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# The Challenges of The Circular Economy in Accounting Concepts and Applications, and Possible Solutions

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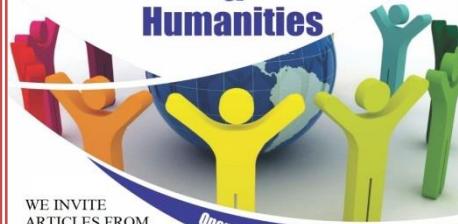
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## ABSTRACT

The aim of the research is to clarify the most important challenges faced by the adoption of the circular economy (CE) in accounting concepts and applications, and the possibility of solutions and procedures to meet those challenges. The analytical approach was adopted to achieve the research objective. Among the most important conclusions that were reached is that the challenges were represented in the difficulty of reporting natural resources and waste resources as assets, social responsibility as liabilities, historical cost and continuity hypothesis, risk reporting, and the lack of rules for reporting on the circular economy. Possible solutions include complementing the accounting information disclosure model, enhancing the concept of natural resources assets, and improving accounting applications.

**Keywords:** *circular economy, challenges of circular economy, accounting applications.*

**IJRSSH**

## INTRODUCTION

Economic units play an important role in sustainable change. Alternative business models have gained importance such as the circular economy, which can become an engine for more sustainable development, by calling for innovative business models that adopt circular thinking and refer to the concept of circular closed-loop systems. The need for sustainable ways to create value also led to the emergence of the concept of the circular economy, and its popularity has grown due to the need to protect scarce resources from being depleted by manufacturing industries, and to reduce the need for resources, due to the use of closed loop systems, as well as modern technology has facilitated new business models and the creation of Opportunities that were not previously possible, as well as changes in consumer preferences towards ownership. These business opportunities have led to an increase in the awareness of economic units in the hope of reaping profits. However, the transition to a circular economy is hampered by several barriers related to accounting, with regard to accounting concepts and applications, how to improve reporting and possible changes that suit a circular economy.

## RESEARCH PROBLEM

The scarcity of resources is one of the most important challenges of the twenty-first

century, so it should focus on practices that are based on waste recovery and recycling, increasing the efficiency of its use, keeping resources in a closed loop, extending their life within the operational cycle, and renting some products instead of buying them, within the concept of The circular economy, to which it has become necessary to move. And that these practices may require changes in the current accounting concepts and applications, and accordingly, the research problem can be raised through the following question:

Does the transition to a circular economy face challenges in the field of accounting, specifically in accounting concepts and applications, and what are the possible solutions to address them?

## RESEARCH OBJECTIVES

- 1-Presentation of the conceptual framework of the circular economy, in terms of concept, benefits and opportunities.
- 2-A statement of the most important challenges that may face the transition to a circular economy related to accounting concepts and applications.
- 3-Exploring changes and possible solutions in accounting concepts and applications to meet the challenges of moving to a circular economy.

## RESEARCH IMPORTANCE

The importance of the research comes from the importance of the topic of adopting the circular economy as an approach related to sustainability that all economic units seek to achieve, and the challenges that this approach may face related to accounting at the level of concepts and applications, and need solutions and procedures.

**Research Hypothesis:** The research is based on the hypothesis that: The transition to a circular economy faces challenges related to accounting concepts and applications, and it is possible to find some appropriate solutions for them.

**Research Methodology:** The research adopts the deductive approach in the description and analysis of the research variables.

## CONCEPTUAL FRAMEWORK FOR CIRCULAR ECONOMY AND ACCOUNTING INFORMATION

### First: The Circular Economy Concept

It is a restorative and renewable industrial system by design, which aims to keep products, components and materials at their highest levels of utility and value at all times. The main objective of such a system is to reconcile industrial development with environmental protection, by adopting integrated management approaches (13252010, Zhu et al). The circular economy is also seen as an approach to economic development systems designed to benefit

economic units, society and the environment. The circular economy aims to separate economic growth from the consumption of limited resources, and to build economic, natural and social capital, Depends on the transition towards renewable energy resources and the increase in the use of renewable materials, and the concept recognizes the importance of economic work effectively in all standards. This means that it is characterized by the active participation and cooperation of both small and large economic units, with such a distribution that a diversified and inclusive economy will be in a better position to create and share the benefits of implementing a circular economy. The circular economy is based on three basic principles: designing waste and pollution, keeping products and materials in use, and regenerating natural systems (Ellen MacArthur Foundation, 2019:19).

The researchers believe that the concept of the circular economy describes an economic system that relies on business models that are committed to reducing the materials used in production, reusing, recycling, recovering and extending their life, with the aim of achieving sustainable development. It is a three-dimensional concept, which means that it aims to create environmental quality, economic prosperity and social justice for the benefit of current and future generations.

