

Digitalization of Islamic Economics in 12 Aspects of Isomorphism: Indonesian Context

Digitalisasi Ekonomi Syariah dalam 12 Aspek Isomorfisme: Kontekstual Indonesia

Rachmad Nor Firman

ABSTRACT

The digitalization of the Islamic economy can penetrate various aspects of the economy, both microeconomics and macroeconomics. Right now, the role of digital is extraordinary; almost all economies use information and communication technology or digitization, both in packaging products and in marketing products, making it easier and faster the distribution information used to make economic growth faster and without limits with the support digital technology and information technology. Information technology that has penetrated individuals (personal) can support the era of digitalization of information and communication in conventional economics and Islamic economics; this technology is now in the hands of gadget users, such as mobile applications, which can be downloaded and installed with features easily understood by users. Likewise, in the banking world, in carrying out its activities, Islamic banking cooperates with the information technology sector to build an Islamic banking information system by creating a special application (app) that can facilitate all transaction processes in banking. So, the formation of a digital society, one of which is the digital Islamic economy.

Keywords: digitalization, Islamic economics, isomorphism, Indonesian

ABSTRAK

Digitalisasi ekonomi syariah dapat merambah dalam berbagai aspek ekonomi baik ekonomi mikro maupun ekonomi makro. Sekarang ini peran digital sangat luar biasa, hampir semua perekonomian menggunakan teknologi informasi dan komunikasi atau digitalisasi, baik dalam mengemas produk ataupun dalam memasarkan produk, sehingga lebih mudah dan lebih cepat dalam distribusi informasi yang digunakan untuk membuat pertumbuhan ekonomi semakin cepat dan tiada batas dengan dukungan teknologi digital dan teknologi informasi. Teknologi informasi yang sudah merambah ke individu (personal) dapat mendukung era digitalisasi informasi dan komunikasi pada ekonomi konvensional maupun ekonomi syariah, teknologi tersebut sekarang sudah dalam genggam tangan pengguna gadget seperti aplikasi mobile yang dapat diunduh dan dipasang dengan fitur mudah dimengerti oleh user. Demikian pula di dunia perbankan, dalam melakukan kegiatannya perbankan syariah bekerja sama dengan bidang teknologi informasi untuk membangun sistem informasi perbankan syariah dengan membuat aplikasi khusus (app) yang dapat mempermudah semua proses-proses transaksi yang ada di perbankan. Maka terbentuknya masyarakat digital, salah satunya adalah ekonomi syariah digital.

Kata Kunci: digitalisasi, ekonomi syariah, isomorfisme, Indonesia



JIHBIZ

Journal of Islamic Economy, Finance, and Banking

P-ISSN 1238-1235 | E-ISSN 2807-6028

Vol. 7 No. 2 2023

Page 152-163

Published by:

Program Studi Ekonomi Syariah dan
Program Studi Perbankan Syariah
Universitas Islam Raden Rahmat,
Malang, East Java, Indonesia

Website:

<http://ejournal.uniramalang.ac.id/index.php/jihbiz/>

Article's DOI:

<https://doi.org/10.33379/jihbiz.v7i2.2913>

Author(s):

Rachmad Nor Firman¹

Email: rachmadfirman2@gmail.com

Affiliation:

¹ Sekolah Tinggi Agama Islam Salahuddin
Pasuruan, Pasuruan, East Java, Indonesia

Correspondence:

rachmadfirman2@gmail.com

Article Type: Viewpoint

Submission's History:

Received	:	19 June 2023
Revised	:	14 July 2023
Accepted	:	17 July 2023

1. Introduction

Digital Technology is a transition from its operation that no longer uses much human power. However, they are more inclined to fully automatic and sophisticated operating systems with computer systems in binary numbers (zero and one) in a format that a computer can read. Digital technology is a very fast calculating system that processes all forms of information as numerical values. In analogue technology, images and sound are converted into radio waves, and digital technology converts images and sounds into digital data consisting of the numbers 1 and 0. This digital technology gives the displayed image a more natural colour quality and better resolution. Keep quality intact when the image is displayed on a large screen.

The rapid development of digital technology is marked by the presence of several various cutting-edge communication tools, where everyone can process, produce, and send or receive all forms of communication messages, anywhere and anytime, as if without knowing the boundaries of space and time, by itself. The mass media sector has spurred developments, part of the communications component. As a result, the rush of information from the mass media, both print and electronic, began to be felt. Whether we realize it or not, we are in a circle full of information.

