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Article

The Scientific Basis of Accounting Thought and Its Reflection on The Development of Accounting Objectives

Hussein Fadhil Abbas[1], Mohammed Hamid Majeed[2], Jasim Gshayyish Zwaid[3]

1. University of Samarra, College of Administration and Economics
2. University of Samarra, College of Administration and Economics
3. Middle Technical University, Kut Technical Institute

* Correspondence: adm.husseinabbas976@uosamarra.edu.iq , Mohammed.hamid@uosamarra.edu.iq , Jasim.alwsole@mtu.edu.iq

Abstract: The research aimed to demonstrate the development of accounting thought and the scientific focus of accounting, and to extrapolate the development of accounting thought within the logic of the natural sciences and the philosophy of the social sciences. The research relied on the descriptive approach in presenting its theoretical framework and the deductive reasoning approach in its applied aspect, to study and analyze the impact of schools of accounting thought on the objectives of accounting. The conclusions revealed that accounting thought encompasses scientific Bases belonging to the natural sciences and others belonging to the social sciences, in a manner that largely parallels the accounting profession's inclusion of both measurement and financial reporting. Accounting also meets the standards of the social sciences, while still facing a scientific crisis from the perspective of the natural sciences. Scientific progress in accounting measurement can be paralleled by the scientific integration of the pure sciences. Accounting measurement relies on the method of congruence and determinism, the same method used to explain other natural phenomena. Scientific progress in accounting reporting also parallels the philosophical and cognitive diversity in the social sciences, particularly epistemology in management and behavioral theory in education. Accounting, as a systematic field of knowledge, fulfills the definition of science and allows for prediction and control of future events. The most important recommendations emphasized the use of the scientific method, particularly the mathematical approach. It was also necessary to direct accounting research toward the principles and rules of accounting measurement as a distinct discipline. A specialized committee or accredited specialized council should work to standardize the definitions, concepts, and terminology related to the use of scientific research methods in the field of accounting.

Keywords: Nature of Accounting, Accounting Thought, Normative Accounting Theory, Positive Accounting Theory.

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1. Introduction

Many debates still arise regarding the nature of accounting and its relation to the social sciences or the experimental sciences. This is an old and modern issue that has been discussed by prominent accounting theorists and researchers since the beginning of the twentieth century and continues to this day. Hatfield pointed to the slow pace of scientific progress in accounting compared to the natural sciences, and he was the first to call for raising the status of this discipline in an official letter to the American Association of Accounting Teachers in 1923. Chambers, in the late 1950s, emphasized the need to enhance the scientific status of accounting by increasing the level of scientific excellence and rigor of accounting research. In light of an analysis of the social science criteria in

1963, Mautz (1963) found that accounting meets the criteria of the social sciences. This significantly impacted attitudes toward accounting in the United States. Academics and researchers were forced to reconsider the discipline's curricula, taking into account the requirements of the social sciences, enabling practicing accountants to benefit more deeply from research findings. Thus, the role of accounting as a science emerged during the second half of the twentieth century. At the same time, this discipline witnessed a reorientation regarding the specific approach to further accounting development, from normative to positive. This shift was made possible by Watts and Zimmerman's (1978) development of the foundations of positive accounting theory. As a result, accounting not only acquired a normative character but also began to be viewed in light of explaining and predicting the development of accounting practice. At the beginning of the twenty-first century, representatives of the Anglo-American school formed comprehensive views on understanding accounting as a science, although their opinions differed regarding the social and experimental science to which it could be referred. Hendricksen (2000) notes that it is considered among the humanities, but it is also a social and applied science, largely dependent on the wisdom, honesty, and status of accountants. Belkaoui asserts that accounting is an integrated social science, and others add that accounting is a social science that deserves a prominent place in university studies and is expected to be less precise than the natural sciences. According to this school, accounting is considered a social science because it tends to employ methods that define the social aspects of the discipline, rather than the intellectual superiority requirements that characterize the natural sciences. The widespread adoption of social and behavioral accounting fields, whose development is supported by individual accounting scientific schools, particularly the English positivist school, is also important.

The understanding of accounting as an empirical science has been significantly enhanced since the late 1970s with the spread of positive accounting theory, through the work of Watts and Zimmerman in Positive Accounting Theory (1986), which contributed to the formulation of new standards for scientific research in the field of accounting. Sterling and a large number of contemporary researchers also believe that the belief that accounting cannot be an empirical science must be abandoned as a first and most important step toward establishing its scientific status. From their perspective, accounting is an empirical science, an open system of incentives and feedbacks. For accounting to be an empirical science, it must meet the criteria of these sciences and, in particular, have its own laws. Productivity and capitalization, for example, are deterministic empirical laws. Further efforts should be made to identify accounting laws that can be empirically verified.

2. Materials and Methods

1. Research Problem

The reliance of the theoretical framework of accounting since the 1970s on establishing accounting standards that are accepted or rejected by voting by professional and academic institutions portends a shift in the focus of scientific research in accounting from theory to regulation. Although these standards are formulated in light of realistic scientific rules that have stood the test of time, implementing these standards is a social decision made by voting. This also portends a shift in the theoretical construction of accounting from a product of the political process rather than a product of scientific logic based on obligation rather than acceptance. Therefore, the research problem is represented by the following questions:

a. Is accounting theory facing a scientific crisis?
b. Can the multiplicity of accounting theories be interpreted as an aspect of natural science?

2. The Importance of the Research

Many studies point to the need to formulate a unified accounting theory that can be articulated in clear terms. This is similar to progress in other sciences, and accounting theorists have been slow to recognize clear evidence in their complex and confusing new experimental research programs. The importance of the research stems from the need to study the intellectual approaches that contributed to the development of accounting theory, clarify the path and developments of accounting research, and highlight the most significant difficulties that led to the decline of field studies and the movement of scientific experimental construction in the field of accounting. It also highlights the prospects for theoretical construction to achieve scientific consistency in accounting theory.

