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INDUSTRIAL REVOLUTION 5.0: DEVELOPMENT DESIGN OF TRANSACTIONS AND FINANCIAL ACCOUNTING SYSTEMS

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Abstract

Industry 5.0 is the latest phase in industrial evolution that combines advanced technology with a human touch to create added value. Financial transaction models in the context of Industry 5.0 must be able to integrate digital technology, artificial intelligence and data analysis with humanitarian elements, such as ethics and sustainability. The Industrial Revolution 5.0 also provides opportunities for the development of financial accounting systems that can react and adjust more quickly to changes in the working environment. A more adaptive financial accounting system can integrate data from various sources, including advanced technologies such as AI and IoT, to provide more accurate and real-time information for business decision making. However, it should be remembered that the Industrial Revolution 5.0 is currently in the stages of discussion and development, so the implementation and design of developments in transactions and financial accounting systems in this context are still developing and may vary in each industry and company. The Industrial Revolution 5.0 brings changes in the development of transactions and financial accounting systems by integrating cutting-edge technologies with human creativity and experience, such robots, IoT, and AI. This can increase efficiency, flexibility and sustainability.

Keywords: industrial revolution 5.0, financial transactions, financial accounting system

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INTRODUCTION

The development of accounting science cannot be separated from the industrial revolution and the sociological context of world society. Because these two things have a strong correlation with the development of accounting studies. Industry is the locus for the application of accounting science practices, while society is those who are interested in accounting information. Apart from that, society is also the part that produces the accounting profession through educational institutions. The reality above is an important variable in reviewing accounting transformation 5.0. The World Economic Forum lists the following technologies as hallmarks of the Industrial Revolution: genetic engineering, cloud computing, big data systems, intelligent robots, driverless cars, supercomputers, and the advancement of neurotechnology, which enables humans to further enhance brain function (Kasinathan et al., 2022).

The stages of the industrial revolution began in 1800 with the invention of the steam engine, encouraging the emergence of steam ships, steam trains, steam-powered factory machines, etc. Second, in 1900 with the discovery of electricity and assembly lines which increased the production of goods. Third, information technology innovation, commercialization, personal computers, etc. in 2000 and fourth, namely the Industrial Revolution 4.0, integrated manufacturing activities through wireless technology and massive big data that we are experiencing now. The main characteristic of the industrial revolution 4.0 is that disruptive technology is so fast and rapid that it poses a threat to giant industries. And changes in company size do not need to be large, but the company must be 'agile' in utilizing technology and information (Nel-Sanders, 2023).

According to Zizic et al., (2022) the main focus of the industrial revolution 5.0 is to shorten time to market; increase flexibility and; increase inefficiency. So that an economic face like a marketplace is formed; smart appliances; sharing economy; e-education. Industrial revolution 5.0 in Indonesia, for example, conventional shops are starting to be replaced by taxi marketplaces and traditional motorbike taxis are starting to be replaced by online modes of transportation. The second variable in accounting transformation 5.0 is the sociological context of society or what is known as society 5.0. According to Sinzo Abe in his speech at the World Economic Forum Davos, January 2019, In order to solve problems through systems that combine physical and virtual space, civilization 5.0 is a human-centered society that strikes a balance between economic and technical advancement.

Xu et al., (2021) stated that the characteristics of society 5.0 are technology based, namely the use of advanced technology, robots, drowning, computers, artificial intelligence and big data. Second, human centered, meaning that human activities are carried out using sophisticated technology. Many large companies have developed this technology, because it is supported by standardization of financial management processes, standardization of financial processes, systems, and information architecture.

The accounting profession underestimates the impact of technology on accountants' work. Competencies that are important for the accounting profession must have data analysis, information technology development, and leadership skills, which must be developed. Industry 4.0 and society 5.0 in accounting transformation 5.0, namely Digital business models, customer access, product and service offerings, vertical and horizontal value chain digitalization and integration. There are four accounting transformation trends 5.0, namely artificial intelligence; blockchain; cyber risk and; big data. First, artificial intelligence, namely codification of account entries, contract analysis and transaction identification. Second, blockchain changes the economic assessment of assets and bookkeeping reconciliation is no longer needed (Maddikunta et al, 2022).

