of triangulation is employed not just in relation to measurement issues but to different approaches to collecting data.

QUANTITATIVE RESEARCH and QUALITATIVE RESEARCH are sometimes taken to refer to distinct PARADIGMS and as such as being incompatible. Several writers have argued that quantitative and qualitative research derive from completely different epistemological and ontological traditions. They suggest that while it is possible to employ, for example, both a structured interview (as a quintessentially quantitative research method) and ETHNOGRAPHY (as a quintessentially qualitative research method) within a single investigation, this does not and indeed cannot represent a true integration, because of the divergent principles on which the two approaches are founded. The combined use of such methods represents for such authors a superficial integration of incompatible approaches.

However, most researchers have adopted a more pragmatic stance and, while recognizing the fact that quantitative and qualitative research express different epistemological and ontological commitments (such as POSITIVISM vs. INTERPRETIVISM and OBJECTIVISM vs. CONSTRUCTIONISM), they accept that much can be gained by combining their respective strengths. The apparent incommensurability of quantitative and qualitative research is usually resolved either by ignoring the epistemological and ontological issues or by asserting that research methods and sources of data are in fact much less wedded to epistemological presuppositions than is commonly supposed. With the latter argument, a research method is no more than a technique for gathering data and is largely independent of wider considerations to do with the nature of valid knowledge.

When quantitative and qualitative research are combined, it is sometimes argued that what is happening is not so much multimethod as *multistrategy* research (Bryman, 2001). This preference reflects a view that quantitative and qualitative research are research strategies with contrasting approaches to social inquiry and that each is associated with a cluster of research methods and research designs. These distinctions suggest the fourfold classification presented in Table 2.

[TABLE 2 ABOUT HERE]

Multimethod research associated with the multimethod-multitrait matrix essentially belongs to cell 1 in Table 2, since such an investigation combines two data collection methods associated with quantitative research. Cell 4 includes investigations that combine two or more methods associated with qualitative research. In fact, much ethnography is almost inherently multimethod research since ethnographers frequently do more than act as participant observers. They buttress their observations with such other sources as interviewing key informants, examining documents, and engaging in nonparticipant observation.

APPROACHES TO COMBINING QUANTITATIVE AND QUALITATIVE RESEARCH

Cells 2 and 3 are identical in that they comprise multistrategy multimethod research, where at least one research method or source of data associated with both quantitative and qualitative research is employed. They can be further refined by considering the different ways that the two research strategies can be combined, an issue that has been addressed by several writers. Morgan (1998) elucidates a mechanism for

classifying multistrategy research in terms of two principles: whether the quantitative or the qualitative research method is the main approach to gathering data, and which research method preceded the other. This pair of distinctions yields a fourfold classification of multimethod studies (underlining indicates the principal method):

1. qual → quant. Examples are when a researcher conducts semistructured interviewing in order to develop items for a multiple-item measurement scale or when an exploratory qualitative study is carried out in order to generate hypotheses that can be subsequently tested by a quantitative approach.
2. quant → qual. An example is when a social survey is conducted and certain individuals are selected on the basis of characteristics highlighted in the survey for further, more intensive study using a qualitative method.
3. quant → qual. An example would be when a researcher conducts some semistructured interviewing or participant observation in order to help to illuminate some of the factors that may be responsible for relationships between variables that have been generated from a social survey investigation.
4. qual → quant. An illustration of such a study might be when an interesting relationship between variables is discerned in an ethnographic study and a survey is then conducted to establish how far that relationship has EXTERNAL VALIDITY.

These four types of multistrategy research constitute ways in which quantitative and qualitative research can be combined and as such, are refinements of cells 2 and 3 in Table 2. Morgan's classification is not exhaustive in that it does not consider (a) multistrategy research in which quantitative and qualitative research are conducted more or less simultaneously and (b) multistrategy research in which there is no main

approach to the collection of data, that is, they are equally weighted. Creswell (1995) distinguishes two further types of multistrategy research that reflect these two points:

5. *Parallel/simultaneous studies* in which the quantitative and qualitative research methods are administered more or less at the same time.
6. *Equivalent status studies*, whereby the two research strategies have equal status within the overall research plan.

These two types frequently co-occur, as in multimethod research in which different research methods are employed to examine different aspects of the phenomenon being investigated. One of the more frequently encountered arguments deployed in support of using multistrategy research is that using just quantitative or qualitative research is often not sufficient to get access to all dimensions of a research question. In such a context, the quantitative and qualitative research methods are likely to be employed more or less simultaneously and to have equivalent status.

Tashakkori and Teddlie (1999) further distinguish a seventh type of multistrategy research:

7. *Designs with multilevel use of approaches*, whereby the researcher uses “different types of methods at different levels of data aggregation” (p. 18). An example of this type of study may occur when the researcher collects different types of data for different levels of an organization (a survey of organizational members; intensive interviews with section heads; observation of work practices).

