

# The Role of the Supply Chain Managaemnt in Accounting Information Systems in the Industrial Revolution 4.0

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**Abstract-** Utilization of Supply Chain Management (SCM) practice by businesses has a number of consequences for internal management information systems. The fourth industrial revolution will have a monumental impact on the global economy, so vast and multifaceted that it makes it hard to disentangle one particular effect from the next. Indeed, all the big macro variables one can think of GDP, investment, consumption, employment, trade, inflation and so on will be affected. This paper contributes to discussion concerning the desirability of improving external reporting and audit assurance by identifying and reporting internally generated qualitative SCM information that is critical to achievement of business objectives. The impact that the fourth industrial revolution will have on economic growth is an issue that divides economists. On one side, the techno pessimists argue that the critical contributions of the digital revolution have already been made and that their impact on productivity is almost over. In the opposite camp, techno-optimists claim that technology and innovation are at an inflection point and will soon unleash a surge in productivity and higher economic growth. Strategic management processes in place in almost all businesses already produce vital strategic information related to continuous analysis and monitoring of environmental issues including those relevant to SCM.

**Keywords;** Role of the Accountant Professional, Accounting Information Systems, Supply Chain Management, Industrial Revolution 4.0

## 1. Introduction

Supply chain management is essential in today's world for companies' success. In addition, many organizations are becoming more involved in strategic alliances, networks and virtual relationships. It is an activity that requires managing raw materials until delivering to customers. Revolution implies suddenness, as with the American and French revolutions which lasted a few years; but the Industrial Revolution was not a sudden event. However, other phenomena have been described as revolutions while occurring over a long period of time. The Scientific Revolution of the sixteenth and seventeenth centuries is a case in point. The fact is that the phrase 'Industrial Revolution' is now so ingrained that there is no point in trying to jettison it. What is important is to establish the different ways in which historians have

conceptualized the 'revolutionary' nature of the changes. Some have seen 'revolution' as shorthand for large-scale structural change in the economy; such a dramatic word is used to highlight the extent of the changes. In this view, the Industrial Revolution was a continuation of earlier change; it was not different in kind but merely in degree. Therefore its causes were not novel but rooted in the past, and the agenda for historical research is to chart the progress and exact nature of the changes. To others, however, the Revolution constituted a complete shift in the process of economic growth: it was this which was revolutionary. According to this interpretation, before the eighteenth century there was no mechanism by which long-term sustainable growth could take place. By the mid-nineteenth century such growth was an established fact of life: for the first time rapid population increase was accompanied by sustained growth in income per person. The revolution lay not in the speed, but in the shift from a hitherto inevitable correlation between increasing population and declining income per person. The most important thing, for these historians, is to discover why the changes occurred, and why they occurred in this particular period. Historians and economists have therefore tended to explain the Industrial Revolution in different ways. Some have focused on the long-term nature of economic growth in Europe, seeing British industrialization as one, striking, part of this. [1].

The fourth industrial revolution will have a monumental impact on the global economy, so vast and multifaceted that it makes it hard to disentangle one particular effect from the next. Indeed, all the big macro variables one can think of GDP, investment, consumption, employment, trade, inflation and so on will be affected. I have decided to focus only on the two most critical dimensions: growth (in large part through the lens of its long-term determinant, productivity) and employment. The impact that the fourth industrial revolution will have on economic growth is an issue that divides economists. On one side, the techno pessimists argue that the critical contributions of the digital revolution have already been made and that their impact on productivity is almost over. In the opposite camp, techno-optimists claim that technology and innovation are at an inflection point and will soon unleash a surge in productivity and higher economic growth. While I acknowledge aspects of both sides of the argument, I remain a pragmatic optimist. I am well aware of the potential deflationary impact of

technology (even when defined as “good deflation”) and how some of its distributional effects can favour capital over labour and also squeeze wages (and therefore consumption). I also see how the fourth industrial revolution enables many people to consume more at a lower price and in a way that often makes consumption more sustainable and therefore responsible. It is important to contextualize the potential impacts of the fourth industrial revolution on growth with reference to recent economic trends and other factors that contribute to growth. In the few years before the economic and financial crisis that began in 2008, the global economy was growing by about 5% a year. If this rate had continued, it would have allowed global GDP to double every 14-15 years, with billions of people lifted out of poverty. In the immediate aftermath of the Great Recession, the expectation that the global economy would return to its previous high-growth pattern was widespread. But this has not happened [2].

