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# Measurement in Marketing

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# Measurement in Marketing

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## ABSTRACT

We distinguish three senses of the concept of measurement (measurement as the selection of observable indicators of theoretical concepts, measurement as the collection of data from respondents, and measurement as the formulation of measurement models linking observable indicators to latent factors representing the theoretical concepts), and we review important issues related to measurement in each of these senses. With regard to measurement in the first sense, we distinguish the steps of construct definition and item generation, and we review scale development efforts reported in three major marketing journals since 2000 to illustrate these steps and derive practical guidelines. With regard to measurement in the second sense, we look at the survey process from the respondent's perspective and discuss the goals that may guide participants' behavior during a survey, the cognitive resources that respondents devote to answering survey questions, and the problems that may occur at the various steps of the survey process. Finally, with regard to measurement in the third sense, we cover both reflective and formative measurement models, and we explain how researchers can assess the quality of measurement in both types of measurement models and how they can ascertain the comparability of measurements across different populations



of respondents or conditions of measurement. We also provide a detailed empirical example of measurement analysis for reflective measurement models.

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# 1

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## Introduction

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Measurement is indispensable for empirical research in marketing, and researchers who have conducted empirical studies will have at least a rudimentary understanding of what measurement entails. Still, the concept of measurement is difficult to define unambiguously, and existing definitions (e.g., Stevens, 1946), although often cited, have been criticized on various grounds. Instead of offering yet another definition, which would probably be subject to criticism as soon as it was proposed, we will distinguish three related but distinct senses in which one can think about measurement. Based on this classification, we will then discuss issues relevant to each notion of measurement.

In one sense measurement means conceptualizing theoretical variables of interest and choosing appropriate observable indicators of the intended construct. In another sense measurement means collecting the data necessary for an empirical examination of the theoretical issues under study. In a final sense measurement means constructing a model that relates the data collected in the second step to the latent factors representing the concepts the researcher is interested in, as specified in the first step. Sometimes, it is difficult to clearly distinguish the three activities, as when a researcher employs existing data to study an

issue and uses single observed variables as approximations of presumed theoretical concepts of interest. At other times, multiple observed indicators of carefully defined constructs are developed, primary data from specially chosen respondents are carefully collected, and sophisticated measurement models are formulated to maximize the correspondence between the observed responses and the latent concepts of interest.

The primary goal of this monograph is to review important issues related to measurement in all three senses. To supplement the theoretical discussion, we will present empirical data on how recent research published in three important marketing journals (*Journal of Consumer Research [JCR]*, *Journal of Marketing [JM]*, and *Journal of Marketing Research [JMR]*) has dealt with some of these issues (with an emphasis on measurement in the first sense), and we will also report a detailed example of measurement analysis in the context of material values.

Measurement is intimately related to construct validity and procedures for assessing the construct validity of measures. Construct validity is commonly viewed as the extent to which the measures designed to operationalize abstract theoretical concepts approximate the constructs in question (Bagozzi, 1980; Churchill, 1979; MacKenzie *et al.*, 2011; Peter, 1981). A prerequisite for establishing construct validity is that theoretical concepts be defined clearly and that empirical operationalizations accurately capture all the facets, and only the relevant facets, of the intended construct. These issues relate most closely to the first sense of measurement and are discussed in Section 2. Assessing the construct validity of measures also entails procedures for ascertaining the reliability and convergent and discriminant validity of measures of the construct(s) of interest (Campbell and Fiske, 1959), including efforts to demonstrate that observed measures are not seriously contaminated by sources of systematic variance unrelated to the intended construct (particularly so-called method effects; Podsakoff *et al.*, 2003). These issues are discussed extensively in Section 4 in the context of measurement in the third sense. Since constructs are theoretical entities (regardless of whether they are assumed to be figments of the researcher's imagination or thought to exist in the real world), many authors have suggested that an important part of construct validation is that observed measures behave as expected by a theory in which the construct of interest plays

a prominent role (Bagozzi, 1980, 1984; Churchill, 1979; Nunnally, 1978). In other words, a measure should have nomological validity by fitting into a nomological net of related constructs as specified by some theory. Although we agree that nomological validity is an important aspect of construct validity, we will not emphasize this aspect because assessing the nomological validity of a measure is dependent on a particular theory and thus difficult to discuss in the abstract. Furthermore, nomological validity tests are beyond the scope of measurement analysis *per se*.

Before we proceed, several comments are in order. First, a discussion of measurement could easily fill a tome, and we had to make decisions, based on our own preferences, about what should be included in this monograph. We hope readers will agree with our selections and find the discussion helpful. Second, although measurement need not necessarily involve the assignment of numbers to objects and events, we will focus on this type of measurement. Third and closely related to the previous point, the treatment of measurement is restricted to what has been called the psychometric approach to measurement (usually based on rating scales), in contrast to the representational approach (Judd and McClelland, 1998). The reason is that we believe this approach is most useful to the practicing empirical researcher. Fourth, there are different modes of data collection (observation, interviews, questionnaires, etc.), and there are unique issues that arise when using each of these data collection methods. Our focus will be on survey data collection methods (in a broad sense) via questionnaires (including internet surveys) because these are most common in marketing. Fifth, when we mention examples of prior measurement practices and offer critical reflections, our intention is not to disparage previous work, but to offer tangible illustrations of the points we are trying to make, with the hope of improving future research practices.

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