## **Second- Benefits and Opportunities of Adopting a Circular Economy**

Circular economy aims to reduce raw materials and energy costs, as well as waste management and emission control costs that come from the traditional production method by adopting LE (Linear Economic) Take - make - get rid of). There is commercial viability to a circular economy, by allowing economic value to be used multiple times, and for as long as possible. Here, economic value refers to the products or services that were produced using raw materials. And therefore, Economic units are interested in the circular economy because they can benefit from it by providing resources that are expensive in many cases. (Korhonen et al., 2018:41).

The most important result that can be achieved after the transition from a linear economy to a circular economy is to reduce the consumption of natural resources, and this will help both the environment by reducing environmental impact, and the economy, by achieving the security of the supply of materials by reducing dependence on natural resources (Potting & Hanemaaijer, 2018: 6). The circular economy provides the opportunity to make better use of materials already produced by reusing or recycling them, and thus, reducing the need for new (raw) materials, through strategies such as recycling a larger share of materials, reducing waste in production, lightweight products and

structures, and expanding Life span of products, adoption of new business models based on sharing cars, buildings, etc. (Material Economics, 2018:3).

There are also other benefits of reusing value, including the creation of new business, a market, and employment opportunities. For businesses, adapting the circular economy can also improve the image of economic units, and they can use green marketing techniques in their advertising, which can be attractive to customers (Korhonen et al., 2018:43). As well as the potential for job creation and innovation as other economic opportunities, in addition to economic growth and significant savings in net material cost. Within the circular economy, employment opportunities are widely seen, ranging from the highest skilled jobs in remanufacturing to increasing vacancies in the service sector. Innovation is an important part of the circular economy, and it can affect many aspects of the economy positively. It also encourages technological development and energy efficiency, creates more job opportunities for economic units, and enhances materials and labor (Mustonen, 2020:23).

Possible economic benefits from system improvement include more efficient use of materials and energy, increased revenue from the sale of waste, cost savings from lower insurance costs, reduced environmental penalties, and increased competitiveness. The potential environmental benefits include the preservation of natural resources (particularly

non-renewable resources such as water, fossil fuels and minerals), reduced environmental impact through efficient use of energy and materials, reduced waste discharge, and the avoidance of toxic substances. Extended life cycle of landfill sites, restoration of the local ecosystem. Potential social benefits include improved social relationships between industrial sectors and local communities, more jobs and opportunities from recycling businesses, and improved public environmental awareness and public health.

(Geng et al, 2012:220-221).

On the other hand, the opportunities provided by the circular economy to economic units can be summarized as follows, which are represented by Figure (1):

- 1-Elimination of risk by hedging against uncertainty in future commodity supply and price fluctuations.
- 2- Reducing manufacturing costs.
- 3- Avoiding some costs, and new revenue streams.
- 4- New business opportunities and markets.

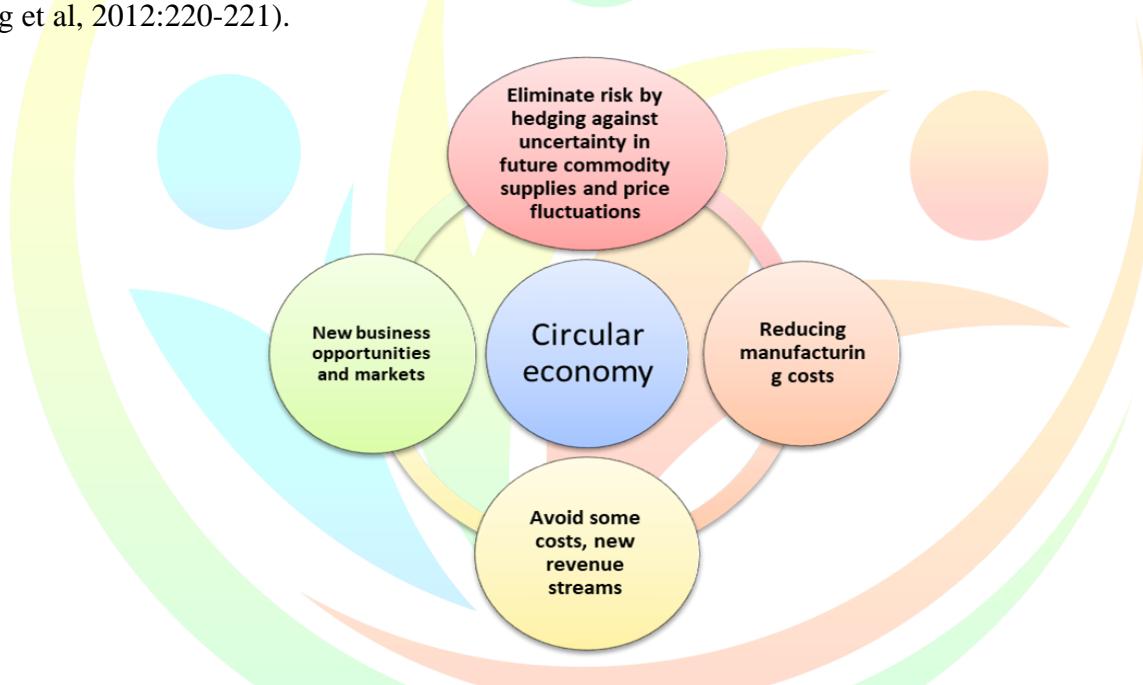


Figure (1)

Opportunities provided by the circular economy

Source: Prepared by the researchers.

