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Editorial

Role of Quantitative Methods in Quantifying "Reality" Objectively

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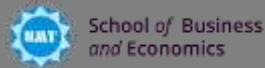
Khalid Al-Adeem, PhD¹

Affiliations

Assistant professor of accounting, Director of the PhD in Business Program, King Saud University, Saudi Arabia.
Email: Kra3@case.edu; khalidaladeem@gmail.com

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Editorial**Role of Quantitative Methods in Quantifying
"Reality" Objectively**Khalid Al-Adeem, PhD¹<https://doi.org/10.29145/2018/jqm/020201>

This editorial highlights the significance of realizing the underlying assumptions of positivism. Specifically, researchers in general and social scientists in particular ought to be aware of, and realize, the assumed objective reality that they are trying to measure in their research.

The prevalence of positivism and, later, logical empiricism as an epistemological philosophy of inquiry in science (Caldwell, 1994; see also Kolakowski, 1968; Smith, 1984a) is a factor contributing to the assumption about the existence of reality in social life. "Positivism insists that only one truth exists." (Lather, 1986: 259) Accordingly, positivists believe in the existence of a single reality for any given phenomenon. For them, "reality is a concrete and objective structure that is external to the researcher and open to being reduced to explanatory (independent) and dependent variables via laws that express their relationship." (Major, 2017:173)

The assumption of the existence of reality in observed phenomena in social life further permits the assumption of the measurability of such a reality (see Cook, 1985). Researchers in social science utilize various measurement procedures to measure reality (see Al-Adeem, 2017). A measurement procedure entails the attachment of values (Wolk, Dodd & Tearney, 2004) to: manifesting characteristics that can be observed directly and latent traits (attributes) that can be

¹ Assistant Professor of Accounting, Director of the PhD in Business Program King Saud University, Saudi Arabia.
Email: Kra3@case.edu; khalidaladeem@gmail.com

theorized and indirectly measured. In measuring manifest variables and latent constructs, objectivity must be maintained to ensure to some extent, and with limitations, generalizable inferences and conclusions. Generalizing from inferences is the law-discovery procedure that enhances prediction (Cook, 1985: 23) of the behavior of the observed phenomenon. Data obtained through sampling yield inferences deduced by rigorous empirical testing; these inferences can be generalized to the population from which the sample is drawn (Al-Adeem, 2017: 504).

However, lack of objectivity in carrying out an empirical enquiry has consequences, such as limiting the generalizability of the research findings. Research findings that lack of objectivity may enhance understanding about the behavior of only the observed phenomena within the domain of the sampled observations. In other words, inferences and conclusions from the empirical investigation are confined to the observations that are included in the empirical investigation. The knowledge derived from such inferences and conclusions cannot be extended to other observations that possess the traits and characteristics that are similar to those of the phenomenon of interest but were not included in the sample. Thus, the inferences drawn from a sample are not applicable to non-sampled observations.

Just as the sample size affects the generalizability of an empirical investigation, objective measures employed in an empirical inquiry enhance its generalizability. Reliable measures and a valid measurement procedure contribute to generalizing inferences obtained by employing such measures. Reliability of the measurement scale and the validity of measurement (see Borsboom, Mellenbergh & Van Heerden, 2004; Carmines & Zeller, 1979), at all levels (i.e., internal validity, external validity, and construct validity) (see Shadish, Cook & Cambell, 2002) ensure that the empirical investigation is independent of the researcher who undertook it.

Therefore, any qualified scientist, who follows the same procedure in an empirical investigation as that followed by a fellow researcher who conducted it earlier, should obtain the same research findings. Replication of results ensures that quantitative research

methods have an advantage over qualitative research methods. The expectation is that the inferences and conclusions are independent of the individual who is conducting the research and can be achieved by anyone who undertakes research. Replicating empirical studies validates the research procedure followed previously to obtain the research findings. Thus, objectivity in measurement is ensured in social science research.

If a social scientist does not assume the existence of a reality in social life that can be measured objectively, then he or she may consider employing other research methodologies and models of inquiry. Qualitative methodologies and models are empirical inquiries in that conclusions are based on data-enabling generalization at the conceptual level (Al-Adeem, 2017: 504). The trustworthiness (validity) of the qualitative research model or methodology employed can be evaluated and assessed (see Churchill, Lowery, McNally & Rao, 1998; Creswell, 1998; Lincoln & Guba 1985; Hammersley, 1992; Smith, 1984b). Unlike positivism, qualitative methodologies and models of different paradigms do not necessarily assume the existence of a single reality.

To those who have a firm belief in the existence of a single reality for all phenomena in the universe, the conclusions reached by quantitative research methods are probably preferred owing to their ability to enhance the researcher's predictive ability. Such research methods may also be preferred over qualitative research methodologies and models owing to their independence of interpretive style. Quantitative research methods may be deemed more rigorous and, thus, perceived as more objective than an interpretation of data; the latter may be distorted by the researcher's values, thereby limiting the generalization of the inquiry and reducing its predictive ability.

Over time, positivism has come under attack (see Janowski, 2004, ch. 6; see also Smith, 1984a). Whether reality exists or not is still debated among social scientists (e.g. Feyerabend, 1987). Even if reality exists, the perception of reality developed by an observer after observing it is perhaps the best that can be achieved (Al-Adeem, 2017: 501). In the arena of science, “absolute ‘truth’ is forever impossible”

(Kerlinger, 1979: 61). Gillispie (1960) challenges the claimed objectivity in science by arguing that it may have reached its edge. Feyerabend, the philosopher of science, has opposed contemporary research methods (2010). A social scientist who chooses to undertake an empirical investigation ought to be aware of the underlying assumptions.

A researcher's awareness of the paradigm of reality to which he or she subscribes is rewarding because it is known to have its own influences upon his or her selection of research methods and methodologies. Conducting research is not just doing what others are doing; further, it also does not entitle one to imitate them. Doing research starts with the love and passion for discovering knowledge and uncovering the reasons causing the observed systematic behavior (i.e., a phenomenon).

Conducting empirical inquiry requires rigorous testing to assure objectivity. Obtaining reliable conclusions depends on the validity and reliability of the measurement tools of the empirical investigation. A social scientist seeks answers to the research questions with a tested and suitable research method. The research question legitimizes the research method employed (Wells, 2005 as cited in Al-Adeem, 2017: 508). Obtaining novel research results and advancing one's career, by employing a quantitative research method that is not informed by the research question proposed and investigated in the inquiry, may be counterproductive.

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