3. The Objective of the Research

The research seeks to achieve the following objectives:

a. Demonstrate the development of accounting thought and the establishment of a scientific focus on accounting.
b. Reflect the experimental approach in shaping accounting theory.
c. The role of the normative approach in shaping the theoretical framework of accounting.
d. Examine the development of accounting thought within the logic of the natural sciences.
e. Examine the development of accounting thought within the philosophy of the social sciences.

4. Research Hypothesis

The scientific construction of accounting theory is based on the historical and empirical development of the accounting profession.

5. Data Acquisition Methods

The research relied on relevant Arabic and foreign literature, including academic books, theses and dissertations, periodicals, reports, and international conferences, in addition to research and studies published on the Internet.

6. Research Approach.

The research relied on the descriptive approach to present its theoretical framework by reviewing academic sources that addressed the research topic to achieve its objectives. In its applied aspect, the research also relies on the deductive reasoning approach to test the hypothesis, interpret the results, and draw the most important conclusions.

7. Limitations

The researcher faced significant challenges in obtaining academic sources, including the relative scarcity of studies addressing the topic of accounting thought. This was in addition to the diversity of studies addressing the research topic from multiple sources, and the overlap of intellectual concepts, terminology, and academic research approaches in the field of accounting.

3. Results and Discussion

The Theoretical Aspect of Research.

1. Philosophy of Science

All knowledge begins with the sense and develops from tangibles to abstractions. Although mathematical knowledge appears to be abstract in nature, it has also evolved in this manner. The first thing perceived from the tangible is extension. Therefore, geometry was the first mathematical science to emerge. The first traces of the idea of extension among the ancients date back approximately 10,000 years BC, in cave drawings from the Reindeer Age [1]. From Popper's perspective, the natural sciences always begin with problems, and to solve these problems, they employ the same method used by the sound human mind: trial and error. This method offers many solutions to a problem and then eliminates any solution that proves to be incorrect. This method assumes that there are

many solutions, each of which must be chosen, and then those proven to be incorrect are eliminated [2].

Philosophical and scientific concepts such as time, space, motion, matter, causality, etc., as well as cognitive and logical methods, research approaches, and philosophical and scientific theories have been subjected to analysis and criticism by previous philosophers in order to construct new philosophical systems. This is considered a scientific philosophical activity that is part of the philosophy of science [3]. Science aims to understand, predict, control, and manage natural and social events and phenomena by identifying their characteristics, measuring them quantitatively and qualitatively, explaining their causes, predicting their occurrence, and determining the relationship between these phenomena. Scientific thinking is described as thinking based on human sensory experience to gather organized scientific knowledge [4]. Philosophy is the science of the reality of beings. Al-Khwarizmi describes it as the science of the realities of things and acting in accordance with what is best. Al-Farabi describes it as the science of beings as they exist, and its goal is the search for truth. The seeker of truth must abstract himself from lesser objectives, whether emotional, social, or material. He must start from a specific, single point of departure and then accept the results he arrives at, whatever they may be. Philosophical thinking is characterized by the continuous search for truth and contemplation that explores the unknown beyond the boundaries of science and explores it until he reaches knowledge of it [3].

Science is the field of knowledge that deals with facts using the scientific methodology. The scientific methodology includes both the inductive and deductive methods. Science's primary goal is to establish general rules capable of explanation and prediction. A theory, on the other hand, is a set of logical hypotheses that have been tested and proven within reasonable limits for a particular phenomenon. A theory is accepted in the absence of a better theory and is subject to evaluation, re-evaluation, and testing. It is replaced by a better one, if available. A hypothesis, on the other hand, is a preliminary explanation for a particular phenomenon and represents a scientific step toward theory-building. When a hypothesis is tested and proven, it becomes a theory. An old theory may also serve as a hypothesis for constructing a new theory [5].

2. The Inductive Approach.

Induction is defined as "a judgment about a whole based on the existence of that judgment in the particulars of that whole." For all particulars, it is called complete induction, or for most of them, it is called famous induction. Induction has gone through many stages, beginning with ancient Greek philosophy. The Greek philosopher Aristotle was the first to use the word induction, and the Greek word Aristotle uses to refer to induction is "leading to." However, since the beginning of the seventeenth century, modern thinkers have found that Aristotle's logic has become an inappropriate path for scientific advancement and does not lead to the addition of new knowledge. This led to the emergence of the new experimental method. Among the proponents of the experimental method are Francis Bacon and John Stuart Mill [6]. From an inductive perspective, scientific experimentation is the fundamental step in constructing any theory, as long as it confirms or disproves the hypotheses. However, in light of modern scientific transformations, the relationship between theory, reality, and experiment has been reconsidered. Einstein asserts that "the axiom of theoretical physics cannot be deduced from experiment; it must be a free creation." Karl Popper also postulated another criterion for verifying a theory's validity: the criterion of falsification. This means that a scientific theory is falsifiable—not in absolute terms, but rather that each theory has its own scope of validity. This, from Popper's perspective, will force scientific systems into a bitter struggle for survival [7].

Inductive reasoning is described as the method that uses partial evidence to reach a general principle. It is the opposite of the deductive-syllogistic method. Inductive reasoning is used to verify the validity of partial knowledge through observation and

sensory experience, and by repeatedly obtaining the same results, to arrive at a general law. The scientific method combines the inductive and deductive methods, i.e., it combines thought, observation, measurement, and induction [4]. Induction is a method of logical judgment, formed by examining several cases and then generalizing. It is used when studying new facts that are discovered and then generalized. There are four important factors that must be taken into consideration when using the inductive method, as follows [8]:

1. The observation must be accurate and documented.
2. The observations must cover cases representative of the study population.
3. The observations must cover a sufficient number of cases.
4. The results must be validated and generalized to the cases studied.