Third, cyber risk is a new control on detection, response, and a dynamic external approach. Meanwhile, fifth, big data is providing new sources of non-financial data, helping with specific decisions and providing assessments and hard evidence. The transformation mentioned above will produce the face of accounting 5.0, namely cloud-based accounting data; big data's influence on accounting; accounting's ability to combine conventional financial data into contemporary technologies; accounting's efficiency and mobility; and, the role of accounting is changing radically (Rehman, A., & Umar, 2024).

One of the important routine activities in a business organization (company) is clerical activities, namely the presentation of financial information to various parties who need it, especially management. Financial information (financial reports) produced based on company economic transaction data must truly meet quality qualifications such as maintained accuracy, timeliness in presentation (timeles) and suitability for the receiving party (relevance). Financial information in a company is produced by an information system, namely an accounting information system. According to Widadi, S., & Parwoto, P. (2017) quality information can only be produced by an information system that is supported by information technology (computer technology, telecommunications technology). Although in theory information

technology support in an information system is not an absolute requirement for the operation of an accounting information system, currently it seems that information technology support for an information system is no longer an option but is a necessity.

How could a company be willing to take risks, for an accounting information system that produces financial information that will be used as a reference or basis for various important company policies that will be taken by company management. An Accounting Information System without information technology support (manual Accounting Information System) is very risky because it contains many weaknesses that can cause disruption to company activities. In this research the author will try to describe how Accounting Information Systems are designed and developed by users in accordance with company needs (End User Development). The design that will be discussed in this paper is a specific design stage, in which there are several activities that will later lead to the design of the shape and format of the system. These activities include technology design, input, process design, output design and database design. The final results of the design of the development of transactions and financial accounting systems by users will of course be subjective, adjusted to the conditions and needs of users in a company (McCallig et al., 2019). However, the business processes contained therein remain standard, referring to the rules that apply in financial accounting standards. At the very least, this research can be used as a discourse on the development of research knowledge in the design of transaction development and financial accounting systems so that it can be further developed in further research which will enrich the scientific repertoire.

RESEARCH METHOD

This research uses a descriptive method by collecting data from various trusted sources, including literature studies and recent publications. A descriptive approach is used to describe the industrial revolution 5.0: design of the development of transactions and financial accounting systems in a comprehensive manner. The first stage in this research method is collecting literature that is relevant to the research topic. A literature search was carried out through academic databases, scientific journals and related publications that discussed the design of transaction developments and financial accounting systems in the industrial era 5.0. The selected literature must be of good quality and relevant to the research objectives. After collecting

literature, analysis and synthesis of the information found was carried out. Relevant data and information regarding the development design of transactions and financial accounting systems in the industrial era 5.0 are analyzed comprehensively to identify the industrial financial transaction model 5.0, the main keys to digital financial transactions, and the importance of accounting systems in the digital era related to the research topic.

RESULT AND DISCUSSION

Industry 5.0 Financial Transaction Model

Swati, K., & Brijesh, K. (2023) stated that industry 5.0 is the latest phase in industrial evolution that combines advanced technology with a human touch to create added value. Financial transaction models in the context of Industry 5.0 must be able to integrate digital technology, artificial intelligence and data analysis with humanitarian elements, such as ethics and sustainability. The following are some of the main components in the financial transaction model for Industry 5.0 (Kunwar, S., & Kumar, 2023):

1. Automation and Artificial Intelligence
   Robotic Process Automation: Automates routine and repetitive tasks in financial transactions.
   Machine Learning: Analyze transaction data to detect patterns, predictions and anomalies.
   Virtual Assistants and Chatbots: Provide real-time customer support and transaction processing.
2. Blockchain and Distributed Ledger Technology
   Transparency and Security: Increase transparency and security in recording transactions.
   Smart Contracts: Automate and secure contractual agreements without the need for a third party.
3. Data Analytics and Big Data
   Predictive Analytics: Using historical data to predict future financial trends and performance.
   Data Visualization: Make it easier for stakeholders to understand financial data through interactive dashboards and visual reports.
4. IoT (Internet of Things) Integration
   Real-time Tracking: Collects data from IoT devices to monitor assets and inventory in real-time.
   Operational Optimization: Reduce operational costs through efficient monitoring and management of resources.