In addition, Tashakkori and Teddlie (1999) observe that the kinds of multistrategy research covered thus far are what they call “mixed method” studies. They observe that it is possible to distinguish these from mixed-model designs in which different

phases of quantitative and qualitative research are combined. Mixed-model research occurs when, for example, a researcher collects qualitative data in an essentially exploratory manner but then submits the data to a quantitative, rather than a qualitative, data analysis.

One of the most frequently cited rationales for multistrategy research is that of seeking to establish the convergent validity of findings; in other words, this kind of rationale entails an appeal to the logic of triangulation. If quantitative findings can be confirmed with qualitative evidence (and vice versa), the credibility of the research is enhanced. Such a notion is not without problems, however. First, it is sometimes suggested that because quantitative and qualitative research derive from such contrasting epistemological and ontological positions, it is difficult to establish that one set of evidence can legitimately provide support or otherwise of the other. Second, as with all cases of triangulation, it is difficult to know how to deal with a disparity between the two sets of evidence. A common error is to assume that one is more likely to be valid than the other and to use the former as a yardstick of validity. Third, it is often suggested that the triangulation procedure is imbued with naive REALISM and that since many qualitative researchers subscribe to a constructionist position that denies the possibility of absolutely valid knowledge of the social world, it is inconsistent with much qualitative research practice. Fourth, it is easy to assume that multistrategy research is necessarily superior than monostrategy research, but this may not be so if the overall research design does not allow one research strategy to add substantially to what is known on the basis of the other research strategy. Fifth, while some social researchers are well rounded in terms of different methods and

approaches, some may have strengths in one type of research rather than another, although this represents a good argument for teams with combinations of skills.

The idea of triangulation invariably presumes that the exercise is planned. However, when conducting any of the previously cited seven multistrategy research approaches, it is conceivable that the resulting quantitative and qualitative data may relate to a specific issue and therefore form an unplanned triangulation exercise. When the two sets of evidence provide convergent validity, the fact that this happens is likely to be unremarkable for the researcher, but when the two sets of data do not converge, they will need to think further about the reasons that lie behind the clash of findings. Deacon et al. (1998) report that in the course of analyzing the results from a multistrategy investigation of the representation of social research in the mass media, they found a number of disparities between their quantitative and qualitative findings. These disparities did not derive from planned triangulation exercises. For example, they found that a survey of social scientists had found a general satisfaction with media representation, but when interviewed in depth about specific instances of media accounts of their research, they were much more critical. The disparity necessitated a consideration of the different kinds and contexts of questioning and their implications for understanding the role of the media in the social sciences.

Multimethod research is undoubtedly being used increasingly in social research. Its appeal lies in the possibilities it offers in terms of increasing the validity of an investigation. It can be employed within and across research strategies and as such is a flexible way of approaching research questions, though it carries certain disadvantages in terms of time and cost. Multimethod research and multistrategy

research in particular can present problems of interpretation, especially when findings are inconsistent, but the preparedness of researchers to address such problems will enhance the credibility of their work.

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Table 1: Multimethod-Multitrait Matrix

	Interview					Observation				
Inter- view	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
T1	-									
T2	$r_{i2,i1}$	-								
T3	$r_{i3,i1}$	$r_{i3,i2}$	-							
T4	$r_{i4,i1}$	$r_{i4,i2}$	$r_{i4,i3}$	-						
T5	$r_{i5,i1}$	$r_{i5,i2}$	$r_{i5,i3}$	$r_{i5,i4}$	-					
Obser- vation										
T1	$r_{i1,o1}$					-				
T2	$r_{i2,o1}$	$r_{i2,o2}$				$r_{o2,o1}$	-			
T3	$r_{i3,o1}$	$r_{i3,o2}$	$r_{i3,o3}$			$r_{o3,o1}$	$r_{o3,o2}$	-		
T4	$r_{i4,o1}$	$r_{i4,o2}$	$r_{i4,o3}$	$r_{i4,o4}$		$r_{o4,o1}$	$r_{o4,o2}$	$r_{o4,o3}$	-	
T5	$r_{i5,o1}$	$r_{i5,o2}$	$r_{i5,o3}$	$r_{i5,o4}$	$r_{i5,o5}$	$r_{o5,o1}$	$r_{o5,o2}$	$r_{o5,o3}$	$r_{o5,o4}$	-

Table 2: Monostrategy and Multistrategy Approaches to Multimethod Research

	Quantitative research method	Qualitative research method
Quantitative research strategy	Monostrategy multimethod research 1	Multistrategy multimethod research 2
Qualitative research strategy	Multistrategy multimethod research 3	Monostrategy multimethod research 4