The inductive approach to theory formation focuses on beginning with the study, analysis, and examination of specific cases and phenomena, then formulating hypotheses to solve the problem and explain the phenomenon. These hypotheses are then tested experimentally. If the hypothesis is proven correct, it becomes a scientific principle or law; otherwise, it loses its scientific value. This final situation requires making some modifications to the hypotheses, or rejecting them altogether and searching for new explanatory hypotheses [9]. Inductive research relies on experience, observation, observation, investigation, statistical data, or practical experiments. Logical inference is drawn according to the inductive approach based on specific cases, and then a general conclusion or premise is derived that can be generalized to the society under study. In other words, moving from particulars to generalities. Applying the inductive approach in the field of accounting requires collecting observations. If recurring relationships are observed between these data, it is possible to move from particulars to generalities [10].

3. **The Deductive Approach.**

The deductive reasoning method, as described by Aristotle, is used to verify the validity of knowledge by comparing it to prior knowledge, assuming its validity. This method is based on moving from premises to conclusions, i.e., from the general to the specific, or from principles to conclusions. Accepting the validity of the premises leads to accepting the validity of the conclusions. Prior knowledge is called a premise, and new knowledge is called a conclusion [4]. Deduction is a proof that begins with accepted propositions and proceeds to other propositions that necessarily result from them, without resorting to experimentation. This process is either through rhetoric or calculations. Deduction is not limited to mathematics. A judge who infers based on documents and a speculator who infers based on the supply and demand of financial securities both perform the same process as a mathematician who deduces geometric theorems [1]. The deductive method means relying on a logical sequence from hypotheses, axioms, or postulates to certain conclusions that lead to the formation of specific theories with specific features that explain specific situations. This method is based on reason, thinking, logical deduction, and analogy, and it moves from the general to the specific [9]. Inference as a logical process is any precise proof such as measurement or calculation. As for inference as a method, it is the general behavior used in the sciences, especially the mathematical sciences, and expresses the logical sequence moving from principles or primary issues to other issues that are necessarily deduced from them. This is in contrast to the inductive method based on observation and experimentation [4].

The requirements for developing a theory require the use of the scientific research method, which is based on logical reasoning using the method of induction or deduction. The scientific research cycle begins with observation, followed by formulating hypotheses, testing the hypotheses and conducting experiments, and finally arriving at results [10]. It is not possible to separate scientific methods in scientific research; rather, we divide them for the sole purpose of studying them. We must take this unity into account and not consider this division absolute, as they are all, in fact, different steps in a single, general method, which we may all follow in relation to a single issue in a single

science. Mathematics, for example, was initially experimental, while geometry originated with the Babylonians in an experimental manner, meaning that it was based on partial experiments and observations of specific conditions, followed by the subsequent generalization of its meaning. From these observations, Greek mathematicians established theoretical geometry [3]. The accounting reality also indicates that most of the accounting principles currently in use are merely professional practices that have gained general acceptance among accountants, where their effectiveness has been established and proven over time. The set of practical practices is the basis for defining theory according to the practical approach. This means that any theory that has no non-practical uses is an unsound theory, as a set of principles is arrived at through observation and application testing. The practical approach is also called the pragmatic approach, and is more recently known as the utilitarian approach. The tendency to extract accounting principles from the reality of accounting practices was the prominent feature of this approach [10].

A deductive system is defined as a system of principles and theories. From initial propositions and concepts, called principles, one continually deduces other propositions or concepts through necessary deductions according to the rules of logic alone. These deduced propositions are called theories. The initial propositions may be deduced from preceding propositions within the same science to which they belong [1]. In contrast to the inductive approach, the researcher begins with a general premise and, through logical deduction, proves that this general premise applies to a specific case or cases. This means moving from generalities to particulars, beginning with hypotheses and then deducing conclusions through logical justification. The deductive approach is applied in the field of accounting, by defining the objectives of financial reporting, moving on to basic assumptions and accounting principles, and arriving at the necessary accounting methods [2].

It is necessary to distinguish between inference and demonstration. Inference is a logical process in which we move from propositions considered in themselves, regardless of their truth or falsity, to other propositions that necessarily result from them according to purely logical rules. Demonstration, however, is more specific than inference. It is an inference in which the truth of the premises is taken into account and aims to prove the validity of the results. Inference, then, does not tell us about the truth of the results, but rather about their necessarily arising from known premises. Demonstration, however, informs us of the truth of the results we arrive at because it is based on the truth of the premises [1]. Popper also emphasizes the importance of the deductive method, which relies on arriving at results through a purely logical path, as opposed to the inductive method, which relies on partial empirical facts. He points out that the opposition between induction and deduction completely parallels the traditional distinction between rationalism and empiricism. He views principles as guesses, tentative intuitions, or hypotheses, in contrast to what others believe to be deductive premises that must be self-evident, clear, distinct, and based on rational intuition [2]. Badawi, however, views principles as propositions that cannot be deduced from other propositions in a given deductive system, which are considered improvable and undisputable. Principles in any deductive system are divided into axioms, premises, and definitions. An axiom is a proposition that is self-evident; it cannot be proven; it is considered true without proof for anyone who understands its meaning [1]. As for assumptions, they are not evidence in themselves, but rather what is assumed to be true and demanded to be accepted, without stating them clearly to the mind, due to their usefulness or as long as they do not lead to contradiction. They are more important than evidence, even if they are less certain. Axioms are analytical propositions, and assumptions are synthetic propositions. As for definitions, they are conceptions specific to each science, and express the essence of the thing known, about it alone, and about it as a whole, and it must be comprehensive and exclusive. In the view of traditional rationalists, a definition consists of the thing to be defined, and the statement that limits the properties of that thing [3].