5. Sustainability and Social Responsibility
   Sustainable Investment: Encourage investment in sustainable and environmentally friendly projects.
   ESG (Environmental, Social, and Governance) reporting: Integrating sustainability performance in financial reporting.
6. Personalization and User Experience
   Personalized Financial Services: Providing financial services tailored to individual needs and preferences.
   Human-Machine Interaction: Combining human interaction with technology to provide users with a better experience.
7. Implementation Example
   Digital Bank: A fully digital bank with advanced automation and data analysis services.
   Payment Platform: Uses blockchain for fast and secure international payment transactions.
   Asset Management: Using IoT and data analytics to efficiently manage and monitor company assets.

The financial transaction model in Industry 5.0 focuses on integrating advanced technology with human values to create a more efficient, safe and sustainable system (Soomro et al., 2022).

The Main Key to Digital Financial Transactions

Daily activities have now become easier thanks to the use of advanced technology. One of them is the convenience related to how to pay transactions. Instead of making conventional payments, now there is a digital payment system that can be done without having to meet face to face. The digital financial transaction system provides many conveniences. Some of these conveniences include the following (Pazarbasioglu et al., 2020):

Practical. Digital transactions provide convenience in the form of a very practical transaction process. The transaction process can be completed in just seconds.

Transparent. Digital payment methods help users to record transactions completely and transparently. Every activity, both expenditure and income, can be recorded.

Safer. The transaction process takes place digitally and funds are sent directly to the account. That way, the risk of theft can be minimized. All of these benefits can be enjoyed if the process of implementing the digital financial transaction system runs smoothly. There are 4 main aspects that play

an important role in efforts to support the smooth implementation process, namely (Kajol et al., 2022):

1. Digital Financial Literacy

   The first aspect that has an important role in encouraging the implementation of a modern financial system is the level of public knowledge regarding digital financial literacy. Digital financial literacy refers to people's knowledge and ability to utilize digital-based financial services. Those who have a high level of digital financial literacy will not experience difficulties in utilizing digital payment systems. People with high digital financial literacy have a very adequate understanding of digital transaction services. Armed with this knowledge, people can access various types of digital financial services. Not only payment methods such as mobile banking or internet banking. However, there are also many digital financial services such as P2P lending, crowdfunding, paylater, and so on.

2. Security System

   The next factor that has a big influence on the implementation of digital payment systems in Indonesia is the security aspect. The security aspect is very important in encouraging the implementation of digital payment systems in line with the high risks and security threats in the digital world. Several types of risks and security threats to the digital financial system include:

   Malware attacks. The threat of this crime occurs through the use of dangerous applications which can be viruses, spyware or ransomware. This malicious application is capable of damaging a system and even locking important files.

   Hacking. There is also the threat of crime in the form of hacking. This crime takes place by attempting to take over access to certain accounts or devices.

   Theft of personal data. Furthermore, there are digital crimes in the form of theft of personal data. The types of personal data that are often targets for theft are quite diverse, including PINs, passwords, credit cards, and so on.

   With good security guarantees, people can use digital payment facilities comfortably. At the same time, the parties involved also need to educate the public regarding efforts to protect themselves from various acts of digital crime.

3. Convenience of Use

   An equally important aspect that can encourage the use of digital financial transactions is convenience in use. In this case, companies that provide

digital financial services need to pay attention to the UI/UX of the applications and websites they use. UI/UX has an important role in providing comfort to users. With good UI/UX design, people can gain comfort and take advantage of various features in financial service applications and websites.