Experts from McKinsey (American Management Consulting) in their 2016 report “The Circular Economy: Moving from Theory to Practice”, concluded that, the circular economy can achieve better welfare and GDP, better employment of the results of the current

path of development, and the economy can benefit the environment while enhancing competitiveness and flexibility. Based on the view of the experts of the World Business Council for Sustainable Development, the circular economy can

provide significant benefits to business, such as increased growth; innovation; achieving competitive advantage; Reducing energy consumption and carbon dioxide emissions (14-12, Tambovceva & Titko, 2017:).

### **Third- Implementation of The Circular Economy and The Implications for The Accounting Profession**

The concept of a circular economy has gained great momentum, as the barriers to change have faded, as many countries have developed, or are in the process of developing, national policies to adopt the principles of a circular economy. Among these was Germany, where in 1996 a law on closed cycle waste management and environmentally compatible waste disposal was enacted (Su et al., 2013:215); In China, having recognized that economic growth has caused great damage to the environment, the government has incorporated circular economy concepts into national policy since 2002 (Geng et al.. 2012:216), The country has invested heavily in pioneering projects in the circular economy, and developments in certain local and regional industries. In Japan, the circular economy has progressed significantly, with substantial legislation passed in 2000, including a legal framework for moving towards a recycling society (Su et al., 2013:215).

In Europe, from a public policy perspective, the circular economy package adopted by the European Commission in December 2015 was presented, which

provided support, legislative proposals and an action plan aimed at enabling a circular economy throughout the value chain.

Accountants need to deal with the concept of circular economy and consider the implications for accounting information systems. In recent years, significant improvements have been made with regard to accounting methods for social and environmental activities within organizations, with published annual accounts including information relating to these aspects in their narrative reports. Although significant progress has been made in the areas of sustainability reporting and integrated reporting, with a large body of academic work in the field of Social and Environmental Accounting (SEA), most of the modern research focuses on measuring the outputs of the production process from wastes related to the production process within different industries, as these generated wastes require innovative methods of measurement. Examples of these measures relate to greenhouse gas emissions, carbon dioxide and energy use. Manufacturing organizations are increasingly realizing that the inputs into the process, and the raw materials used in production require appropriate indicators and metrics to direct attention. This is gaining importance as the scarcity and depletion of natural resources are becoming more and more stressful. Organizations need to review the sources and use of raw material inputs, and

increasingly focus on recycling materials in the manufacturing system. The use of regulatory matters encourages review of processes related to the introduction of waste legislation and the expansion of producer responsibility and take-back systems.

Accounting policy-making institutions are critical to the development of practical standards and advice. While the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) in the United States of America have issued various financial accounting standards over recent years, none of them have addressed the changing perspectives regarding business models such as the circular economy. These institutions require a lot of time to get approval of new standards. However, this area requires more immediate attention, given that new business models, such as the circular economy, command the attention and appreciation of all stakeholders (Conway&Byrne, 2018:47-49).

Despite the increase in the use of social and environmental metrics in sustainability, and the improvement of economic unit social responsibility (CSR) reporting over recent years, the concern is that it is working without real long-term planning and restructuring within economic units to address key resource issues. Limited natural resources and a growing world population (Gray, 2006: 65). Accountants, with their narrow focus on financial reporting standards, and the emphasis

on consistent financial evaluation, find the concept of sustainability and systems thinking challenging. The data used to provide relevant information regarding natural capital, social and environmental impacts, as well as increasingly complex and complex business models and systems, is complex to understand (Conway&Byrne, 2018: 49).

One important aspect that the accounting profession may face is to secure the provision of materials, for the purpose of forecasting profits, and this risk can be reduced with more recycled inputs, however the focus in cost will shift to increased labor and costs of servicing new business and lower cost of physical product elements. The use of reverse recycling, for example in mobile phone design, and the development of simpler ways to take old phones and reuse the materials inside, while providing incentives to the end user to return redundant phones, should lead to a significant reduction in remanufacturing costs. Teamwork and cooperation is essential, Accountants must take the lead in this regard. The accountant can have an important role in defining measurement methods for environmental and social impacts, not just within a single economic unit, but in coordination with suppliers and the entire value chain (Nadeem et al., 2018:53-54).