4. The Nature of Accounting

Accounting is a dynamic science and an open system that affects and is affected by the environment. Any change in the business environment is always affected by the changes. Therefore, historical developments in accounting were made to meet the needs of individuals and society. The advent of the Industrial Revolution in Europe led to an increase in the size of projects, necessitating the search for multiple sources of financing for the required investments. This highlighted the importance of accounting applications that take into account the perspective of creditors and protect their interests. Therefore, it was necessary to develop accounting principles and rules for this purpose [11]. The name of Luca Pacioli is generally associated with the definition of double-entry bookkeeping. In 1494, the mathematician Pacioli published his book (A Treatise on Arithmetic, Geometry, Ratios, and Proportions), in which he described double-entry bookkeeping. This book reflected the practices prevalent in Venice, Italy at the time. Therefore, he is not the inventor of double-entry bookkeeping, but merely described what was in use at the time. After its spread in Europe during the sixteenth and seventeenth centuries, the Italian method achieved new features and developments, arriving at the currently known double-entry model after a successive series of developments in a manner almost similar to what is described as the normal science curve [12].

With economic progress and the increase in the size of companies, their management systems became more complex and sophisticated. This led to the separation of ownership from management, prompting investors and businessmen to delegate the management, monitoring, and control of their resources to managers as agents of the original owners of the project. Thus, the Industrial Revolution had a profound impact on both the intellectual and practical aspects of accounting, directing accountants' attention to cost accounting systems as a tool for controlling cost elements and addressing the problem of allocating fixed costs across different periods and products [13]. The sixteenth and seventeenth centuries also witnessed the emergence and development of periodic financial statements. Following the Industrial Revolution, accounting gained a more prominent status, having previously been a mere record of a business unit's external relationships with other business units or a record of market-defined relationships. With the growth and development of joint-stock companies, the need for cost accounting emerged, relying on the concepts of continuity, periodicity, and accrual. Cost accounting emerged in the nineteenth century following the widespread proliferation of production processes and a greater emphasis on the use of accounting records as a means of administrative control over commercial projects [12]. Consequently, the role of accounting in evaluating management emerged, and the need to match efforts with achievements became more prominent. Perhaps the most important outcome of this was the paramount importance of the income statement and the use of the principle of matching revenues with expenses as a basis for evaluating management's efficiency in investing the funds entrusted to it. As a result, the relative importance of the budget declined, and its role was limited to merely disclosing the remaining balances after preparing the income statement. In accordance with this new approach, the budget became a link between the income statement for successive periods [14]. The second half of the nineteenth century witnessed the development of techniques related to accounting for advances and accruals, which allowed for the periodic calculation of income. The latter half of the nineteenth and twentieth centuries also witnessed the development of financial statements. While the twentieth century witnessed the development of accounting methods to address complex problems ranging from calculating earnings per share, accounting for mergers, accounting for inflation, accounting for long-term leases, and retirement accounting, to pressing and fundamental problems related to accounting for financial instruments [12], many groups have consistently employed a mixture of approaches to critically study and analyze accounting theory and principles. Four phases can be identified through these processes. In the first phase (1900-1933), management had complete control over the

selection of information to be disclosed in financial statements. During this phase, management had complete control over the form and content of financial statements [14]. This management intervention is described as representing random solutions to controversial problems and issues. Professional organizations played a major role in developing accounting principles during the second phase (1933-1959) and the third phase (1959-1972). In the fourth stage, which continues to the present time, the Financial Accounting Standards Board (FASB) and various pressure groups are moving towards politicizing accounting [12].

5. The Development of Accounting Thought

Serious interest in attempting to establish an intellectual basis for practical accounting applications began at the beginning of the twentieth century. These efforts should be based on scientific or practical principles, based on the foundations and methodology of scientific research. Through the combined studies and efforts of numerous thinkers and academic and professional bodies, they constituted a fundamental source of accounting literature. The goal was focused on building a theoretical framework for accounting principles using scientific research methods. The accounting literature also agrees that Patton's doctoral dissertation, submitted in 1916, was the first serious and comprehensive scientific attempt to establish accounting principles, axioms, or hypotheses. It is also the primary source for developing accounting standards applicable across time and space [5]. Accounting involves three basic activities: identifying economic events, recording them, and communicating them to interested users. It is important to note that the traditional function of bookkeeping is limited to recording economic events only, and therefore, it is only one part of the accounting process. Accounting encompasses the complete process of identifying, recording, and reporting economic events [15]. Identifying economic events means selecting economic events relevant to a company's business. Recording these events on a daily and sequential basis provides a history of its financial activities, expressed in monetary units. The information gathered is then communicated to interested users through accounting reports. The most common of these reports are financial statements. A vital element in communicating economic events is the accountant's ability to analyze and interpret the reported information. Analysis involves the use of ratios, percentages, graphs, and charts to highlight important financial trends and relationships [16].

Accounting thought is represented by various intellectual models. All activities in the field of accounting are aspects or manifestations of human behavior, whether in observation, measurement, financial reporting, report interpretation, or decision-making. Accounting theories and research can relate to any of these areas. That is, accounting research is not concerned with inanimate objects, as is the case in physics, chemistry, geology, and astronomy, but rather with the behavior of groups of people. There is a tendency in some accounting research to monitor this behavioral aspect of accounting [17]. Accounting is described as a utilitarian service activity that provides beneficiaries with quantitative financial information to help them make decisions related to the allocation and use of resources. It is also described as a descriptive and analytical system that identifies and defines the large volume of transactions and events that describe economic activity. It is also described as an information system that collects and communicates accounting information to a large and diverse number of users. Despite the apparent differences between these three systems, they share three basic characteristics: identifying, measuring, and communicating financial information about economic units to interested parties [18]. Studies examining the professional and academic development of accounting also confirm the presence of two interrelated characteristics: continuity and change. Continuity indicates that many elements of thought and practice have proven their usefulness and stabilized over time, representing what is known as conventional wisdom. Change, on the other hand, embodies the dynamic nature of accounting and its ability to keep pace with the continuous development of surrounding environmental