4. Infrastructure

   The final factor is infrastructure support, both physical and digital infrastructure. In this case, the government has a responsibility to provide equal distribution of facilities to all Indonesian citizens. That way, Indonesian people, from western to eastern Indonesia, can enjoy the convenience of using digital financial transactions.

In digital financial transactions, there are several main keys that need to be considered. The following are some of the main keys to digital financial transactions according to Dara, N. R. (2018):

Financial and Digital Literacy: Financial and digital literacy is the main key to safe transactions and providing maximum benefits for consumers in the future. Financial literacy involves understanding financial concepts, money management, and investing, while digital literacy involves understanding technology and its use in financial transactions.

Data Security: Data security is very important in digital financial transactions. Financial service providers need to strengthen data security systems to protect consumers' personal and financial information from misuse.

Financial Inclusion: Financial inclusion is an effort to expand access to financial services for individuals who previously did not have such access. Digital financial transactions can help expand access to financial services without having to have a traditional bank account.

Efficiency and Convenience: Digital financial transactions can reduce dependence on time-consuming manual processes. Bill payments, payroll and raw material purchases can be done quickly and without errors.

Security and Privacy: In the digital era, the risk of fraud and data theft increases. Therefore, it is important to continue improving the security of digital payment systems in order to protect users' personal and financial information.

Transaction Recording: Recording digital financial transactions is important to understand a company's financial position better. The accounting ledger records all financial transactions that occur within the company, both related to income and expenses

By paying attention to these main keys, digital financial transactions can be carried out more safely, efficiently and comfortably.

Accounting in the Digital Era

Stanciu, V., & Bran, F. P. (2015) stated that accounting is a process of recording financial transactions in a systematic way, in order to produce financial reporting that is neatly arranged and can be needed by parties who need an accounting system. The parties in question are interested parties in every organization, company and government. An accountant needs to use the basic principles of professional accounting ethics. The basic principles of accounting are the most important thing in implementing all processes of recording financial transactions.

An accounting system is a system used to record, manage and present financial information about an organization (Aksoy, T., & Hacioglu, 2021). In the digital era, technology is developing very rapidly. Accounting in the digital era allows information and data to be processed, stored and shared efficiently, quickly and accurately. Digitalization is an era where technological progress increases to the point that the need for human resources has been replaced by computers, which makes work in all sectors relatively faster, more accurate and of course can avoid work accidents, therefore the use of robot technology has entered all aspects of industry in the whole world.

The benefits of an accounting system are as follows (Mujiono, 2021):

1. Speed up the process of accounting activities
   In the digital era, an accounting system can speed up an accountant in carrying out his work, namely recording or presenting information regarding financial transactions. With an efficient accounting system, the accounting process can be completed more quickly and accurately.
2. Minimize human error
   In the digital era, the use of an accounting system can minimize human error in the accounting process. The accounting system can handle most of the tasks that were previously done manually automatically, thereby reducing the errors that usually occur in manual accounting processes.
3. Optimize data usage
   In the digital era, the use of data is increasingly important. With an accounting system that is integrated with information technology, financial data can be accessed more easily and quickly. In addition, accounting systems can help optimize the use of financial data for analysis and decision making purposes.

4. Improve data security

   In the digital era, data security is very important because data is usually private. With an accounting system that is integrated with information technology. Financial data can be stored more securely and protected from security threats such as hacking and data theft.

5. Increase transparency and accountability

   In the digital era, transparency and accountability have become increasingly important. With an accounting system that is integrated with information technology, financial information can be accessed more easily and quickly by interested parties, such as investors and regulators. This can increase organizational transparency and accountability in financial management.

In this era of industry 5.0 and rapid technological development, the flow of information spreads throughout all regions and levels of society very quickly. Today's internet technology has changed a person's perspective in obtaining information sources. One of the things included is business accounting (AlAnsari et al., 2022). The emergence of technology-based applications makes it easier to organize and collect data in all aspects, including in the field of accounting. This increasingly rapid technological development is changing business performance, thereby reducing the number of human resources needed in business, including an accountant. In order for the existence of accutane to continue throughout the ages, harmony and of course findings that can be combined with the technology itself are needed.
This merger certainly continues to meet the needs of the industrial market by prioritizing the ease of accounting systems and formulas so that they are easy to use and understand. Developments in technology.