The previous three decades have brought a burgeoning interest in corporate sustainability to the fore. Not only are members of the public demanding organizations treat natural resources such as water, air, and soil with respect, government and nongovernment organizations are encouraging corporations to undertake activities in a manner that is economically, environmentally and socially sustainable. However, beyond the need to satisfy external stakeholders, organizations have also begun to realize the benefit associated with proactive environmental activity [3].

The First Industrial Revolution took hold in England in the middle of the 18th century and was potentiated by the invention of the steam engine. During the second half of 19th century, the Second Industrial Revolution came up in Europe and USA. This revolution was characterized by mass production and the replacement of steam by chemical and electrical energy. In order to meet the growing demand, several technologies in industry and mechanization have been developed, such as the assembly line with automatic operations, allowing the increasing of productivity. The invention of the Integrated Circuit (microchip) was the technological advancement that has triggered the Third Industrial Revolution. The use of electronics and Information [4]. In the era of industrial digitalization, companies are increasingly investing in tools and solutions that allow their processes, machines, employees, and even the products themselves, to be integrated into a single integrated network for data collection, data analysis, the evaluation of company development, and performance improvement [5].

The speed and measure of the changes coming about by the fourth industrial revolution are not to be ignored. These changes will bring about shifts in power, shifts in wealth, and knowledge. Only in being knowledgeable about these changes and the speed in which this is occurring can we ensure that advances in knowledge and technology reach all and benefit all [6].

## 2. Theoretical Basis

Management accounting expertise can help supply chain management through a number of ways including

reporting and improving financial and non-financial performance management across the supply chain, and improving performance through the use of technology; using management accounting tools at different stages of developing supply chain relationships; supporting and promoting sustainable distribution; facilitating trust among collaborating organizations and supporting partnership throughout the supply chain [7]. In [8] argued that supply chain management includes coordination and collaboration with different partners, which can be suppliers, retailers, and customers. In general, integration is vital between different parties involved in supply chain. Supply chain management can be viewed as an integrating function, which should be connected to other business functions and processes within and outside companies. Creating value through supply chain requires proper flow of information. Accounting is a discipline that can be implemented in terms of collecting, storing or as a process of identifying data, so that it can be measured and developed through policy. With this basic understanding, it can be assumed that accounting is part of the management information system. In SIA there are documentation and data storage activities with accounting systems and management. With the data collected, a company can make decisions in decisions. SIA can be a manual system, meaning that the system still uses makeshift tools namely pencil and paper. While SIA is a product of advancing technological and information development, it is more established and more advanced. Regardless of the process or method used, in principle the same is the process of collecting and storing data and becoming reports in the form of data and information. Paper and pencil or other facilities such as computers are media that can be used to obtain information. The point of view used where SIA can and is able to be the main information system for the organization because it can facilitate what can be used by users so that it is beneficial for the management of the organization, namely:

- 1) People who use the system;
- 2) Procedures and instructions for using, compiling and storing data;
- 3) Data containing from the organization and all its business activities;
- 4) Software: used to process and manage data;
- 5) Supporting facilities for information technology, these include computers, peripherals and network communication devices that can and support SIA;
- 6) Internal control and control of security features in data storage related to SIA.

From these components, SIA can fulfill three business components, including:

- 1) Collecting data that has been implemented, both related to resources and everything that has to do with organizational activities. The organization has various types of businesses, for example is a routine activity in the sale and purchase of materials,
- 2) Processing data into information so that it can be used as a reference and reference in planning, controlling, executing, and other policies relating to the organization,

3) Can be used as adequate control material for organizations that are useful for securing assets and data or organizational documents.

Accounting data starts from the AIS, and one's ability to use the AIS because it can support the success or career of an accountant. The use of SIA media can help the work and future of the organization, because it relates to the organization's economic activities going forward [9].