factors [14]. Evolutionary progress means the gradual development of the body of knowledge over time. Accounting has typically followed this pattern through slowly evolving standards issued in response to changes in practice. Revolutionary change, on the other hand, occurs when a major crisis causes the entire body of knowledge to deviate from a particular intellectual trend. Accounting is currently experiencing a radical intellectual shift regarding the fundamental foundations upon which financial accounting is based. The drivers of this transformation can be attributed to the transition from an industrial economy to an information economy, growing globalization, improved data availability, and increased processing capacity [19]. Given the diversity of assumptions in the accounting environment, authors and researchers have adopted different approaches to theory building. As a result, accounting has experienced a state of continuous crisis or revolution, with different accounting models competing for supremacy. These groups have acquired vested interests that have supported the dominance of their own models and the resulting theories, and there has been a gradual influence of politics on the standard-setting process [20]. It is also noted that all attempts by accounting thinkers during the twentieth century and up to the present time have focused on explaining or justifying the realistic accounting model, or developing its procedures and outputs, and have not addressed the core of the accounting problem, which is that it is a science and a profession to serve the beneficiary and meet his information needs. As these needs change in time and place, the outputs required by the beneficiary must change, and thus the basics of accounting measurement and the inputs of its models must be modified, in order to suit the renewed needs. Therefore, the purely scientific conception of developing the accounting model in isolation from the needs of society is an intellectual development whose roots do not extend to reality [5].

6. Accounting Theory

The word "theory" is derived from the Greek word "teoria," meaning "contemplation." A theory is generally defined as a coherent set of hypothetical, conceptual, and factual principles that form the general framework or reference for a particular field of study [21]. A theory refers to superior scientific knowledge and is a systematic set of ideas, hypotheses, laws, and concepts that describe and explain facts or events in a particular field. A theory is a coherent and interconnected deductive system, an infinite set of rigorous facts subject to deduction [20]. A theory represents a coherent intellectual system about a phenomenon or a group of homogeneous phenomena. It is defined as an interconnected set of concepts, definitions, and assumptions that form an organized view of phenomena by identifying the relationships between variables with the aim of explaining and predicting them. It is also described as an intellectual construct that links premises to results. A scientific theory is built and constructed on a set of hypotheses that, in turn, guide scientific experimentation [8]. It is worth noting that the theory is guided by specific logical principles, including the principle of causality and the principle of determinism. The first states that every phenomenon has a cause, while the second means that the same causes always produce the same results. The results often generate what is commonly called a law. A scientific law is the set of fixed relationships between certain phenomena. It is characterized by its being based on experimentation and replicability, as it is based on the principle of determinism, generalizability, predictability, and mathematical formulation. From this standpoint, we conclude that when scientific laws are combined, they form a coherent scientific theory [7]. The tendency of science towards maturity is evident in the development of its theory, which suggests that science has reached the stage of academic research and the coordination of its issues in a logical system [9].

Scientific theory is of paramount importance and serves as the foundation for defining the identity of any science. It defines the subject matter of science and organizes its processes, roles, and directions. Theory differs from the scientific method, which is considered a single foundation for all natural and human sciences, with procedures and

tools varying according to the phenomena studied. Kuhn also identifies three main types of social theories. The first type is known as analytical theory, which is similar to logical and mathematical theories. The second type is known as normative theories, which define a set of ideal states that humans strive to achieve [7]. This type of theory deals with ethical and aesthetic issues, such as Plato's theory of virtue. The third type is known as scientific theory, a comprehensive and experimental formulation that establishes a relationship between two or more models of truth and, in its simplest form, studies the relationship of cause and effect [8].

It should also be noted that there is no single definition of theory, and in different circumstances, theory means different things. People often use the word "theory" to speculate or express their ideas, or the word may be used to refer to an unrealistic or impossible ideal. From the previous presentation, we can conclude the following technical definitions of the concept of theory [22]:

1. A belief or guiding principle for action (such as behavioral theory, positive motivation, or management and motivation theories).
2. An idea or set of ideas designed to explain a particular phenomenon.
3. A set of principles underlying a topic, or ideas proposed to explain a particular fact or event (such as economic theory or the theory of relativity).
4. A more general intuition or opinion.

As for accounting theory, Hendrikson defined it as logical deduction in the form of a broad set of principles that provide a framework for evaluating accounting practice and developing new practices and procedures. This definition suggests that the primary purpose of accounting theory is to explain current accounting practice and provide a basis for its development through empirical research [21]. Belkaoui defined it as a set of concepts and definitions that enable the formation of a systematic vision leading to the identification of the relationships between the variables governing a particular phenomenon. In other words, the primary purpose of accounting theory is to provide a basis for predicting and explaining future events. Accounting theory is also defined as a set of logically interconnected principles that form a conceptual framework for evaluating existing professional accounting practices. It contributes to a better understanding of these practices for professionals, investors, managers, and students. It also provides guidance and references that enable the development of new accounting practices and procedures [9] [10]. From the technical definitions of theory, we conclude that theories can do different things. Some describe and explain what actually happens, while others provide predictions about future events. Other theories offer suggestions or guidelines for what should happen. Accordingly, accounting theory enables the following tasks [22]:

a. Describe, explain, or predict accounting practices based on observations and/or logical reasoning.
b. Reasoning in the form of a set of general principles that (1) provide a general frame of reference against which accounting practices can be evaluated and (2) guide the development of new practices and procedures.

Four characteristics of a good theory are also noted, as follows [21]:

1. It must anticipate or predict phenomena; that is, it must be empirical.
2. Theories that fail in some empirical tests are not universally applicable and should therefore be replaced by better or un falsifiable theories.
3. The theory must be both internally and externally consistent. Internal consistency means inferential consistency, i.e., expecting the same output for each matching input. External consistency means the theory's compatibility with other existing theories.
4. The theory must cover all variations present in nature or in practice that are relevant to the phenomenon under study.

