International Journal of Management, Accounting and Economics
Volume 10, Issue 12, December 2023
ISSN 2383-2126 (Online)
DOI: https://doi.org/10.5281/zenodo.10668196
www.ijmae.com

Conceptual Paper

Scientific Revolution in Accounting: Paradigm Shift Towards the Use of Fair Values

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Received 10 November 2023 Revised 20 December 2023 Accepted 25 December 2023

Abstract

The controversy surrounding the scientific or artistic nature of accounting has been the subject of various scientific circles for years, and the source of such debates is the fundamental difference between accounting and natural sciences such as physics, in such a way that some experts consider physics to be the ultimate goal of science. They have tried to bring these two categories together, and on the other hand, some others have completely invalidated such an attempt with some baseless criticism. In this article, we have tried to outline the current and ideal accounting situation while expressing different views on the nature of science and describe the tools to fill the gap between the current and ideal situation. Finally, while respecting the efforts made to draw the path of the scientific movement of the profession, we considered the comparison of physics and accounting to be unworthy, and at the same time, we have given a worthy answer to some of the unfair criticisms. In the same way, we believe that the change of the accounting paradigm towards the use of fair values promises a scientific revolution in accounting, which will smooth the path of the faster movement of the profession towards the scientific position it deserves, but at the same time, we have also mentioned the challenges facing this mutation.

Keywords: Fair Values, Scientific Revolution, Scientific or Artistic Nature.

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Introduction

The great preoccupation of social science thinkers, especially after the tremendous progress of natural sciences, has always been whether the science of the scientific fields they are interested in is under question. And to put it more simply, can social sciences be called science, and these sciences are just as certain to be science as natural sciences? Accountants are also not free from these concerns, and there have been such discussions in accounting academic meetings (Arab Mazar Yazdi, 1992).

Accounting is considered a science that has evolved over time and plays a crucial role in economic development. It has expanded beyond its traditional role of supporting enterprise management and has become an integral part of economic science and global leadership (Valeriy, Viktor, & Oleksii, 2023). The development of accounting as a science is closely related to the historical development of forces and relations of production, and it satisfies the need for reliable and objective information in business and national economic contexts (Tatarov, 2022). However, there are also discussions about the differences between accounting science and practice, and the need to adhere to methodological principles in both theory and practical activities (Hryhoriy, Mykola, & Sviatoslav, 2023). Accounting science is influenced by the social environment and requires ongoing research to address emerging phenomena (Mislavskaya, 2022). Overall, accounting is recognized as a practical element of economic theory and has a significant impact on economic development (Rabiyatul, Lia, & Mulyadi, 2022).

The definition of accounting as a scientific field is not obvious for everyone. Some consider accounting as an applied activity with the aim of creating a report that describes the financial status and profitability of an economic unit. At the same time, the method that provides a framework for financial reporting inevitably relies on scientific research, given that its subject matter is the assets and business activities of economic enterprises that are prone to continuous and continuous change, which subsequently describes their method. will also be subject to such changes. Based on this, the definition of accounting should include both science and practice. However, the confusion between accounting theories, techniques, and practices, as well as the interchange of roles between academicians and practitioners, pose barriers to the development of the discipline (Przemysław, 2022).

(Thomas, 1981) presents several approaches to describe accounting as a scientific discipline. First, accounting is a social institution and a regulatory system that meets human needs. In this approach, accounting is a normative science that specifies how members of the profession should perform their duties to ensure that social needs are met in an efficient manner. Second, accounting as a positive science is focused on describing, explaining and predicting for the users of financial statements and evaluating the social and economic effects of the application of bookkeeping methods. In fact, Thomas links both approaches: the choice of the best accounting methods is the result of human decisions that are outside the scope of science, but making such decisions requires predicting their consequences, which presupposes the existence of a positive science of accounting.