Academically, and as the circular economy has been defined as an economic model, whereby the design, management, provision of resources, procurement,

production and reprocessing of processes and outputs to maximize ecosystem performance and human well-being (Murray, Skene, Haynes, 2017:1), it requires a transition to a circular economy model, An orderly shift in work methods (Frishammar & Parida, 2019:5-6), and accounting is a key to this transformation. There is a need for new forms of accounting to transform waste from a costly or useless component, to a source of value, either economically, socially or environmentally (Chompu - Inwai, Jaimjit & Premsurianunt, 2015:3).

#### **Fourth - The Impact of The Circular Economy on The Current Contents of Accounting**

The main advantage of the accounting system in the light of the circular economy, is in the different users of accounting information, in traditional accounting they are basically investors and creditors; While the main users of accounting information in a circular economy environment, in addition to business owners and stakeholders, also include relevant government departments, particularly with regard to information on the conversion of pollutants into renewable resources based on circular economy information, in order to estimate project development prospects and identify investment behaviour. By establishing the concept of adapting to a circular economy, economic units can achieve in the long run, existence and stable development in the

innovative economic environment, for two reasons:

- 1-The survival and development of any project cannot be separated from social life and the natural environment. The social environment is the institutional basis for the goal of survival and the development of institutions, and the natural environment is the material basis for this goal as well. Therefore, economic units must adapt to the social environment as much as possible, and seek the best investment environment, financing environment, market environment and policy environment, to achieve a long-term existence and stable development.
- 2-The disclosure of circular economy information, especially the disclosure of resources and environmental information, will enable responsible economic units to obtain a good image, good marketing, and achieve returns in public markets, capital markets and product sales. With bad environmental behavior, economic units are also stimulated to improve control over Environmental pollution and improve this environmental behavior. Effective information disclosure to economic units not only reduces transaction costs, but also improves resource allocation efficiency (En-Zhu et al., 2019:208-209).

## Fifth - Disclosure of Accounting Information for The Circular Economy

The main form of disclosure of traditional accounting information is financial statements, with explanations of financial statements and text notes, while in a circular economy, there is a lot of non-quantitative information, accordingly, more practical things are used to disclose information about economic units, more annotations and notes text as well. The form and content of the financial statements and reports that reflect the information should be reformed, that the circular economy should be added, for example, a table of revenue from renewable resources, and a report on the environmental responsibility of the resources.

In traditional accounting also, the monetary scale is used, but when there is a disclosure of circular economy indicators, the monetary scale and the non-monetary scale must be used, because resource assets come from natural accumulation for a long period, where there is no human work in it, and it is impossible to ascertain their value According to the method of social labor productivity, therefore, its value should be determined by the method of indirect calculation. Moreover, the period of replenishment of natural resources is different, and there is no unified standard for this, and therefore a combination of monetary and non-monetary scale will provide the measurement for more complete and accurate information.

One of the main defects of the current contents of accounting is the insufficient attention to renewable resources, as the topics of the circular economy were not mentioned in the current contents of accounting, so that the circular economy was not fully disclosed, which led to making the accounting cycle not integrated, and for natural assets it is not accounted for Renewable resources, related to liability and expenditures are fully examined, the benefit or loss of the project is not confirmed, and the benefits brought by renewable resources are accurately calculated and audited. There is no realization that the economic process is closely linked to the natural environment, while ignoring the impact of resources and the environment of enterprises and the impact of enterprises on the natural environment, ignoring the process of material renewal of the environment itself and the ecological responsibility of the economic unit. Specifically, the current contents of accounting do not present natural and renewable resources as assets, and do not emphasize social responsibility, responsibility for production safety, and responsibility for environmental protection as obligations of economic units.

There is no information about the circular economy included in the current financial accounting statements, and it is noted that some information related to the circular economy cannot be disclosed, due to some technical problems in the disclosure of current

accounting information that cannot be fully resolved, this information includes the scope of renewable resources and technical standards and verification conditions, cost and risks for accounting and disclosure of resource

information, auditing of information disclosure behavior, audit standards, and losses due to disclosure distortions (En-Zhu et al., 2019:210).

## CIRCULAR ECONOMY AND THE CHALLENGES OF ACCOUNTING CONCEPTS AND APPLICATIONS AND POSSIBLE SOLUTIONS

### First: Effects of The Circular Economy on Reporting

The transition to CE has many impacts, and many obstacles or challenges to reporting, as shown in the following table: (2019:19Gusc) .

Category	Effects and hindrances
Financial Statements	<ul style="list-style-type: none"> <li>- Historical cost accounting, which is not suitable for circular assets without a purchase price</li> <li>- The continuity hypothesis related to the valuation of assets may depend on the circularity</li> </ul>
Risk reporting	<ul style="list-style-type: none"> <li>- Risks in the manager's report, which are generally focused on the short term</li> <li>- Risks related to not being able to handle the transition to CE are not currently disclosed in the reports</li> </ul>
Rules for reporting CE	<ul style="list-style-type: none"> <li>- The absence of the rule, the reporting of CE is usually done on a voluntary basis in which information about CE is reported, but it is difficult to compare</li> </ul>

( 2019:19Gusc,)source:

The question here is how can reporting be improved to better suit the circular economy?