Empirical Accounting Theory

As the name suggests, an empirical theory means that it is derived from experience or experimentation. Positive theories are often called empirical theories. Positive or positivist theories incorporate observations of the existing situation, directly or indirectly, as a basis for describing or explaining it, and for testing any predictions made. Most positive theories are developed through observation and through a process of induction and deduction [23]. A positive theory describes, explains, or predicts activities. For example, a positive theory can explain why managers choose certain accounting methods in situations where accounting standards permit such a choice, and predict what other units might do when faced with similar circumstances [24]. Positive theories are theories that are proven or confirmed in practice. They help us understand what happens, what exists in reality, and why units operate the way they do. Therefore, they are based on real-world observations. Positive theories also help us understand the decisions users make regarding accounting information, which may lead units to make wiser decisions about how and why they present information the way they do [25]. Since the 1970s, accounting research has shifted toward the positive theory of accounting knowledge theorization. This is a form of the inductive approach, which focuses on explaining and predicting phenomena, extrapolating them, identifying the reasons for their occurrence, and determining the causal relationships between their dimensions. Therefore, the positive theory focuses on explaining management behavior regarding the trade-off between alternative policies, with the aim of arriving at the causes or motives leading to this behavior. The positive theory also enables predictions to be made about accountants' behavior toward specific problems and their expected solutions [26].

The understanding of accounting as an empirical science has been significantly enhanced since the late 1970s with the spread of positive accounting theory. This was facilitated by the work of Watts and Zimmerman, which contributed to the formulation of new standards for scientific research in the field of accounting. A prominent example of this type of empirical research in accounting is the confirmation of hypotheses about opportunistic behavior by those involved in accounting within an organization. It is also worth noting that Chambers' study is devoted to selecting (12) empirical laws of accounting, including the laws of productivity and capitalization [25]. Examples of positive theories include theories of the spread of infectious diseases and theories that explain why managers prefer or choose certain accounting methods or policies over others. If a positive theory predicts or is expected to occur, this prediction is often formulated as a hypothesis. This hypothesis can then be tested to help determine whether the theory is correct. The focus of these theories is on the following tasks [22]:

a. Describe what actually happens.
b. Explain what's happening.
c. Predict what will happen.

Positive accounting theory is designed to explain and predict accounting practices and to explain why one company uses a particular accounting method and another does not. In an attempt to understand accounting policy decisions, the theory examines a set of relationships, or contracts, between an entity and its providers of owned capital (shareholders), management (managers), and borrowed capital (lenders). Positive accounting theory is based on a fundamental economic assumption called the "rational economic person," which implies that all individuals act in their own self-interest and are rational maximizers of wealth. It is derived from several economic theories, including contract theory and agency theory [24].

8. **The Behavioral Approach to Building Accounting Theory.**

Behavioral accounting refers to the broader social implications of accounting figures and how key stakeholders—managers, shareholders, creditors, and government agencies—respond or react to accounting information [20]. Accounting is a behavioral activity that aims to influence individual and collective behavior, directly through the

content of financial statements and accounting information, and indirectly through the behavior of accountants. The behavioral approach to building accounting theory is based on the relevance of the information provided and studying its impact on user behavior. The behavioral theory of accounting primarily aims to explain and predict human behavior in light of possible accounting alternatives [26].

Unlike traditional methods that focus on procedure rather than analysis, the behavioral approach focuses on analyzing users' reactions to help select preferred accounting methods, which play a vital role in making sound economic decisions. This approach then builds the foundations of accounting theory based on the behavior of users. This approach has been used since the beginning of the second half of the twentieth century, and advocates of this approach justify its use by generating accounting information and its impact on future decisions. By analyzing this impact, an accounting theory can be constructed that provides users with the best information. This approach is criticized for its apparent weakness in terms of the scientific method and the limited generalizability of its research findings [5].

9. **Normative Accounting Theory**

The word "normative" is an adjective derived from a standard and is used to describe what is ideal, not realistic, but rather what should be. This theory predominated prior to the 1960s. Normative theory represents a deductive theory that describes what empirical reality should be, regardless of the reality of that reality. It is used to find the best among accounting alternatives, with the best being measured by reference to specific standards [7]. One of the characteristics of this theory is its tendency toward idealism, as it assumes that there is a specific goal to be achieved. Therefore, it begins with these goals and ends by deducing the ideal accounting policies that should be applied and achieve the desired objectives. In other words, it focuses on choosing the best accounting policy without focusing on the reasons for choosing this policy. Normative theories provide recommendations on what should be. They describe what reality should be like based on a specific goal or objective [27]. The conclusion of the normative theory is drawn through logical reasoning and based on a specific objective. The conceptual framework for financial accounting is an example of a normative theory. The objective of financial reporting stated in the conceptual framework serves as its foundation. A set of concepts is developed regarding what should be reported, what the characteristics of accounting information should be, how to define financial statement elements, such as assets and liabilities, when information should be recognized in accounting reports, and how information should be presented to make sense [22].

Accounting practices reflect the information needs of stakeholders. The International Accounting Standards Board (IASB) is currently developing a unique set of high-quality, open, and globally accepted financial reporting standards to serve the interests of users. The role of these standards is to impose a conceptual framework for accounting and financial reporting, enabling the development of a general accounting theory [20]. The normative approach has been heavily criticized because it focuses on what should be and neglects the possibility of management's choice. One of the most significant shortcomings of the normative theory is that it leaves broad scope for choosing among alternative bases, opening the door to personal judgment, in addition to providing recommendations on what is best. The criterion of best is relative, not absolute; what is best for one company may not be appropriate for another [26].