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In fact, for years, the debate about the scientific or artistic nature of accounting has occupied a large amount of writings of various professional and academic societies and international prestigious journals. Many have tried to include accounting in this framework by defining a scientific framework or to classify it outside the framework and only as an art. According to (Sterling, 1975), the root of all these problems and unsolved problems is in the wrong understanding and definition of the problem itself. In defining accounting as an art, he points out two cases of misunderstanding of science and accounting, which have made these two different from each other. First, a misunderstanding of the nature of science with the false belief that science is a set of immutable laws and absolute truths. But the fact is that even the most exact sciences have variable laws. From the point of view of a scientist, laws are general propositions that must be constantly challenged empirically. Unfortunately, accountants, unlike scientists themselves, think that laws are immutable and believe that uncertainty has no place in science. Second, it is a misunderstanding of the nature of accounting in such a way that it is inherently unscientific because it is based on conventions. Accounting in its current state is based on covenants rather than laws, and this is what jeopardizes its scientificity. But these conditions are the existing accounting situation, not the desired situation. According to Sterling, it is the way we look at accounting that makes it unscientific, not the nature of accounting itself. There is no requirement that accounting be based on covenants rather than laws. In other words, there is nothing inherent in accounting that makes it unscientific. Rather, it is our approach to accounting that is non-scientific. Accordingly, the first step in moving towards science is to change the definition of the problem.

This article is typically based on a critical review of several opinions presented in different literatures regarding the scientific or artistic nature of accounting and tries to converge these different points of view into use of one all-inclusive concept currently influencing different aspects of accounting, i.e., fair value accounting. Accordingly, the research methodology of this article is critical, qualitative and descriptive one from the perspectives of research results, processes and the objectives respectively.

In this article, while expressing different views on the nature of science, we also test the nature of accounting with these criteria and put the scientific nature of this field of knowledge to the test and, in addition to these requirements, outline the scientific mobility of the profession. Based on this, in the next part, the nature of science will be discussed from the perspective of several theoreticians in this field, and then the current and desirable state of the profession and the requirements to reduce this gap will be explained. Then, while honoring the valuable efforts of some writers in order to draw the path of the scientific movement of the profession, we note the inappropriate comparison of accounting and natural sciences, and at the same time, we give a proper answer to some of the criticisms that lacked merit. Finally, we consider the change in the accounting paradigm towards the use of fair values as a good omen as a development in the scientific transition of the profession, and in addition, we also recall the upcoming challenges. The conclusion of the discussed topics is also postponed to the final part of the article.

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Different views on the nature of science

According to Karl Popper, a theory and field is scientific only if its propositions are falsifiable. Falsification is a feature that is independent of the validity of the theory. A theory can be falsified even if a falsifying experiment is not possible. Falsifiability does not mean that the relevant theory is wrong. Rather, it means that according to this theory, testable predictions can be made, and by testing the predictions of theories, their accuracy can be checked. If the corresponding predictions are wrong, the corresponding theory is rejected. Therefore, a falsifiable theory is one that we can discover to be false. According to Popper, theories that do not meet this criterion are not science but pseudoscience. Popper considered the concept of falsifiability beyond the original, which defines the boundary between science and non-science. He saw the progress of science as an endless cycle in which a theory is proposed, then refuted, and then another theory is presented in its place, and this theory is also subject to falsification. In this way, falsifiability has become the foundation of a kind of science methodology. Scientists should try to disprove the existing theories and present another theory instead. The main advantage of falsificationism is that after disproving a theory, scientists try to present another theory (Gattei, 2010).

Max Weber, a prominent German sociologist, believed that an original work of art will never be replaced and will never become obsolete and no one will say that one work of art has made another work obsolete. But in the realm of science, any theory can be a copy of another theory. According to Weber, incompleteness is the fundamental characteristic of modern science. Knowledge of scientific matters is a form of conquering reality and it never ends. The completion of science is only possible when human history ends. In other words, the science of human works will not be definitive unless humans lose their creativity. Science is a dangerous business that treats scientists unfairly. Because only one experiment can invalidate a very popular theory, while thousands of successful experiments cannot absolutely confirm it. In other words, one violation example is enough to reject a theory, while thousands of justified examples are not enough to confirm it (Seyedi & Ghaznavi, 2013).