To answer this question, it is necessary to analyze the effects and obstacles caused by the transition to a circular economy, which are as follows:

#### 1- Financial statements:

When looking at the balance sheet, it is noted that the reporting of assets in them conflicts with assets according to the principles of CE, some wastes have a certain value, and within the current accounting that

those wastes have a value, but this value cannot be presented in the records yet, due to the need to evaluate them on the basis of the purchase price, which may be zero, because this waste may have been collected and not purchased, and the value is recognized only when it is sold. It can be said that fair value can be the best alternative, but the valuation method may not always match reality, especially since waste can have a market value in some cases. . Thus, leaving the value of circular assets off the balance sheet may put CE-adopting economic units at a disadvantage. When the value is not measured through accounting, this reduces the carrying value of the economic unit, and makes it more difficult for economic agents to estimate the value of the economic unit. . In this regard, the researchers believe that it is not possible to use the fair market value because the International Accounting Standard No. 13, did not refer to what applies to the issue of waste or other terms mentioned in the concept of circular economy.

On the other hand, there is no room for recognition of a future value, nothing is known about it, and there is no certainty whether it will ever be realized. This can be viewed in the context of convenience versus reliability, as although placing the value of estimates on the balance sheet would be appropriate by informing users of the value of an economic unit, it cannot be measured reliably like the purchase price, due to uncertainty about its

accuracy, and whether achieve it in the future. Economic units can deal with this uncertainty, agreeing to a price with suppliers or financiers in advance, and using that price to estimate the value of products and production inputs. This provides certainty about future sales value. This increases the reliability of the fair value estimation. In addition, there is a need to find parties willing to engage in such schemes which may not always be possible, but given the entire value chain, it must be to make a circular product, and to engage in schemes, where the price is predetermined, can be part of building alliances around CE business practices and serving as a means of persuading actors (eg producers) to join circular networks.

Looking at the income statement, it can be seen that the measurement of revenue and costs does not differ for CE, but aspects of CE can be clarified in the income statement. For example, by measuring revenue based on how circular it is. Thus revenue from circular business practices and revenue from linear business practices are separated. Such a distinction makes clear the extent of the circular revenue stream, facilitating accountability to stakeholders by depicting the preparedness of the economic unit for CE.

Another aspect of the financial statements that needs further examination relates to the “going concern” hypothesis, which is used to justify an overvaluation of assets when they are immediately sold. “Continuity” is the assumption that the

economic unit will continue to exist, and that the asset values are not estimated according to the liquidation value." Some accountants face lawsuits due to neglect of environmental risks and climate policies, and this would affect the continuity of the economic unit, which indicates that some users of reports They already demand that such risks be taken into account during the audit.

To inform stakeholders about the financial performance of an economic unit, revenue is differentiated on the basis of roundness. Given the risks of staying on an LE approach in a changing business environment, this distinction between circular and linear revenue will inform stakeholders of the economic unit's revenue stream and procurement practices being flexible enough to handle the transition to CE. Furthermore, revolving assets (such as waste) on the balance sheet can be measured at fair value in the absence of a purchase price. Although fair value accounting is also subject to criticism due to a lack of reliability, the reliability of fair value measures can be supported by pre-determined price agreements with suppliers and the use of this price to estimate the value of circular products and production inputs (Gusc, 3321-20, 2019).

## **2- Risk reporting:**

Acknowledging the risks related to linear survival (rather than embracing the transition to CE), and communicating this to stakeholders, is an important way to carry out

accountability. Normally, reports consider risks to the existence of economic unity in the short term, but the risks related to remaining linear - while the economy becomes circular - are significant but are currently omitted. When governments have to purchase circular products, this imposes circular production processes and a circular value chain as a condition of competition. Moreover, regulation (such as the imposition of fines, permit requirements) can pose risks, which may ultimately mean that economic units can only continue to exist when they are circular. So the risks associated with linear survival can harm the existence of the economic unit, and it must be taken into account when informing investors about the value of the assets of the economic unit.

There is also a similar omission of risks in the risk section of the director's report, which is part of the annual report, where the board of directors of the economic unit provides information such as its current objectives, prospects and future risks, but this paragraph focuses excessively on financial risks. Economic units that remain linear face some risks (eg, those related to the competitive environment, litigation and reputation). When an economic unit does not become circular, it may lose its competitive position in the market, since the inability to meet the CE requirements of another economic unit can mean a loss of business for that economic unit. Furthermore, it faces increased liability risk.