This, of course, will have certain impacts on society, both positive and negative. However, of course, what needs to be watched out for is the negative impact of this rapid development which has indirectly started to fill the twists and turns of people's lives. For the record, the development of mass media and the flow of information in Indonesia has been extraordinary in the last few decades. In order to survive and win the competition in the digital economy, players need to understand the characteristics of the underlying concept because it is very different from the classical economy that has been known so far. It is not uncommon for companies to carry out business transformation in order to optimally play in the digital economy arena. This is because to implement it requires a completely new business model. For new companies (start-ups), getting into this business is usually easier than for companies that have been established for a long time. Statistics show that most old companies that want to take advantage of the digital economy must radically change their business processes (business process reengineering).

Islamic economics, as an economic thought, considered an alternative to economic thought, is currently being developed rapidly throughout the world in the last ten years. An idea that, in the beginning, was an impossibility, but at this time, has penetrated many countries in the world. These countries are not all countries with a majority Muslim population but also countries with a non-Muslim majority population. An example is the rapid development of Islamic finance in England which then tries to become the centre of Islamic finance in the world.

Amid rapid development and our current condition in the digital era, the Islamic economy can increasingly spread its influence worldwide. The Islamic economy, with all its infrastructure and instruments, must be able to take advantage of this enormous opportunity. Islamic economic activists must make the best use of this golden opportunity. Many things are being done in the digital world as it is today in developing the Islamic economy, especially in Indonesia. Indonesia, which has the title of the country with the largest Muslim population in the world, has enormous potential in developing the Islamic economy.

Based on the census of the Central Bureau of Statistics, the Muslim population in Indonesia is in the range of 87% or around 207 million people. This huge amount must be used with great care, especially when we can easily access smartphone technology due to technological advances.

2. Literature Review

2.1 Definition of Islamic Economics

Definition of Islamic Economics, according to M.A. Manan, is a social science that studies people's economic problems inspired by Islamic values.

According to Muhammad Abdullah Abdullah al-'Arabi, the definition of Islamic economics or understanding of Islamic economics is a set of general economic basics that we conclude from the Qur'an and Sunnah, which are economic buildings built based on these basics according to each environment and period.

According to Prof. Dr. Zainuddin Ali, Understanding Sharia Economics or Understanding Islamic Economics is a collection of legal norms originating from the Koran and hadith which regulate the economy of humanity.

According to Dr. Mardani, Understanding Islamic Economics or Understanding Islamic Economics is business or activities carried out by individuals or groups of people or business entities that are legal or not legal to meet commercial and non-commercial needs according to Sharia principles.

From the understanding of Sharia economics above, it can be concluded that the definition of Islamic economics or the definition of Islamic economics is an economic system that originates from transcendental revelation (the Koran and hadith) and sources of interpretation of revelation called *ijtihad* (At-Tariqi, 2004).

Economics is a science that explains how to meet the needs of human life in order to maintain their survival. So, no doubt with other economics that Islamic economics is a science that can be applied in the joints of human life in fulfilling its survival.

The first economic system on earth is the Islamic economy. It was proven during the time of the Prophet Muhammad that the Prophet Muhammad taught his companions how to trade that was true, honest, and fair.

Moreover, the Prophet taught his followers to set aside 2.5% of their wealth to give charity to people in need or *mustahiq*. This is intended so there is no gap between the poor and the rich. The rich give some of their possessions to the poor. Thus, it has been proven that Islamic economics existed at the time of the Prophet Muhammad. However, new schools of thought emerged as time progressed that embraced economic liberalism, commando or socialism, and capitalism.

They only take some of the principles of Islamic economics. Which one is acceptable to them, he takes? If not, they reject it (At-Tariqi, 2004).

The Islamic economic system is an economic system that is run based on Islamic law or the rules of Allah. This system starts from Allah, aims ultimately at Allah, and uses means that cannot be separated from Islamic law.

In all economic activities carried out by humans, they must comply with God's provisions, both in terms of buying and selling, savings and loans, and investments. In Islam, the concept of property ownership is that property completely belongs to Allah, while humans are caliphs over these assets. Besides that, Islam also strictly prohibits humans from carrying out acts of *Maisyir*, *Gharar*, *Haram*, *Dzalim*, *Akhtar*, and *Riba*.