In the definition of normal (normative) science, (Kuhn, 2012) says: Normative science is a research that is solidly built on the foundation of one or more scientific achievements, and a certain scientific community believes in those achievements over a period of time and uses them as the basis of future action. I call these achievements a paradigm. Those whose research is based on common patterns are committed to common rules and standards for scientific practice and profession. This commitment and dedication and the clear consensus that emerges from it is a necessary condition for normative science, that is, for the emergence and continuation of a specific research tradition.

According to Kuhn, a paradigm is like a container for scientific theories. In this role, its duty is to tell the scientist what nature contains and what it does not contain, and what is the behavior of those things. In short, Kuhn's thesis is that every science is dominated or influenced by a certain paradigm at any given moment in time. Whenever the previous pattern wants to give its place to a new pattern and model, disorder and anarchy arise, which ultimately results in the revolution of replacing the patterns.

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Just as the verb conjugation in the grammar workshop can be subject to specific patterns and examples in a language so that everyone in this literary environment can express his/her pronouns in the form of the desired verbs, in the thought workshop also the verb conjugation Thoughts are greatly facilitated with the help of models (paradigms) and a strong ground is provided for the exchange of thoughts in a specific scientific field. These paradigms are the basis for scientific consensus and preventing irrelevant dispersions in the field of science. This does not mean that we attribute eternal authenticity to paradigms and consider them as eternal examples of every science, that in the course of thinking, errors from those dominant forms of thought are not allowed, but these patterns also change depending on the necessity and demands of the situation.

A paradigm can be discarded because it is not fruitful. At this time, the behavior of scientists is like the behavior of the subjects of a despotic government that dominates all affairs, who suddenly and en masse turn away from it and believe in a new paradigm that promises a new era of peace. This work is a revolutionary work, because just as the leaders of a revolution remove any legitimacy from the actions of the previous established system and consider the servants of that system as life, here too the scientific community has the least pity for those who want to agree with the method and paradigm. They will not satisfy the previous ones. Such people will find no audience, no cooperation, and no job, and their name will be removed from the tablet of knowledge.

In science, as in a factory, changing the tools provided by a paradigm is unusual and reserved for when the need arises. The importance of crises is that they provide a sign that it is time to change the tools. Both in political development and in scientific development, the feeling of doing badly, which can lead to a crisis, is a necessary condition for revolution or paradigm change (Arab Mazar Yazdi, 1992).

Finally, many philosophers and artists have acknowledged that art, as well as science and many other concepts, are indefinable. It is possible to state some characteristics for science and art, however, some sciences or arts may not have these characteristics and at the same time fall under the category of science or art. It should be noted that definitions are words and words are not always able to express concepts, meanings and goals (Seyedi & Ghaznavi, 2013).

The requirements of the scientific mobility of the profession

The main goal of a science, apart from explaining the experimental phenomenon, is to compile general principles through laws and theories in order to justify, explain and predict experimental phenomena. This is the goal of accounting (although in the current situation, it is not easy to achieve this goal). But the purpose of art/artist is to present his personal interpretation (imagination) of a subject, not to accurately represent a subject. In art, a different representation of the same subject is not only acceptable, but also highly desirable. An artist's presentation method depends on his ideas about the subject, not the subject itself. On the other hand, scientists try to stay away from differences. In fact, the difference in the representation of a phenomenon itself causes alarm. The fundamental principle of science is agreement between independent observers, not differences. In science, the presentation of a phenomenon depends on the subject itself, not on the imagination of the scientist. Unfortunately, accounting in its current state deserves to be

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more of an art than a science. But as it was said before, this is the current state of accounting, not the desired state. The basic principle of accounting should also be agreement between independent observers. In accounting, the presentation of phenomena should be based on the company's own situation, not the accountant's imaginations and mentalities.