On the other hand, it is expected that economic units will bear the responsibility of their products after they are sold, to avoid lawsuits from environmental authorities and damage to reputation. It can be considered as the file of shifting towards the stakeholders' view of value creation, as the stakeholders, for example, are environmentalists or the government holds economic units accountable for their impact on society. This also indicates that the accountant should anticipate such events as a reasonable risk, which must be dealt with. It may also indicate that accountants should already think about how the future will affect their current activities. Litigation risks also increase the risk of government regulation, which means that economic units that do not comply with the circular regulations may be subject to penalties. Such risks could harm the ability of an economic unit to conduct business in the long run. Thus, a broader perspective on long-term risks is required to report in CE, including also in the risk section how the economic unit deals with the transition to CE, and how it integrates the CE approach into its business practices (22-21Gusc,2019:).

Currently, the risks associated with linear survival (such as reputational, litigation and continuity risks) are neglected, but they must be recognized, and to ensure that these risks are recognized in the continuing interest assessment and risk section of the manager's report. Economic units can effectively report

risk by recognizing how they Can these risks affect their current business, relate this impact to their value creation process and strategic goals and describe how these impacts are expected to develop over time (543Van Daelen&De Groot,2014:) Linear survival poses risks, which accounting professionals need to recognize Because it may affect the continuity of the economic unit, and thus its financial position in the future.

Most economic units and financial institutions typically do not take written risk into account in their business decisions, investment credit assessments or reporting procedures. This is primarily due to the perception of current market stability and the success over time of linear business practices in adapting to changes in global markets. As a result, investors and consumers are largely unaware of the potential adverse factors by which these risks affect the performance of their business or investment.

So the economic unit has to assess the linear risk. The main mechanism for clarifying these risks is through risk and credit assessments that are conducted by financiers and investors to provide a better understanding of the strengths and weaknesses of linear or circular investments. Specific incentives must also be created to deal with inertia in current, well-established, and time-bound linear business practices that do not incorporate linear risk into financial assessments.

The specific recommendation in this regard is the development of international financial reporting standards by including the reporting of linear risks from investments, and the establishment of economic units that can assist in standard accounting practices to ensure that linear risks are adequately assessed and disclosed. The Linear Risk Reporting Standards provide a methodology for economic units and financial institutions to determine the exposure to linear risks within their portfolios or operations (31,2019 European Commission).

### **3- Rules for reporting CE:**

The Global Reporting Initiative (GRI), although it helps create indicators for sustainability reporting, is criticized for its lack of a clear set of usable indicators in the context of CE. Currently, such frameworks give organizations the freedom to create their own indicators and standards, this makes comparison of CE performance between economic units difficult, and creates an opportunity for economic units to omit unfavorable CE performance indicators. Furthermore, these reports are still issued voluntarily, whereas, financial reporting, including an accountant's audit, is mandatory for economic units. That comparative information about rotation is important, therefore, the lack of a clear set of performance indicators that are reported by each economic unit can be considered problematic. This can be clearly seen as to

what standard should be used in tax law, and where percentages of subjects can be formulated and linked to taxation and government financing.

The lack of a legal standard regarding circularity precludes the ability to produce comparable and objectively verifiable reports on circularity. Accounting professionals need unified rules that are imposed on everyone and must be adhered to. This clarity can be achieved by the government including a standard in legislation for each report to use the same approach. The government can specify in the tax code that something is circular when it can be reused or recycled at least a certain percentage x% (eg by weight or volume) of the product, and it must be made of at least a specified percentage x% of Recycled or reused materials. The inclusion of this rule in the tax code, will affect the financial position of the economic unit, leading professional accountants to consider CE in their activities. This rule of law can also be used to inform stakeholders of the economic unit about the extent to which the economic unit has sufficient flexibility to deal with the transition to CE. Although the exact ratio may vary depending on the sector to which it is applied, the standard enables economic units to be measured, as well as to report how circular they are.

For economic units that do not create tangible products (such as service organizations), or do not follow the production

process (such as commercial organizations), circularity can be based on whether a given x% of the products purchased is circular (based on the minimum requirements of the viable sector). applicable), and whether x% of economic unit waste can be recycled (Gusc, 2019:33).

## **Second: Some Suggestions for Possible Solutions**

### **1- Completing the disclosure form for accounting information: The era of the circular:**

Economy places higher requirements for accounting, and accounting information must be true, accurate, timely, relevant, applicable and practical, not only to reflect the actual situation, but also to predict the future. So the work of accounting must not only provide information, but also provide relevant information; There should be monetary information and non-monetary information, which are the accounting "products" reporting forms. To change the current pattern, the contents of renewable resources must be disclosed in the accounting reporting system to meet the needs of the circular economy. Accounting information in a circular economy is information about the behavior of a process, and its impact on finance. The forms of accounting information are diverse; There is qualitative information, quantitative information, monetary information, and non-monetary information, such as things and

technology. Hence, attention should be paid to the following principles when choosing accounting information:

- A- The minimum amount of appropriate information that must be disclosed in the accounting system is determined.
- B- The economic unit must establish a mechanism for voluntary information disclosure.
- C- Resource accounting and financial information should be collected only when these innovative contents of accounting reform have been added to truly meet the requirements of the innovative environment of the circular economy.