Information is a business resource. As with other business resources such as raw materials, capital and labor, information is very important for modern companies to survive. Every day a lot of information flow to decision makers and various other users to meet various internal needs. Information flows also out of the company to external users, such as customers, suppliers and stakeholders. While the system generally has meaning as a series consisting of various elements that interact with each other to achieve certain goals. Every system, especially artificial systems and open systems have several characteristics including:

- a. Having input, process and output,
- b. Consisting of elements,
- c. Has a user,
- d. There are certain goals,
- e. Exists in certain environments.

A system especially relating to the management of a matter, generally can not be separated from the procedure where the procedure is a series of work that is clerical by involving several parts or people to handle a routine activity [8].

An accountant is a practitioner or accounting or accountancy, which is the measurement, disclosure or provision of assurance about financial information that helps managers, investors, tax authorities and others make decisions about allocating resources. In many jurisdictions, professional accounting bodies maintain standards of practice and evaluations for professionals. Accountants who have demonstrated competency through their professional associations certification exams are certified to use titles such as Chartered Accountants or Certified Public Accountant. Such professionals are granted certain responsibilities by statute, such as the ability to certify an organization's financial statements, and may be held liable for professional misconduct. Non-qualified accountants may be

employed by a qualified accountant or may work independently without statutory privileges and obligations.

The Big Four auditors are the largest employers of accountants worldwide. However, most accountants are employed in commerce, industry and the public sector. Chartered accountancy is offered in India by the Institute of Chartered Accountants of India (ICAI), the second largest accounting body in the world. This Institute was established in 1949 under the Chartered Accountants Act, 1949 for the regulation of the profession of Chartered Accountants in India. The ICAI sets up the Accountancy Museum of India in 2009, the third museum of accounting

in the world. It is currently located at ICAI's office in North Sumatra. Careers in accountancy, tax and treasury all require you to pass exams and hold qualifications with a relevant professional body [9].

Technologies like artificial intelligence help accountants to improve their efficiency by adding new job responsibility which requires critical thinking and intense technological knowledge. The Association of Chartered Certified Accountants in their „Professional accountants – the future: Drivers of change and future skills“ paper, states that “the accountancy profession will evolve significantly over the next decade... all professional accountants will be expected to look beyond the numbers, collaborate, think and behave more proactively to find out the new shape of the profession with trending technologies as well as examining the current situation of Bangladesh [10].

### 3. Research Methods

In this The Role Of The Accountant Professional And The Quality Of Accounting Information Systems In The Industrial Revolution 4.0 research the author uses the literature research method. This research is a type of descriptive research, which describes the characteristics of a phenomenon that can be used as a basis for making decisions to solve problems.

#### 3.1 Supply Chain Management and Its Challenges

There are many definitions of supply chain, with different emphasis and details. For example, SCM refers to all the events associated with the flow and transformation of goods from raw material stage to end user customers [5]. Another slightly different view sees supply chain management as the coordination of all activities of a business organization from its suppliers and manufacturers, transporters, warehouses, retailers to customers [3]. Because it holds the potential to improve a firm's efficiency and effectiveness, SCM may therefore be seen as a resource for competitive advantage [7]. A supply chain is a very complex system involving many business entities, often operating at various locations across state boundaries, involving different processes, incorporating the organizational competencies of financial firms, logistics firms, production firms, etc. With this in mind, we adopt as a working definition the following: “A supply chain refers to the flow of materials, information, payment, and services from raw material suppliers, through factories and warehouses, to the end customers. A supply chain also includes the organizations and processes that create and deliver products, information, and services to the end customers. It includes many tasks such as purchasing, payment flow, materials handling, production planning and control, logistics and warehousing inventory control, and distribution and delivery