According to (Sterling, 1975), if accounting wants to become an empirical science, the subject of accounting should be redefined in a way that is based on laws rather than conventions. Of course, accounting, like other sciences, needs some covenants. But it is necessary to pay attention to the difference between laws and covenants so that their functional difference is also considered in the action scene. Covenants are contracts whose discretionary choice is made by the rulings of competent authorities (it does not matter which one is chosen) and once chosen, the debate about the advantages and disadvantages of the various options ahead is eliminated and it is only sufficient to be followed uniformly. Based on this, their selection is not a necessity to make different choices according to different conditions. Unfortunately, in the current state of accounting, acknowledging the presence of various covenants such as different methods of depreciation, inventory turnover, etc., their selection is contingent, that is, according to the requirements and conditions, any one of them can be chosen, which is related to the second part. The definition of a covenant is to follow a uniform in contradiction.

One of the implicit consequences of accepting covenants instead of laws is the simultaneous acceptance of arbitrary allocations (because covenants, unlike laws, are not susceptible to empirical challenge). While proposing a pre-institutional law regarding the depreciation of an asset such that "depreciation is the decrease in the output value of productive assets", Sterling is critical of the definition of depreciation in the form of conventional price allocations because it prevents the possibility of deciding between different methods. destroys and the issue remains unsolved because it is originally defined as unsolvable. The inherent characteristic of such allocations is to assign current values and measurements to future values. For example, actual depreciation cannot be determined until the asset is sold; Actual profits cannot be determined unless the company is liquidated. This way of defining problems in accounting is such that it makes the problems basically unsolvable. With these definitions, we have made it impossible to determine profit or depreciation until some events occur. If one makes current measurements dependent on future events, the actual current values will never be known because future events are always formed in time and unfortunately the future is never known and can only be predicted or estimated. In other words, the lack of agreement about the future will lead to the lack of agreement about the current measurements. Unfortunately, this method always involves constant corrections or admitting that all past measurements were wrong. Although we can change past figures, users who made decisions based on those figures will no longer be able to change their past decisions. Again, we note that this is the current accounting situation and there is no obligation to predict the future for current measurements. Measurement is the process of discovering a current value, not the process of assigning past values to time periods based on forecasting future values.

In response to the criticism of some who believe that accounting deals with cost rather than values, Sterling states that dealing with cost accounting is a consequence of the

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definition of accounting; we could define it in another way. Another more severe criticism is that depreciation based on historical cost, while lacking an empirical basis, has a theoretical basis. In response, it is necessary to explain two basic concepts in science: experimental and theoretical. Empirical concepts should be susceptible to empirical testing. On the other hand, theoretical concepts are susceptible to logical testing, that is, to prove that that concept has some logical relationship with other concepts through the channel of laws. In accounting terms, the theoretical concept must be relevant. That is, having a theoretical basis means being relevant. According to Sterling's belief, depreciation based on historical cost is not relevant and therefore lacks a theoretical basis because this concept is not related to other concepts and no decision-making model can be found that uses this concept as an input to the model. It is therefore surprising that we continue to define concepts such as price allocation instead of value measurement.

According to (Stamp, 1981), the importance of relevance should be unequivocal and obvious in a field of knowledge such as accounting. But in accounting, the combination of objectivity and relevance can only be optimized, not the maximum. Stamp generally agrees with Sterling that accountants should pay more attention to experimental testability, but he believes that this term is exactly synonymous with provability.