2.2 Principles of Islamic economics

The principle of Islamic economics in building the people's economy is based on the signs that have been determined as follows:

a. *Maisyir* Prohibition

Maisyir is an act of gambling which means that someone wants to get wealth without having to work hard; it is also an act of enriching oneself by harming others.

b. Prohibition of *Gharar*

Gharar is an act of fraud that can harm other people, where in the transaction, there are hidden elements carried out by one party to gain profit. *Gharar* has very bad consequences. Namely, it will cause hatred among the transacting parties.

c. Prohibition of doing *Haram* things

That is the law imposed on a substance or object that is forbidden to use or consume because it is prohibited by Allah both from the item itself and how to obtain it.

d. Prohibition of *Zalim*.

Namely, actions that harm or hurt others for a specific purpose, because in Islamic economics, what is done must be based on mutual pleasure, so Islam does not justify this.

e. Prohibition of *Ikhtikar*

That is an activity of hoarding goods to obtain large profits by holding an item in a certain condition and will resell it when the price rises.

f. Prohibition of *Riba*

Namely, in addition to a transaction usually carried out in accounts payable, namely in interest. Islam does not justify usury in any form, even though both are willing, except as a bonus or gratitude from the borrower to the lender.

2.3 Definition of Digital Economy

The definition of the Digital Economy version of the Encarta Dictionary is "Business transactions on the Internet: the marketplace that exists on the Internet." The definition of Digital Economy focuses more on transactions and markets that occur in the Internet world. According to PC

Magazine, a broader understanding than just transactions or markets is the New Economy, "The impact of information technology on the economy." Its meaning emphasizes the application of information technology in the economic field. It is understandable because PC Magazine is a special magazine about the IT world.

The Economist magazine states that the term New Economy was born because of IT and globalization, which caused high productivity and growth (company or country). The term New Economy first appeared in the United States. According to a study by Kauffman and ITIF, the New Economy is measured by several indicators grouped into five components: knowledge-based jobs, globalization, economic dynamism, digital economy transformation, and technological innovation capacity.

Referring to several definitions and indicators for measuring the New Economy, it can be assumed that Indonesia has yet to achieve or rely on it in developing the national economy. A brief overview of the pace of ICT implementation in Indonesia and its position at the international level can be seen in the article "Downloader Society". The indication is still low penetration of ICT- or often called ICT Density. The difference in ICT density between groups is called the digital divide or the Digital Divide. The definition of the group can be viewed between countries (e.g., developed countries vs. developing countries), between individual demographics (men vs. women, higher vs. low education, between professions), between geographies (City vs. Rural, Java vs. Outside Java), or between business types (between business sectors, large vs. small industry).

2.4 Development and Advancement of ICT

The development and progress of information and communication technology (ICT) lately are being felt in almost every aspect of people's lives. As with every other advancement in communication technology, the internet has entered various forms of people's lives. This happens because communication is one of the basic needs of society. Internet technology develops and integrates into a 'world' or 'cyberspace,' often called cyber-space, a world or place where people can communicate, 'meet,' and carry out various economic/business activities.

The impact of this evolution on society has encouraged the emergence of a new society called the information society or knowledge society/knowledge-based society. Initially, the old fundamental economic theory was based on optimizing/maximizing the factors of production, namely: physical, labour, and capital (land, money, and human capital). In its current development, economics realizes the importance of incorporating intellectual factors in the form of science and technology, creativity, and various forms of innovative capital that can be categorized as science and technology (science and technology).

Various innovation developments in information and telecommunications technology (ICT) or digital technology over the past decade, have impacted the economic and business fields referred to as post-industrial society, science-based economy, innovation economy, online economy, new economy, e-economy, and digital economy. (Cohen et al., 2000). The digital economy is a complex and emerging phenomenon related to microeconomics, macroeconomics, and organizational and administrative theory. The digital economy will explain economic development and growth in the coming decades.

The concept of the digital economy was first introduced by Tapscott (1998), explaining a socio-political and economic system with characteristics as an intelligence space, including information, various access to information instruments, and information processing and communication capacity. The components of the digital economy identified for the first time were the ICT industry, e-commerce activities between companies and individuals, digital distribution of goods and services, support for the sale of goods, especially systems and internet services.