Accountants must continually update their knowledge about the latest technologies used in the accounting process, such as AI, big data and blockchain. They must also be able to choose technology that suits their clients' needs and be able to maximize the benefits of this technology to make their work as an accountant easier (Azih, 2018).

The era of industrial revolution 5.0 also brings higher competition to accountants, because digital technology creates global competition and makes it easier for clients to access accounting services. Accountants must be able to face this competition by improving the quality of their service levels to clients and utilizing technology to improve accountant performance to be more efficient and accurate. More complex data usage. In the era of industrial revolution 5.0, the data produced by companies has become more complex

and large, so accountants must be able to process and analyze this data more effectively (Asonitou, 2020). This requires broader skills in analyzing data and making decisions.

The era of industrial revolution 5.0 also brings greater data security and privacy challenges. Accountants must be able to ensure the security of their clients' data and meet applicable regulatory requirements and data security standards. Skills development

Accountants must continue to develop skills to remain relevant in the era of industrial revolution 5.0. skills such as data analysis, decision making, and understanding digital technology must be continuously improved to be able to meet increasingly complex client needs (Incozi, C., & Rodrigues, 2021). Accounting and digital systems enable companies to record transactions automatically, thereby enabling faster, more accurate and more efficient data processing. accountants must be able to adapt to changes in technology and the continuously evolving business environment, as well as improve their skills to be able to provide better and more relevant services to clients. So that harmony between human resources (accountants) and technological developments themselves is very necessary, so that the impact of the need for an accountant can still exist in all situations and conditions of the times.

CONCLUSION

Although the term "Industrial Revolution 5.0" is still in its infancy, it generally refers to technology advancements that push the boundaries of automation and digitization in the manufacturing and industrial sectors. This idea centers on fusing human creativity and knowledge with cutting-edge technologies like artificial intelligence (AI), the Internet of Things (IoT), and robotics to promote the creation of production systems that are more productive, adaptable, sustainable, and enhance wellbeing.

The integration of cutting-edge technologies, such artificial intelligence (AI), the Internet of Things (IoT), and robotics, with human skill and invention is the main emphasis of the Fifth Industrial Revolution. This approach can stimulate the creation of production systems that are more productive, adaptable, sustainable, and enhance welfare. The Industrial Revolution 5.0 has a big impact on how transactions and financial accounting systems are developed. The application of the latest technology such as AI, IoT and robot technology can increase efficiency in transaction processes and financial accounting systems. This technology can help in automating and digitizing

accounting processes, reducing human errors, and increasing speed and accuracy in financial reporting.

The Industrial Revolution 5.0 also provides opportunities for the development of financial accounting systems that can react and adjust more quickly to changes in the working environment. A more adaptive financial accounting system can integrate data from various sources, including advanced technologies such as AI and IoT, to provide more accurate and real-time information for business decision making. However, it should be remembered that the Industrial Revolution 5.0 is still in the development and debate stage, so the implementation and design of transaction developments and financial accounting systems in this context are still developing and may vary in each industry and company. So, Industrial Revolution 5.0 brings changes in the development of financial transactions and accounting systems by integrating advanced technologies such as AI, IoT, and robot technology with human expertise and innovation. This can increase efficiency, flexibility and sustainability.

REFERENCES

Aksoy, T., & Hacioglu, U. (2021). *Auditing Ecosystem and Strategic Accounting in the Digital Era*. Springer International Publishing.

AlAnsari, A., Alqadhi, B., Aljawder, A., & Wadi, R. A. (2022). Management accounting in the digital era: literature review. *Artificial Intelligence for Sustainable Finance and Sustainable Technology: Proceedings of ICGER 2021 1*, 512-521.