Inappropriate comparison of accounting and physics; Answer to some criticisms

Natural sciences such as physics and chemistry focus on discovering the laws that apply and explain the phenomena in the real world. The field of these sciences has expanded so much that in addition to interpreting the past, they also include the ability to predict the future. On the other hand, social sciences pay special attention to human behavior in everyday life and in comparison with a group of fellow human beings. Since human behavior is affected by many factors, it is not 100% predictable. The principles derived from these sciences are in no way comparable to their counterparts in the natural sciences. The fact that these sciences have never been able to predict does not mean that these sciences are not science. On the other hand, we can also mention the history and antiquity of these sciences, many social sciences are new (Seyedi & Ghaznavi, 2013).

Sterling, in determining the direction of the profession towards science, unfortunately targets physics in many cases, which itself has caused a lot of criticism. Although many of these criticisms have been made without considering the introduction of Sterling that "the current state of the accounting profession does not deserve anything more than art", but we also believe in this article that the comparison of accounting with physics is not appropriate. And not necessary. Therefore, while accepting this false analogy, we would like to give a proper answer to some of these criticisms (Sterling, 1975).

We must examine the intrinsic nature of accounting and see if it deals with phenomena like the phenomena of physical science. It is important to know that the scientific method in sciences such as physics is based on the assumption that nature has fixed laws. The scientist's duty is to discover these laws, and if an experiment violates the law, it is the scientist who made a mistake in proposing his law, not that nature has changed in the meantime. The facts and mechanisms of physics are subject to discovery, but they are independent of humans, and physics deals with a world that would exist without scientists.

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The world of physics deals with universal propositions that are universal across all times and places. Its laws, like gravity, are always followed, at all times and in all places. The laws of physics are autonomous, unlike the laws of accounting and law (obeying or disobeying them does not create a problem in them). We discover them but we cannot make them. But on the other hand, accountants operate in a completely different environment. If one of the accounting rules is considered unacceptable, it cannot be said that the accountants made a mistake in raising it. Real world conditions may have changed in the meantime in such a way that the said law is no longer applicable or people have prevented its acceptance. Accounting deals with a system that is built and handled by people, so its basic features are constantly changing and evolving. The main characteristics of the accounting environment are not fixed either in the dimension of place (Marxists have a different view of accounting compared to the Securities and Exchange Commission) or in the dimension of time (the history of accounting is the history of humanity's adaptation to human changing conditions). Of course, the latter case is one of those criticisms that have been made without considering the fact that this is the current state of accounting, which makes it deserve nothing more than art, not its favorable state. In addition, accounting changes in time and place are due to the necessity of development and evolution, which will undoubtedly continue in the future.

According to Stamp's point of view, unlike length, characteristics such as profit, value, and wealth are not unambiguous, unique, and inherent characteristics of an object in the real world. But in principle they are measurable and therefore experimentally testable. depending on whether it is determined exactly whether the net recoverable value or its replacement value (which one) should be measured (it is necessary to remember that our purpose in this article is also to instill the view that accounting measurements should be based on the fair value criterion) . But for many balance sheet assets, the measurement will not necessarily be anything more than an estimate. Therefore, wide differences in the estimates of the net recoverable value or the replacement price of the assets will be possible and as a result these estimates will lack objectivity. This view of Stamp is derived from the current state of accounting, not its desired state. As mentioned earlier, the current state of accounting, according to Sterling, is more worthy of being an art than a science. And it is necessary to move towards science, to distance yourself from non-provable covenants and contracts and to formulate provable laws. As Stamp also believes, by developing accurate measurement rules, it is possible to increase the accuracy and objectivity of the resulting measurements.

From Stamp's point of view, another problem with accounting measurements (as opposed to physics) is that accounting measurements are not aggregable: even if all assets of a company are measured on the same basis (e.g., net recoverable amount) they rarely The sum of each of these values will be equal to the total value. This criticism seems very strange and superficial. Because when two measurements must reach exactly the same result when both measurements are of the same object and only in the second measurement, that object is separated into components. On the other hand, if a company is divided into components, some assets will be lost in the meantime, and those are intangible assets that only appear in the form of a combination of assets under the banner of a company. Accordingly, if the sum of individual assets of a company is equal to the value of the entire company, it is strange, not their inequality. Because in fact two completely different objects are measured. But in physics, for example, if we divide the

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length of an object, which is one meter, into 100 parts of 1 centimeter, the sum of them will still be one meter, because in this case, by dividing an object into parts, nothing is lost in between, that two make the measurement different.