Meanwhile, another digital economy concept is digitizing information and ICT infrastructure (Zimmerman, 2000). This concept is often used to explain the global impact of information and communication technology on the internet and the economy. This concept becomes a view of the interaction between innovation development and technological progress and its impact on macroeconomics and microeconomics. The digital economy encompasses goods and services whose development, production, sale, or supply depend on digital technology.

The development of the digital economy cannot be separated from its characteristics/nature, namely the existence of value creation, products in the form of distribution channel efficiency, and structures in the form of personalized and customized services. In Indonesia, the Bank Indonesia real-time gross settlement (RTGS) system is a system of electronic transfers between participants in the rupiah currency, the settlement of which is carried out in real-time, per individual transaction, the amount is quite significant, ranging from IDR 3 trillion to IDR 4 trillion per month. This can be categorized as an e-banking transaction that is part of the digital economy, likewise, with e-banking shopping transactions for ATM and debit cards.

From a social and cultural perspective, Indonesian society is now more advanced. As evidenced by a survey from the WorldBank.org website, Indonesia has experienced a significant increase in internet users. This shows that the Indonesian population is starting to follow technological developments worldwide. This is also a parameter for the growth of a country's digital economy.

In terms of the legal environment, maintaining the stability and security of information and communication technology, especially the internet in Indonesia. The Ministry of Communication and Informatics of the Republic of Indonesia formed the Indonesia Security Incident Response Team on Internet and Infrastructure (ID-SIRTII), which aims to balance strategic infrastructure readiness to minimize the negative impact of the internet network in Indonesia. Who is in charge of socializing with related parties regarding information system security, monitoring, detecting, and early warning against threats to telecommunications networks from within and outside the country, especially in securing network utilization and creating/running/developing internet security statistics in Indonesia.

3. Discussion

In a digitalized Islamic economy, everything is possible in cyberspace or what is often referred to as cyberspace business, such as; e-commerce, e-business, e-banking, e-payment, e-marketing, e-learning, and so on, covering various aspects. There are 12 aspects in this article referred to as 12 Aspects of Isomorphism, namely: 1) Knowledge, 2) Digitization, 3) Virtualization, 4) Molecularization, 5) Convergence, 6) Innovation, 7) Presumption, 8) Immediacy, 9) Globalization, 10) Internetworking, 11) Disintermediation and 12) Discordance.

3.1 Knowledge

Knowledge from human resources (knowledge) is the most important thing in the continuity of a company or agency and is an asset of the company or agency; in the previous economic theory, namely classical economics, it is an asset for the company or agency.

Given the importance that knowledge attaches to the human brain, the intelligence factor of the company's human resources is a determinant of the success or failure of the organization in achieving its objectives. This collective knowledge is the value of the company in the process of creating products and services. In addition, technological advances have created various artificial intelligence products that can help management and employees of companies or agencies improve their intelligence capabilities (knowledge leveraging). For example, software and hardware products that can become decision support systems are decision support systems and expert systems. The concept of knowledge management will be the key to the success of a company in this era (Tapscott et al., 1996).

3.2 Digitization

Digitization is a process of transforming information from various forms into the digit format "0" and "1" (binary numbers). Even though the concept seems simple at first glance, its existence has resulted in a breakthrough and a huge impact change in the world of business transactions, which are transformed in digital form to facilitate effective and efficient storage in a denser form and now even to accommodate enough data with iCloud only. See how two-dimensional images such as paintings and photographs can be represented in bit formats to be easily stored and exchanged via electronic media. This has increased the company's efficiency because it reduces the costs associated with making, storing, and exchanging media. Even the latest technology has converted analogue video and audio formats into digital formats. Advances in telecommunications technology allow humans to exchange information quickly via e-mail to all corners.

The world is increasingly facilitating the process of sending and exchanging all types of information that can be digitized. In other words, if the products and services offered can be represented in digital form, companies can easily and cheaply offer their products and services to the world. Electronic publishing, virtual bookstores, internet banking, telemedicine, and iCloud are examples of the digital world's various products and services.