10. **Theoretical Framework Method**

The conceptual framework of financial accounting is primarily based on the objectives for which the accounting profession was established. The framework begins with the primary objective of accounting, which is to provide information to investment and financial decision-makers, then establishes unified principles and terminology for accounting concepts. It then establishes standards, measures, or systems that must be followed to achieve pre-defined objectives using agreed-upon professional concepts and

terminology. The term "accounting standards" does not refer to standards in their literal sense, but rather to everything related to the regulation governing the accounting profession [7]. Accounting, as the "language of business," is defined as an information system through which various economic data and events (inputs) are transformed into accounting statements and reports (outputs) through accounting processes, communicating the truth of these events to the beneficiaries in a neutral and transparent manner [18]. To assist these users in obtaining this information, the conceptual framework for financial accounting is used as a guide for accountants in providing useful accounting information to their users. The conceptual framework represents an integrated system of interconnected objectives and foundations that can lead to the issuance of consistent and coherent accounting standards, helping to describe the nature, function, and determinants of accounting and financial reporting [16]. The theoretical framework for accounting includes three levels. The first level deals with the objectives and purpose of accounting, while the third level includes the concepts of recognition and measurement and discusses the methods for achieving these objectives. Between these two levels, it is necessary to present some basic theoretical concepts that clarify the qualitative characteristics of accounting information and the elements of financial statements. These basic concepts form the link between the reason for accounting (why?), which expresses the objectives, and the method for achieving these objectives (how?) [27]. The objectives of accounting represent the cornerstone of the theoretical framework, and they are three main objectives, as follows [13]:

a. Providing useful information for investment and credit decisions.
b. Providing useful information in estimating expected cash flows.
c. Providing information about the entity's resources (assets) and the claims (debts) arising from these resources.

The third and final level of the conceptual framework explains the concepts of recognition and measurement, which include accounting principles, assumptions, and determinants. It includes four basic accounting assumptions: the economic unity assumption, continuity, monetary unity, and periodicity assumption. It also includes four basic principles: the measurement principle, revenue recognition, expense recognition, and comprehensive disclosure principle [27].

Accounting assumptions are described as fundamental logical issues related to the economic environment in which accounting operates. These assumptions are linked to the logical development of accounting and its objectives. The formulation of accounting assumptions depends on the inductive and deductive approaches. The verification of the assumption does not rise to the level of absoluteness as is the case with axioms, mathematical logic, and other natural sciences. Arriving at acceptable logical results does not necessarily have to be absolutely positive in accounting due to the impact of accounting on the economic and social environment [26]. Issuing accounting standards based on principles accepted by a particular society at a particular time is considered an agreement and choice of that society at that time and place, and does not mean at all that it is considered an essential part of building a purely accounting theory, as principles in accounting do not mean the same word in the natural sciences, due to the lack of an attempt to search for the true foundations of these principles in a purely scientific manner, and thus their application cannot give absolute scientific results, which remain in the hands of personal interpretations that cannot be prevailed over each other in the absence of sound scientific principles [5].

Descriptive analysis of the contribution of natural science and social science to the construction of accounting thought.

To test the research hypothesis and achieve its objectives, the researcher relied on the use of the deductive-inferential approach to analyze data and studies that addressed the research topic from both practical and scientific perspectives. This part of the research focuses on studying, analyzing, and explaining the following topics:

a. The technical and scientific development of accounting, and the role of scientific research methods in shaping accounting thought from a historical perspective. Table (1)
b. Contributions and interests of pioneering researchers and international professional organizations in the development of accounting theory during the second half of the twentieth century and the beginning of the twenty-first century. Table (2)
c. Classification of schools of accounting thought and their implications for the development of accounting objectives. Table (3)

Table (1) illustrates the stages of historical development of accounting thought.

Table 1. Technical and scientific development of accounting and the role of scientific research methods

Period	Development	Description
Before 1450 AD	Practical Practice	Evolution of Practice
1450-1750.	The Development of the Technical Aspect of Accounting - Within the Science of Accounting	Pre-Theoretical Period (Continued Development of Practice)
1750-1800.	The Development of the Technical Aspect of Accounting - Within the Science of Mathematics	Formalization of Practice
1800-1950.	The Development of Accounting Research	General Scientific Period – Explaining, Interpreting, and Theorizing Accounting Practices
1950-1970	Accounting as a Social Science	Normative Accounting Theory – Explaining Ideal Practices and the Basis for Their Realization -Deductive Approach
1970-2000	Accounting as an Experimental Science	Positive Accounting Theory – A Framework for Explaining and Predicting Behavior Inductive Approach
2000 - Present	The development of accounting as an experimental and social science, with disagreement over which social and experimental sciences can be identified	Mixed Evolution - Positive and Behavioral Theories: The Anglo-American School._ Inductive and Deductive Approaches.
Accounting as a Natural Experimental Science	From a natural science perspective, accounting continues to face an ongoing scientific crisis.	To achieve the intellectual superiority requirements that characterize the natural sciences, it is necessary to develop specific empirical and deterministic accounting laws and to develop an independent and self-contained accounting measurement system. Pioneering researchers in this approach include Sterling (1979) and Salvary (2007).

Source: Prepared by the researcher based on the following sources: [20] [25].

Table 2. Development of accounting theory during the second half of the twentieth century (1950-2000).

Name	Scientific contribution
American Accounting Association (AAA)	- Issuing a report that includes amended assumptions and defining accounting definitions and concepts related to revenues, expenses, losses, assets, and equity in 1957. - Constructing and developing accounting theory. Issuing a report entitled "The Fundamental Theory of Accounting," which focused on defining accounting objectives and accounting information standards, marked a turning point in addressing the needs of accounting report users, emphasizing prediction and its importance in decision-making, through the characteristics of accounting information: relevance, verifiability, freedom from bias, and quantifiability (1964-1966). - Issuing a report entitled "Accounting Theory" that includes a presentation of different approaches to constructing accounting theory: the traditional approach, the decision-making approach, and the information economics approach(1977).
American Institute of Certified Public Accountants (AICPA)	- Establishment of the Accounting Principles Board to intensify scientific research efforts and regulate accounting practices(1958). - Issuing 8 accounting principles based on basic assumptions related to revenue recognition, recording changes in the resources of an economic unit, and recording assets(1961-1962).
Financial Accounting Standards Board (FASB)	A qualitative shift in financial accounting, through the issuance and development of financial accounting and financial reporting standards. These standards represent a fundamental reference for accounting application and education, users of financial statements, and society in general(1965) .
International Federation of Accountants (IFAC)	Formation of the International Auditing Practice Committee, which is responsible for preparing international auditing standards and codes of professional conduct (1973).
International Accounting Standards Committee (IASC)	It was founded with ten professional organizations in various countries, and later expanded to include more professional organizations. By 2000, its membership had reached 143. It specializes in preparing international accounting standards, and its name was later changed to the International Accounting Standards Board (ISAB).