In criticizing Sterling's proposed law, Stamp argues that: it is clear that laws of this type can never have the acceptability or usefulness that scientific laws such as conservation of mass or gravity have, and this is due to the inherent nature of the phenomenon that They have that business. Changes in customers' tastes, production techniques, strikes, changes in tariffs and other types of unpredictable economic phenomena turn the hope that these laws can be practical or accurate into despair. In addition, in another place, he points to the effect of volume (bulk buying or selling) on prices as another criticism of Sterling's law, and in addition, by implicitly accepting the view of critics of output values, he believes that output values are independent of intentions. Roshan market participants is completely irrelevant. However, he believes that we should not abandon the use of output values just because there is no clear intention to sell. These statements seem to show Stamp's greater enthusiasm than Sterling for comparing accounting and physics! Sterling himself does not claim that his proposed law is the cornerstone of the laws of physics. Rather, his goal in proposing such laws is to distance himself from arbitrary and arbitrary covenants and allocations and increase the dimension of experimental testability (verifiability) of accounting measurements, which is definitely the use of more testable output values than arbitrary allocations. The rules will have a historical cost and will be more relevant to the needs of the users. Otherwise, it is obvious that the measurement criterion in accounting is monetary values, which are subject to supply and demand, which in turn are the result of the movements and dynamics of human societies. According to Stamp himself, accounting measurements should be related to the needs of users, which is a self-justification for using current values instead of allocation.

In addition, in the definition of depreciation, Sterling (1975) does not distinguish between changes in value caused by external factors such as price changes and changes in value as a result of the deterioration of the asset's service potential. In times of rapid price increases, his definition leads to negative figures for period depreciation. If the output value of an asset increases over a period, there is no doubt that its utility potential has decreased. This problem can also be solved in such a way that it is possible to separate the value changes caused by the increase in the general level of prices by using the relevant economic indicators. However, according to Stamp, defining and measuring the potential of profit and the rate of its deterioration (obliteration) will obviously face problems, but this fact does not justify failure to make such an effort.

Stamp in another strange criticism on the classification of scientific concepts, which is divided by Sterling into two types of empirical and theoretical concepts, and the latter is considered equivalent to relevance in accounting, without considering the second dimension of scientific concepts and only considering the empirical. Being scientific concepts, he argues that the concepts used in the two branches of logic and mathematics cannot be discovered by conducting an experiment. Concepts of various other types such as justice, rights, duties, etc. cannot be tested with experimental methods. They are not related to experimental phenomena, they are not related to measurable characteristics, and they do not lead to concepts that are connected with experimental phenomena. But by

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Stamp's own admission, none of these concepts are useless and all of them have practical value, that is, they are relevant. Therefore, they belong to the second category of scientific concepts. Therefore, this criticism is actually a confirmation of Sterling's view that allocations based on historical cost are useless because they are neither empirically testable nor relevant.

According to Stamp, many authors are of the view that relevance to the needs of users is the dominant requirement of accounting information. The needs of users are extremely diverse and accountants should pay more attention to the problem of persuading these diverse needs, possibly by providing multi-column reports. Doing so may modify the value nature of accounting measurements that are drawn on a single basis. However, Sterling disagrees with this approach and argues that the policy of unlimited expansion of data is in practice the finish line on the formulation of a reporting theory and prevents the movement towards accounting science. However, it seems that the increasing diversity of accounting theories and methods has led to the existence of several competing paradigms in accounting, and in fact, we are facing a plurality of dominant paradigms in accounting. Kuhn himself says about the possibility of multiple paradigms and the existence of competing theories: Philosophers of science have repeatedly proven that more than one theoretical structure can be placed on a given set of data. The history of science has shown that, especially in the early stages of the development of a new model, it is not so difficult to even invent several options. According to Vernon Kam, if accounting researchers cannot agree on one of these models, then accounting will be a multi-paradigm scientific system or field in the coming years (Arab Mazar Yazdi, 1992).