3.3 Virtualization

Virtualization allows a person to start a business with a simple device (a PC device with an internet data connection). It can reach all potential customers in cyberspace (internet) and carry out business transactions. It is different from running a business in the real world, which requires physical assets such as buildings and means of production to carry out business transactions. In cyberspace, a customer only deals with an internet site as a company (business to consumer) and relations between various companies that wish to work together (business to business). In establishing this relationship, the process that occurs more than a transaction is the virtual exchange of data and information without a physical presence between the parties or individuals making the transaction. In other words, a business can be done anytime and anywhere, 24 hours a day and seven days a week, online and in real-time, as long as it is connected to an internet network.

3.4 Molecularization

Organizations that will survive in the digital economy era are those that successfully apply molecular shapes. The shape of the molecule is a system where organizations can easily adapt to any dynamic changes that occur in the environment around the company. As is known, at this time the majority of organizations were managed using the concept of a hierarchical structure or a more advanced matrix structure.

These two concepts are veryvmediator (broker) as an intermediary for transactions between suppliers and customers. Examples of mediators in economic activity are wholesalers, retailers, broadcasters, record companies, and so on. Classical companies that depend on themselves as mediators are forced to go out of business by themselves due to the existence of internet business. The free market allows for transactions between individuals without having to involve other parties.

3.5 Convergence

The key to a company's success in internet business lies in the level of ability and quality of the company in converging three industrial sectors, namely: computing, communications, and content. The computer, which is the core of the computing industry, is the nerve centre for processing data and information needed in conducting business transactions. The most relevant product of the communications industry is information and communication technology infrastructure as a pipe for distributing data and information from one place to another. The real competition lies in the content industry, which is the type of service or services offered by a company to the market in cyberspace. The three things above are absolute requirements that must be owned and controlled by the user to be able to run a business successfully.

3.6 Innovation

Activity on the internet is a 24-hour business, not 8 hours like companies in the real world. Competitive advantage (competitive advantage) is very difficult to maintain considering what one person or other internet company is very easy to imitate. That's why fast and continuous innovation is needed so that a company can survive. Company management must be able to find ways so that the key players in the organization (management and staff) can always innovate like companies in Silicon Valley. The concept of learning organization deserves to be considered and implemented within the company.

3.7 Presumption

In the digital economy, the boundaries between consumers and producers that have been seen so far have become blurred. Almost all consumers of information technology can easily become producers who are ready to offer their products and services to the public and the business community. An example is someone who has to pay IDR 5,000,000 to get or rent a website data space (hosting) with a size of 10 Giga bytes and subcontract / lease it back by dividing the amount of its capacity, for example 1 gigabyte can be rented out or sold for one million rupiah. In a short time, the person concerned has been able to make a profit from the small business. In this context, the individual concerned is categorized as a prosumer.

3.8 Immediacy

In cyberspace (internet), customers are faced with various companies that offer the same product or service. In choosing a company, they only used three main criteria. In principle, they will conduct transactions with companies that offer their products or services in a cheaper, better, and faster manner compared to similar companies. Given that switching costs on the internet are very easy and cheap, customers will continue to look for the company that provides the highest benefits for them. Seeing this, companies must always be sensitive to various customer needs that require certain service satisfaction.

3.9 Globalization

The essence of globalization is the collapse of the boundaries of space and time (time and space). Knowledge or knowledge, as the main resource, knows no geographical boundaries, so the existence of state entities becomes less relevant in running a business context in cyberspace. A person is vulnerable to change, which will slow down the company's movement in adjusting to market developments. One thing to remember is that going online means going head-to-head with companies worldwide. Their daily behaviour will greatly affect the structure of the market and related industries, which will often change various conditions. This, of course, is a manifestation of free and tight competition that occurs besides being a strategy to win the rivalry. In other words, change is a natural process that the company must carry out. Charles Darwin said that the nation that will survive is not the biggest or the strongest but the most able to adapt to change.

3.10 Internetworking

Internetworking is the most important thing in conducting business transactions both electronically and conventionally by meeting face to face and conducting business transactions; companies need to collaborate with other parties; that is one of the requirements for success in cyberspace. Based on the chosen business model, the related company must determine its core activity and cooperate with other institutions to help carry out supporting activities. Examples of parties commonly used as partners are technology vendors, content partners, merchants, suppliers, etc. The business concept that wants to control its resources from upstream to downstream will only last for a while in the digital economy. With a dynamic system that opens up as many opportunities as possible, in this case, anyone can compete and is also not limited by space and time as long as an internet communication network connects it.