### **2- Enriching the concept of natural resource assets: The circular economy requires:**

Sustainable economic, environmental and social development, and therefore, natural resources must be used effectively, resource accounting has not been good enough for a long time, and on the other hand, there has been no accounting link between financial accounting and resource accounting. The issuance of IFRS 6 (Exploration and Evaluation of Natural Resources), is a good example of accounting for natural resource assets, Mineral resources have also been used to harmonize accounting practices (Hafez, 2016: 346), but the calculation of other resources has not yet begun. From a circular economy perspective, there is an urgent need to account for and make good use of resource

assets, and to promote the concept of natural resource assets in accounting.

According to current accounting, assets refer to the existing resources that are obtained through past transactions of the economic unit or various things that it owns or controls and is expected to bring economic benefits to it. Natural resources are assets, whether natural or man-made, that are depleted or renewable. Therefore, natural resources have property rights and their values, so it is necessary to calculate and control natural resources. Therefore, economic units, as organizations, can realize the true meaning of accounting for natural resource assets. In addition, in order to make better use of natural resource assets, and to measure resource use standards, a system of periodic analysis and evaluation to control resource use must be established to achieve rational use of natural resource assets and improve the efficiency of the use of those resources.

Moreover, in order to maximize the efficiency of the use of natural resources, the accounting system must be designed to cover both physical records and cash records, and access to natural resources must be presented separately in the relevant accounting reports. In making the long-term decision to manage production, investment and price direction in the future, natural resources must be actively estimated by the amount of natural resources actually consumed. The use of clean energy and renewable resources should also be

emphasized, so measures should be taken to encourage the recycling of natural resources and spent energy. Only in this way, can the effect of promoting social and economic prosperity be achieved with the development of natural resources and at the lowest cost of environmental protection (En-Zhu et al, 2018:211).

### **3-Improve accounting applications:**

In a circular economy, the center of accounting must be changed from resource consumption to resource account and reuse, and the biggest obstacle to this is the lack of applicability of accounting methods. Traditional accounting methods cannot accommodate the circular economy, so it is necessary to reform in accounting methods. Hence, multiple accounting methods must be introduced into the accounting system.

The development of accounting theory is a comprehensive system engineering; And components that will give accounting theory an innovative meaning in accordance with the requirements of the circular economy. Current accounting theory is a product of linear economics. Objectives and methods The management systems and standard systems of current accounting theory are no longer able to meet the needs for the development of the circular economy. And then the accounting will assume the task of calculating the inputs and outputs of economic units in the new economic conditions, confirming the responsibility for the use of resources and

calculating expenses, revenues and losses to obtain renewable resources. et al,2018:211).

From the foregoing, the researchers believe that adopting the concept of circular economy puts on accounting, especially financial accounting, difficult challenges represented in how to respond to new variables of a descriptive nature, or resulting from modern economic concepts that were not previously dealt with by recognition, measurement and disclosure, which may lead to theorists Accounting and standard-setters, to review the conceptual framework of financial reporting.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Conclusions:**

1. The circular economy has many benefits and opportunities for economic units, the most important of which is allowing the economic value to be used for several times and for the longest possible period and achieving sustainability.
2. Adoption of the circular economy faces challenges in accounting concepts and applications, such as the concept of sustainability and the provision of appropriate accounting information related to natural capital, represented by renewable resources, methods of measuring environmental and social impacts, performance measurement systems for the circular economy,

historical cost accounting, continuity hypothesis, and risk reporting.

3. Users of accounting information differ in light of the circular economy, by adding government departments related to information related to the transformation of pollutants into renewable resources.
4. The circular economy affects the form of accounting information disclosure, as it requires more non-quantitative information, explanatory comments, and notes, regarding renewable resources and the environmental responsibility of the resources.
5. Inadequate attention to renewable resources and some resources such as waste and counting them as assets within the current contents of accounting, due to their lack of evaluation, as well as failure to report the responsibility for production safety and environmental protection as obligations on economic units.
6. There is insufficient awareness of the close connection between the economic process and the natural environment, and the ignoring of the mutual influence between resources and the environment on the one hand, and economic units on the other.
7. There are no rules for reporting on the circular economy. Reporting is done on a voluntary basis, and there is freedom for economic units to adopt circular

economy indicators and to create their own indicators and criteria, and this makes it difficult to compare information between economic units.

### **Recommendations:**

1. Adopting some possible solutions to the challenges facing the circular economy, such as disclosing renewable resources and waste that depend as resources in the accounting reporting system, and that there is an accounting link between financial accounting and resource accounting.
2. Introducing multiple accounting methods into the accounting system to accommodate the circular economy to carry out the task of calculating inputs and outputs and using resources for economic units.
3. Economic units may enter into agreements or contracts with suppliers, in order to approve the contract value to measure the value of waste that does not have a real purchase price, due to the difficulty of adopting the fair value alternative because Standard 13 did not refer to the issue of waste.
4. Due to the risks that economic units may face from staying linear when the economy becomes circular, those risks that will affect the sustainability of those units should be disclosed, and thus to stakeholders to see the actual value of the economic unit.
5. The accounting policy-making institutions should issue standards related to the new perspectives of business in light of the circular economy, and set indicators that cover aspects and practices of the circular economy, in order to standardize the application and make comparisons between economic units.