Scientific revolution in accounting: changing the paradigm towards the use of fair values

(Kuhn, 2012) believes that scientific development has two different phases: in the phase called the normal phase of scientific research, when knowledge is added, a cumulative development occurs, the predictions of a paradigm constantly clash with reality. are compared and the theory is continuously adjusted. Due to slow changes in standards, accounting evolution usually follows this path. But science enters a revolutionary phase when a crisis cannot be solved in the context of the prevailing paradigm; That is, a paradigm shift occurs. This is because we cannot get from the old paradigm to the new paradigm only through the cumulative addition of new knowledge.

(Kuhn, 2012) describes scientific revolutions in the form of the following four steps:

1. Recognition of abnormalities

2. Period of uncertainty (crisis)

3. Development of different set of ideas

4. Predominance of a new paradigm

(Kovacs & Deak, 2012) by raising two of the biggest challenges facing the accounting profession in recent years, i.e. intangible assets and financial instruments, argue that the tools available to normal science are not enough to create growth in this matter somehow.

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If the previous achievements and traditions were preserved, it would be very difficult to solve such issues. According to Kuhn's (2012) theories, if it is proven that normal knowledge tools are insufficient to investigate an abnormality, unexpected researches will begin, which will lead to the opening of ways for scientific resolution and ultimately, they lead to a new paradigm that has nothing to do with the previous paradigm. (Shortridge & Smith, 2009) also agree that the changes following the anomalies that surround the recognition of intangible assets have such dimensions that can lead to a paradigm shift in financial reporting; Events that eventually translate into adjustments or jumps to the new phenomenon of the information economy. According to them, the most important elements of the emerging paradigm will be as follows:

1. Globalization

2. Increasing emphasis on principles in principles in the legislative framework

3. Focus on the concept of economic events

4. Replace reliability with fair presentation

5. Relevance as a fundamental quality feature

6. Measurements based on fair value

In this regard, the new conceptual framework highlights two qualitative characteristics: relevance and fair presentation, which have become the most important characteristics of information disclosed in financial statements. The reason why these factors have become the most important quality characteristics is the fact that only the correct and relevant information can be useful to the users of the reports.

The role of fair value-based measurements also appears to be changing. Theoretically, individuals have three valuation models to measure their assets: cost, revaluation and fair value. Fair value concepts and fair value measurements have been seen as an opportunity to overcome the specific limitations of the balance sheet. Basically, it is believed that regardless of the initial price, the current values of the assets reflect their current relative values. In 2011, the International Accounting Standards Board issued Standard No. 13, the first stand-alone standard specifically devoted to fair value measurements, applicable to both financial and non-financial assets. In this standard, fair value is defined as: the price that would be received or paid if an asset were sold or a liability transferred in an orderly transaction between market participants on the measurement date. Similarly, fair value is the price that would be determined in a hypothetical market during a hypothetical transaction. Separate legislation for fair value-based measurements in the international financial reporting standards system is a decisive step towards the adoption of the new paradigm (Kovacs & Deak, 2012).

Challenges facing accounting based on fair value

Fair value accounting is a financial reporting approach that is also known as the "mark to market" accounting practice. Using fair value accounting, companies measure and report the value of specific assets and liabilities based on their real or estimated fair

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market prices. Changes in the value of assets or liabilities over time cause unrealized profit or loss, increase or decrease in net profit, as well as equity in the balance sheet.