Asonitou, S. (2020). Technologies to Communicate Accounting Information in the Digital Era: Is Accounting Education Following the Evolutions?. In *Strategic Innovative Marketing and Tourism: 8th ICSIMAT, Northern Aegean, Greece, 2019* (pp. 187-194). Springer International Publishing.

Azih, N. (2018). Electronic accounting: An imperative tool for quality assurance in accounting education programme in the digital era. *Nigerian Journal of Business Education (NIGJBED)*, *1*(2), 90-98.

Dara, N. R. (2018). The global digital financial services: A critical review to achieve for digital economy in emerging markets. *International Research Journal of Human Resources and Social Sciences*, *5*(1), 141-163.

Incozi, C., & Rodrigues, F. (2021, November). Understanding the role of Information Systems in Accounting. In *European Conference on Management, Leadership & Governance* (pp. 191-201). Academic Conferences International Limited.

Kajol, K., Singh, R., & Paul, J. (2022). Adoption of digital financial transactions: A review of literature and future research agenda. *Technological Forecasting and Social Change*, *184*, 121991.

Kasinathan, P., Pugazhendhi, R., Elavarasan, R. M., Ramachandaramurthy, V. K., Ramanathan, V., Subramanian, S., ... & Alsharif, M. H. (2022). Realization of sustainable development goals with disruptive technologies by integrating industry 5.0, society 5.0, smart cities and villages. *Sustainability*, *14*(22), 15258.

Kunwar, S., & Kumar, B. (2023). Application of Industry 5.0 in Financial Sector. *Journal of Business and Social Sciences*, *2023*.

Maddikunta, P. K. R., Pham, Q. V., Prabadevi, B., Deepa, N., Dev, K., Gadekallu, T. R., ... & Liyanage, M. (2022). Industry 5.0: A survey on enabling technologies and potential applications. *Journal of industrial information integration*, *26*, 100257.

McCallig, J., Robb, A., & Rohde, F. (2019). Establishing the representational faithfulness of financial accounting information using multiparty security, network analysis and a blockchain. *International Journal of Accounting Information Systems*, *33*, 47-58.

Mujiono, M. N. (2021). The shifting role of accountants in the era of digital disruption. *International Journal of Multidisciplinary: Applied Business and Education Research*, *2*(11), 1259-1274.

Nel-Sanders, D. (2023). Revolutionising Public Private Partnerships: A Transition to the Fifth Industrial Revolution. *International Journal of Innovation in Management, Economics and Social Sciences*, *3*(1), 12-29.

Pazarbasioglu, C., Mora, A. G., Uttamchandani, M., Natarajan, H., Feyen, E., & Saal, M. (2020). Digital financial services. *World Bank*, *54*, 1-54.

Rehman, A., & Umar, T. (2024). Literature review: Industry 5.0. Leveraging technologies for environmental, social and governance advancement in corporate settings. *Corporate Governance: The International Journal of Business in Society*.

Soomro, Z. A., Ali, Q., & Parveen, S. (2022). Diffusion of Industry 5.0 in the financial sector: A Stanciu, V., & Bran, F. P. (2015). The accounting proffesion in the digital era. *Calitatea*, *16*(S1), 546.developmental study. *Proceedings of the BAM*.

Swati, K., & Brijesh, K. (2023). APPLICATION OF INDUSTRY 5.0 IN FINANCIAL SECTOR. *Journal of Business and Social Sciences*, *2023*(13), 1-7.

Widadi, S., & Parwoto, P. (2017). Software Engineering to Develop Patterns for Accumulated Values of Accounting Transactions. *Journal of Electrical Technology UMY*, *1*(3), 157-164.

Xu, X., Lu, Y., Vogel-Heuser, B., & Wang, L. (2021). Industry 4.0 and Industry 5.0—Inception, conception and perception. *Journal of manufacturing systems*, *61*, 530-535.

Zizic, M. C., Mladineo, M., Gjeldum, N., & Celent, L. (2022). From industry 4.0 towards industry 5.0: A review and analysis of paradigm shift for the people, organization and technology. *Energies*, *15*(14), 5221.