## REFERENCES

1. Chompu-Inwai, R., Jaimjit, B., & Premsuriyanunt, P. (2015). A combination of Material Flow Cost Accounting and design of experiments techniques in an SME: the case of a wood products manufacturing company in northern Thailand. *Journal of Cleaner Production*, 108, 1352-1364.
2. Conway, E., & Byrne, D. (2018). *Contemporary Issues in Accounting*. Springer International Publishing. . <https://doi.org/10.1007/978-3-319-91113-7>.
3. Ellen MacArthur Foundation, Circular economy in cities (2019)
4. En-Zhu, L. I., Gang, L. I., & Guan-Nan, L. I. (2019, January). Study for Innovative Contents of Accounting Professional Education in Circular Economy. In *4th Annual International Conference on Social Science and Contemporary Humanity Development (SSCHD 2018)* (pp. 208-213). Atlantis Press.
5. European Commission. Communication No. 640, 2019. The European Green Deal; (COM no. 640, 2019); Commission of European Communities: Brussels, Belgium, 2019. 2.
6. Frishammar, J., & Panda, V. (2019). Circular business model transformation: A roadmap for incumbent firms. *California Management Review*, 61(2), 5-29.
7. Geng, Yong, Jia fu, Joseph Sarkis, and Bing Xue. 2012. "Towards a National Circular Economy Indicator System in China: An Evaluation and Critical Analysis." *Journal of Cleaner Production* 23 (1): 216–224. <https://doi.org/10.1016/j.jclepro.2011.07.005>.
8. Gray, rob. 2006. "Does Sustainability reporting Improve Corporate Behaviour?
9. Wrong Question? right Time?" *Accounting and Business Research* 36: 65–88.
- Gusc, J., (2019) . Circular Economy and Accountancy profession: The Way Forward, Master's Thesis Organizational & Management Control (EBM859A20), University of Groningen
10. Hafez Abdo, Accounting for Extractive Industries: Has IFRS 6 Harmonised Accounting Practices by Extractive Industries, *Australian Accounting Review*, Vol. 26, Issue 4 (2016), p. 346-359
11. Korhonen, J., A. Honkasalo & J. Seppälä (2018). Circular Economy: The Concept and its Limitations. *Ecological Economics* 143, 37–46.
12. Material Economics (2018). The Circular Economy: A Powerful Force for Climate Mitigation. Transformative innovation for prosperous and low-carbon industry. Available: <https://media.sitra.fi/2018/06/12132041/the-circular-economy-a-powerfulforce-for-climate-mitigation.pdf>

13. Murray, Alan, Keith Skene, and Kathryn Haynes. 2017. "The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context." *Journal of Business Ethics* 140: 369–380. <https://doi.org/10.1007/s10551-015-2693-2>.
14. Mustonen, M. (2020). Circular Economy in Finnish Companies: Opportunities and Challenges [Master's Thesis, University of Vaasa]. Osuva. <http://urn.fi/URN:NBN:fi-fe2020042923212>
15. Nadeem, S. P., Garza-Reyes, J. A., & Glanville, D. (2018). The challenges of the circular economy. In *Contemporary Issues in Accounting* (pp. 37-60). Palgrave Macmillan, Cham.
16. Potting, J. & Hanemaaijer, A. (2018). Circular economy: what we want to know and can measure: System and baseline assessment for monitoring the progress of the circular economy in the Netherlands. Available: <http://www.pbl.nl/sites/default/files/cms/publicaties/pbl-2018-circular-economy-whatwe-want-to-know-and-can-measure-3216.pdf>
17. Su, Biwei, Almas Heshmati, Yong Geng, and Xiaoman Yu. 2013. "A review of the Circular Economy in China: Moving from rhetoric to Implementation." *Journal of Cleaner Production* 42: 215–227. <https://doi.org/10.1016/j.jclepro.2012.11.020>.
18. Tambovceva, Tatjana; Titko, Jelena (o. J.) (2017): Introduction to Circular Economy. *Ekonomikas un kulturas augstskola*.
19. Van Daelen, M., & De Groot, J. (2014). Risicoverslaggeving in het directieverslag in beweging. *Maandblad Voor Accountancy En Bedrijfseconomie*, 88(12), 543-555. doi:10.5117/mab.88.31213
20. Zhu, Q., Geng, Y., & Lai, K. H. (2010). Circular economy practices among Chinese manufacturers varying in environmental-oriented supply chain cooperation and the performance implications. *Journal of Environmental Management*, 91(6), 1324-1331.