The primary advantage of fair value accounting is that it provides accurate valuation of assets and liabilities on an ongoing basis to users of a company's reported financial information. When the price of an asset or liability increases or is expected to increase, the company increases the value of the asset or liability to its current market price to reflect what would be received if the asset were sold or would have to be paid to settle the liability. . Conversely, the company reduces the value of an asset or liability to reflect any decline in market price.

On the other hand, fair value accounting limits the company's ability to potentially manipulate reported net income. Sometimes the management deliberately prepares to sell certain assets to use the profit or loss from the sale to increase or decrease the net profit reported on the desired date. Using fair value accounting, gains or losses arising from any change in the price of an asset or liability are reported in the same period as they occur. While an increase in the value of assets or a decrease in the value of liabilities adds to net income, a decrease in the value of assets or an increase in the value of liabilities reduces net income.

At the same time, fair value accounting can also create challenges for companies and users of their reported financial information. Market conditions in which certain assets and liabilities are traded are usually volatile and even volatile at times. By using fair value accounting, companies reassess the current value of certain assets and liabilities even in bubble market conditions that have the potential to cause severe fluctuations in the value of those assets and liabilities. However, as the market stabilizes, such changes in value are likely to revert to prior normal values, thereby rendering any reported gains or losses temporary, meaning that fair value accounting can provide misleading information. provided at that time.

Additionally, the use of fair value can have a more severe adverse effect on a low-end market. For example, after an asset has been devalued by a fall in current market trading prices, the lower value of the asset can cause more of that asset to be sold at even lower prices. Without the impairment required by fair value accounting, companies may not feel the need to sell an asset in a down market to avoid further impairment of that asset. In the absence of additional pressures to sell, the market may be more stable over time, which helps preserve asset values (Gaille, 2015) (Way, 2017) (Trajkovska, emjanovski, & Koleva, 2017).

Conclusion

It seems that the analogy between physics and accounting is neither appropriate nor necessary, and in order to prove that accounting is scientific, there is no need to target physics and other branches of natural sciences as the goal of scientific aspirations. Accounting is also a scientific branch with special features of this field of knowledge which may not necessarily have any relationship with concepts in physics and even having such a relationship will not be a test of its being a science, as there may be similarities. In other words, the definition of science in the form of words and expressions

or the expression of scientific examples is not exhaustive and it may have scientific concepts, but it does not have some of the characteristics of definitions or examples. The accounting profession is currently in a stage of scientific transition, and that paradigm shift is towards the use of fair values, which is a proof of the multi-paradigm nature of accounting. This paradigm shift is synonymous with Kuhn's scientific revolution and will promise tremendous changes that will make the path of the scientific movement of the profession smoother and fill the gap between the current and desired accounting situation to some extent.

However, the application of fair value accounting is not free of serious challenges. One of the main challenges of fair value accounting is the volatility and uncertainty that it introduces to the financial statements. The changes in the fair value of securities may not reflect the underlying cash flows or economic substance of the firm, but rather the market fluctuations or noise. Another challenge is the potential for manipulation or bias in the valuation process. A firm may use different assumptions or models to inflate or deflate the fair value of its securities, depending on its incentives or expectations. And finally, the lack of an organized reliable market for many assets and securities hampers the use of fair value accounting.

Future researchers are suggested to empirically investigate the relevance magnitude of fair value information through quantitative examination of market reaction before and after using fair value-based data. Likewise, it is suggested that the market's reaction extent to information based on fair value be measured and ranked based on different classes of assets. In addition to this, various assumptions and valuation models of fair value measurement for balance sheet and income statement items should be examined, and different models proposed should be evaluated based on how the market reacts.

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HOW TO CITE THIS ARTICLE

Hajeb, H., Alipour, S., & Ghayouri Moghadam, A. (2023). Scientific Revolution in Accounting: Paradigm Shift Towards the Use of Fair Values. *International Journal of Management, Accounting and Economics*, *10*(12), 1101-1114.

DOI: https://doi.org/10.5281/zenodo.10668196

URL: https://www.ijmae.com/article_190039.html