### 4. Research Result

According to [11] states that what must be done by an SCM in accountant in facing the 4.0 industrial revolution, among others, are as follows: first strengthen accounting expertise and skills as core competency. Second, maintaining high ethical values and standards (integrity)

and not allowing fraud. Third, expand knowledge related to information technology, communication and management. Fourth, being able to simplify the problem and provide solutions (professional judgment) for its users not only do the work of recording, processing, and sorting transactions. Fifth, maintain trust (trust) in providing advice (professional judgment) for its users. The traditional accountant profession that relies more on the ability to record and analyze financial and audit reports on tangible assets is likely to be replaced by artificial intelligence (AI) robotics and big data analysis. If accountants still use conventional or traditional approaches will be replaced by technology. Fifty-nine percent (59%) of their small companies think that in the next 10 years there will be no need for an accountant profession anymore, the next example is how to criticize financial statements that are currently only able to measure and assess company performance in terms of tangible assets (such as buildings, machinery, vehicle). Whereas intangible assets (for example intellectuality and human resource innovation) cannot be measured optimally, even though the era of the industrial revolution 4.0 companies that are able to optimize human resources (HR) in optimizing technology and innovating are often able to defeat companies that rely on physical assets. Therefore in the future investment in the field of human resources must take precedence. In the context of fostering and developing the accounting profession, human resources must be prepared by accountants who are able to adapt and provide added value in the era of the industrial revolution 4.0. [12].

According to [12] states that the Industrial Revolution 4.0 has a great influence on financial technology innovation, including innovations in financial literacy and education, retail banking, investment, and cryptocurrency such as bitcoin. In addition, increased use of information technology (IT) in the financial industry believed to be able to increase the reach of financial services. The use of technology can also create ways to have access to all financial tools and services at an affordable cost. Adjustment for an accountant becomes a challenge and an opportunity to improve accountant competence in the 4.0 Industrial Revolution. For example in the use of Robotics and data analytics (big data), it is now beginning to take over the basic work of an accountant, such as recording transactions, and processing transactions, and sorting out transactions so that the accounting profession is expected to develop it before it's too late where competencies are important for the accounting profession such as data analysis, information technology development, and leadership skills must be developed before it's too late.

According to [13] states that in the face of the Industrial Revolution 4.0, the world of education must prepare themselves to be able to equip their students to become capable resources and be able to adapt to changes in the industrial and technological world quickly. Educators must prepare and make appropriate educational learning methods and be able to synergize with the times. In this case the educators become one important part in improving the quality of human resources, the most basic or fundamental thing is to improve the mindset. The mindset of human resources who only prioritize hard

skills will be unable to compete with the mindset of human resources who are able to train their hard skills and soft skills equally. Demand for human resources who have skills in 2020 will increasingly increase demands, according to, The Future of Jobs Report, World Economic Forum, definition of skills based on O \* NET Content Model, US Department of Labor & Bureau of Labor Statistics, scale of mapping HR skills will be as follows: 36% demand for human resources who have problem solving skills, 19% Social skills, the next 18% lies in process skills, 15% Cognitive Abilities, 13% Resources Management Skills, 12% Technical Skills, 10% Content Skills, 4% Physical Abilities.

An increase in the competence of Accountants in the Indonesian Industry era must or not be done. Accounting competencies are accounting graduates / accountants to be able to integrate management and analysis methods, supported by technology, with the aim of helping companies to formulate and implement their strategies successfully. In realizing the increase in competence of Accountant graduates, learning in Accountant education must be integrated with learning information systems and technology competencies, it can be included in the learning curriculum. In line with current development demands, Karangturi National University offers a double major program that can be taken for prospective students who choose the Economics of Accounting faculty. This double major program can be chosen for accounting students who in addition to being experts in the field of Accounting can also gain additional skills in the field of Information Systems that are currently highly needed.

## 5. Conclusion

An information system for managing the supply chain being used through the cloud would enable this business model in a more simple way and especially with greater flexibility. Based on the theory in the research above and what has been explained in the previous section, it can be concluded that this research provides evidence that an increase in the competence of accountants in the Indonesian Industrial era must be carried out. where accounting competencies are accounting / accountant graduates who can integrate management and analysis methods, supported by technology, with the aim of helping companies to formulate and implement their strategies successfully. In realizing the increase in competence of Accountants graduates, learning in Accountant education must be integrated with learning information systems and technological competencies, so it is expected that professional accountants who are not only experts in Accounting can also acquire additional skills in the Information Systems field that are currently needed today.

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