3.11 Disintermediation

Another distinctive feature of the digital economy arena is the reduced tendency of pure capitalists to do business from a cheap and comfortable place, sell their products and services to wealthy people, and the profits will be transferred and deposited in the safest bank and provide the greatest interest. Market segmentation, which has often been carried out based on time and space boundaries, must be redefined, bearing in mind that all people have become one in cyberspace, both producers and consumers.

3.12 Discordance

The last characteristic of the digital economy is the phenomenon of changes in social and cultural structures as a logical consequence of changes in several paradigms related to everyday life. The more concise the organization, will cause unemployment everywhere, the livelihoods of mediators (brokers) will be lost, workers will become workaholics because of very tight competition, and the influence of Western culture is difficult to prevent because it can be freely accessed by anyone via the internet, and so on is an example of a phenomenon that occurs in the digital economy era. An organization's unpreparedness in dealing with all possible negative impacts will have bad consequences (boomerang) for the company's survival.

4. Conclusion

The digitalization of the Islamic economy is absolute and necessary to keep pace with the development of information and communication technology which is increasingly reaching the palms of the hand (gadgets), and various business application features are offered more and more and are easily used by users and the business world such as industry, banking and education, whether they like it or not. Like it or not, the economy grows and develops, especially the sharia economy which is on the rise in the current era.

Products from sharia economic role holders such as sharia banking with its mobile banking application, sharia insurance with its online service products, then the digitization of the sharia economy is formed by itself in line with the needs and supporting technologies that already exist and continue to develop.

Digitization is just a term in summarizing database servers that can be used for online transactions that are connected to each other so that transactions can be carried out automatically using a machine, all that remains is the application and process flow using Islamic methods in the transaction flow which is based on Islamic teachings by the provisions stipulated in the Qur'an. Thus, only the flow and process are different between conventional economics and Islamic economics while the equipment and machinery used are the same.

Data communication services that are connected and exchange transactions in all information, both business and non-business, which produce mutually beneficial deals based on Islamic principles. No one feels morally and materially disadvantaged, so there is a continuity of business interconnection capable of arousing Islamic economic passion.

The formation of data and information stored on iCloud or database servers that can accommodate millions of business and non-business transactions, then the data obtained is used as information that can be used as starting material for doing business, where the round of business transactions carried out makes the digitalization of the Islamic economy if the business transaction is based on Islamic rules, so the results automatically become *syar'i*. And certainly not contradictory. The substance of Islamic values is the noble behaviour of humanity, as practiced by the Prophet in his daily life (Musnandar & Ubaidi, 2022).

The basic thing that underlies the digitization of the Islamic economy is only in the methods and rules of the game from the teachings of the Islamic religion in carrying out transactions that are *syar'i* according to the teachings of the religion of Islam because all affairs in the world already

have rules in the holy book of Muslims, this method is outlined in the algorithm and coded in a programming language that can be understood by computer machines so that the automation of these machines can digitize orders made by users in carrying out business transactions with company owners, the digitization equipment used is the same, the only difference is the method.

Reference

- AT-Tariqi, Abdullah Abdul Husain; Penj. Irfan Syofwani, M.; Penyunting: Roem Syibli, M. (2004). *Ekonomi Islam: prinsip, dasar dan tujuan*. Yogyakarta: Magistra Insania Press.
- Ismail (2011). *Perbankan Syariah*. Jakarta: Kencana Prenada Media Group
- Kartono, Kartini. (2000). *Pengantar Ekonomi Research Sosial*. Bandung: Peberbit Alumni.
- Kasmir (2004). *Pemasaran Bank, Edisi Pertama, Cetakan Pertama*. Jakarta: Kencana.
- Machmud, Amir (2010). *BANK SYARIAH Teori, Kebijakan, dan Study Empiris di Indonesia*. Jakarta: Erlangga.
- Musnandar, A., & Ubaidi, A. (2022). *Islamic Values on Soft Skills*. Jihbiz: Jurnal Ekonomi, Keuangan Dan Perbankan Syariah, 6(2).
- Teguh, Muhammad. (2005). *Metodologi Penelitian Ekonomi (Teori dan Aplikasi), Edisi pertama*. Jakarta: PT Raja Grafindo Persada
- Zachman, John A., 1999. *A framework in information systems Architecture*. New York: IBM Systems Journal.