

**Applying the representational theory of measurement  
to accounting**

**by**

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## **Abstract**

For many years, accounting discourse has been concerned with the measurement of attributes of accounting events. The concept of measurement forms one of the central pillars on which the preparation of financial statements is based. For example, financial statements can only be prepared if economic events meet the definition of an element of the financial statements and have a cost or value that can be measured with reliability. This has created the belief that accounting practices are practices of measurement.

The principles of measurement require that every process of measurement be based on an appropriate theory of measurement. Given the belief in the accounting discipline that accounting practices are synonymous with practices of measurement, it is to be assumed that acceptable theories of measurement exist in the discipline. However, over the decades, researchers in this field have been unsuccessful in creating an acceptable theory of accounting measurement. This suggests that there is a gap between the accounting concept of measurement and the scientific principles of measurement.

The main goals of this thesis are to determine whether the concept of measurement in accounting is in harmony with the principles of the representational theory of measurement and to develop a conceptual model of the accounting measurement problem. Representational theory establishes measurement in the social sciences. Accounting is regarded as a social science. This study applies the principles of the representational theory of measurement to determine the nature of the gap between the accounting concept of measurement and the principles of this theory.

The very fact of referring to accounting as a measurement discipline implies the presence of an established and well-known theory of measurement in that discipline: a discipline cannot be referred to as a measurement discipline without the existence of such a theory. Therefore, the lack of success of researchers in creating a theory of accounting measurement suggests that accounting is not a measurement discipline and that accountants are currently unaware of this.

To test this hypothesis:

1. A critical literature analysis was conducted, investigating whether the accounting concept of measurement is in harmony with the principles of the representational theory of measurement. The results of this analysis indicated that the accounting concept of measurement is not in harmony with the principles of the representational theory of measurement.
2. A questionnaire was sent to accountants, testing whether they were familiar with the principles of the representational theory of measurement and their application to the accounting discipline. The results of the survey indicated that accountants are not familiar with the principles of the representational theory of measurement or their application to the accounting discipline.

The main contributions of this study lie in the fact that it reveals that current accounting practices are not in harmony with the principles of representational measurement. Accountants should be educated in the purpose of the principles of measurement in the social sciences in order to ensure their proper application during accounting measurement.

**Key Words**

Representational Measurement, Homomorphism, Meaningfulness, Uniqueness, Existence Theorems

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## LIST OF DEFINITIONS

**Axiom-** A true statement about a qualitative structure or an empirical relational structure

**Homomorphism-** A mapping between two algebraic structures in such a way that the result obtained by applying the operations to the elements of the first set is mapped onto the result obtained by applying the corresponding operations to their respective images in the second

**Indicant** – These are effects or correlates related to psychological dimensions by unknown laws

**Meaningful measure-** A measure is meaningful if it is clear what statements may be made about it that preserve its true meaning.

**Numerosity of monetary units** – The quantity of monetary units assigned to represent the cost or value of a commodity or of an item that meets the definition of an element of the financial statements

**Representational measurement theory** - A theory which comprises many related theories of measurement that require a scale to be a set of structure preserving mappings (e.g., a set of isomorphisms or homomorphisms) from some qualitative or empirically based structure into a structure from pure mathematics