Source: Prepared by the researcher based on the following sources: [7] [10] [12].

Table 3. Schools of Accounting Thought

Level	School	Orientation	Pioneers
Level 1	The Classical School	Classical thought, or procedural analysis, focuses on practical application, finding logical justifications for it, and developing it by establishing basic rules based on practical reality, through which future accounting treatments are predicted. This school focuses on accounting procedures without considering the relevance of the results of those procedures to reality. It focuses on identifying system inputs, accounting measurement, and	Paton(1932). Sanders, Hatfield & Moore(1938). Paton & Littleton(1940).

		the necessity of providing objective evidence of the occurrence of an event.	
Level 2	The Interpretive School	This school focuses on establishing a direct relationship between the measurement of events and reality. Accounting income, for example, is the sum of revenues and gains minus the sum of expenses and losses. These elements are not defined and specific in classical thought and have no practical meaning. Revenue cannot be defined in isolation from the notion of recognition, and expenses cannot be separated from assets in isolation from the notion of distribution. Advocates of interpretive accounting also believe that measurement results are meaningless in isolation from the chosen accounting policy, while emphasizing the need to develop an accounting theory that gives accounting measurement a realistic and practical meaning.	Canning(1929). Edward & Bill(1961). Sprouse & Moontiz(1962). Chambers(1967).
Level 3	Behavioral School	This school of thought focuses on the usefulness of the accounting system's outputs to users, rather than on the accounting procedures or the accounting system itself. It is concerned with developing these outputs to align with user needs and influence their behavior. This means that proponents of this behavioral approach to accounting may sometimes accept objective measurement and other times accept factual measurement, depending on user needs. Research at this level is ongoing.	Ball& Brown(1968). Beaver(1972). Belkaoui. Zimmermanm. Fama& Watts Billy. Gaffikin

Source: Prepared by the researcher based on the following sources: [5] [7] [25].

4. Conclusion

Accounting has two stages: the first is the financial measurement of economic events, and the second is informing users of the reality of these events or conveying the results of this measurement. The research also reached a set of conclusions, as follows:

1. In the measurement phase, accounting relies on the rules of empirical science and closely resembles the natural sciences. It relies on the approach of congruence and determinism, using an abstract mathematical method to arrive at meaningful results and outcomes. This is the same approach used to explain condensation, evaporation, combustion, and other natural phenomena in physics and chemistry. Scientific progress in accounting measurement can be analogous to the scientific integration of pure sciences.

2. Accounting, in its other branch, which is represented by communicating the truth of financial events to interested parties, may depart from the rule of natural science in response to its objectives as a socially beneficial tool. Therefore, the function of accounting reporting is similar to the social sciences, based on the philosophy of managing common interests, interpreting behavior, and predicting the impact of information models on user decisions. This draws on historically accumulated professional empirical experience in an attempt to arrive at general rules for measuring the impact of information on behavior, similar to the theory of knowledge in management and the behavioral theory in education. Scientific progress in accounting reporting is analogous to the philosophical and cognitive diversity in the social sciences.
3. The limitations and problems of formulating accounting theory, along with the necessity of a theoretical framework for the impact of accounting information on economic behavior, have led professional organizations to rely heavily on the deductive approach. The process of establishing accounting rules is based on the generally accepted view of the political arena, and anything that deviates from the rule and objectivity of mathematical measurement is subject to estimation and discretion, inevitably threatening the internal and external consistency of accounting science.
4. The historical development of accounting thought indicates the development of multiple accounting theories by researchers, academics, and professional organizations, with differing perspectives on the nature and role of accounting. There is still no single accounting theory, but rather a group of competing theories or hypotheses that have not yet reached the stage of scientific acceptance, highlighting the existence of vast differences and differing viewpoints.
5. Attempts to construct a unified theory of accounting have resulted in three levels of accounting thought. Through a realistic approach, the traditional school attempts to find and predict generalizations related to accounting practices. While the interpretive school attempts to develop general laws governing the relationship between the accounting methods used and the elements of financial statements, by interpreting these relationships analytically, the behavioral school seeks to scientifically frame the impact of accounting information on user behavior.
6. Accounting is a field of knowledge organized around a set of general theories and principles that allow for quantitative predictions under certain conditions and control of future events. Thus, accounting fulfills the definition of a science. Accounting is similar to other sciences in its ability to benefit from the approach of scientific revolutions. Progress in the field of accounting can be radical, by abandoning the prevailing ideas at a given time, ensuring further scientific progress in accounting.

Recommendations:

In light of the research findings, the following recommendations are proposed:

1. The need to direct accounting research attention toward the provisions of accounting measurement rules and address the problems of accounting measurement as a specialized science, in terms of measurement concepts, measurement objectives, value and the object measured, measurement methods, and measurement tools.
2. Working to unify research efforts toward establishing general rules and common factors to bring together different viewpoints on the nature and role of accounting and to build a unified accounting theory that is consistent internally and externally.
3. The need to rely on solid Arab and foreign scientific sources of accounting theory by specialists and academics, and to make them available physically and electronically, as a primary reference for teaching and research activities in accounting thought. This is to maximize the benefit of research efforts and increase their effectiveness by relying on solid scientific sources.

4. Emphasizing the use of the scientific method, particularly the mathematical approach, and encouraging innovation and creative thinking aimed at discovering scientific proof similar to the natural sciences, while distancing accounting thought as much as possible from political consensus and personal judgments.
5. Work to unify the definitions, concepts, and terminology related to the use of scientific research methods in the field of accounting, by a specialized committee or an accredited specialized council, to prevent the overlap and confusion that occurs in many sources between what is a theory, hypothesis, scientific law, scientific theorem, principle, axiom, and axiom. What should be worked on is to clarify them in a concise manner, supported by illustrative examples, for the purpose of their official adoption by students and researchers, saving scientific efforts, and consolidating accounting research in general.

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