Review Multi Factors Authentication for Financial Technology using Biometric Features

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Abstract: Financial Technology is increasingly needed in industry 4.0 towards the era of society 5.0. This need was triggered by the many brokers that made marketing a product very expensive. The existence of Financial Technology can eliminate brokers, cut the product marketing chain. The effect is that consumers can get products at affordable prices and good quality because of direct selling. The contribution of this research is to review multi factors authentication for Financial Technology that uses biometric features. The results of this study obtained recommendations for biometric features that are in accordance with user needs that can be used for Financial Technology.

1   INTRODUCTION

Financial Technology is increasingly needed in industry 4.0 towards the era of society 5.0. This need was triggered by the many brokers that made marketing a product very expensive. The existence of Financial Technology can eliminate brokers, cut the product marketing chain. The effect is that consumers can get products at affordable prices and good quality because of direct selling (Wu, 2017). The Industrial Revolution was marked by the emergence of the big data system, cloud computing, supercomputers, smart robots, unmanned vehicles, genetic engineering, and neurotechnology development that enabled humans to optimize brain function further. In this 4.0 industrial revolution manufacturing activities were integrated through massive wireless and big data technology. Figure 1 shows the conventional versus online models of 4.0 industrial revolution in Indonesia.

Figure 1: Conventional versus online models of 4.0 industrial revolution in Indonesia.

Society 5.0 is a human-centered society that balances economic and technological progress by solving problems through systems that integrate cyberspace and physical space. Innovation in society 5.0 will reach a forward-looking society that breaks the sense of stagnation that exists. Communities whose members respect each other, and society where everyone can lead an active and pleasant life. Figure 2 shows that the application of society 5.0 will help the community to handle needs in an automated manner and as a place where people can enjoy their lives.
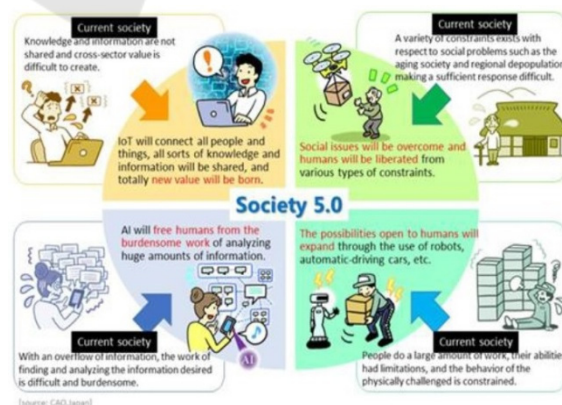

Figure 2: Achieving Society 5.0.

Financial technology (Fintech) is a Blockchain technology for transferring money that opens the

Application Programming Interface (API) between companies and Fintech banks and promotes payments without cash. Figure 3 shows a few of conventional versus online models Fintech in Indonesia.

Figure 3: A few of conventional versus online models Fintech in Indonesia.

Blockchain is a cheaper way to create a reliable security system in cyberspace (Lynn et al., 2019). In Society 5.0, cybersecurity will be a key factor. This technology will be very useful to ensure cybersecurity. One of the securities of cybersecurity is from the side of authentication.

The contribution of this research is to review multi factors authentication for Financial Technology that uses biometric features. The results of this study obtained recommendations for biometric features that are in accordance with user needs that can be used for Financial Technology.

2 LITERATURE REVIEW

Ometov et al., (2018) have conducted a survey of the evolution of authentication systems towards Multi-Factor Authentication (MFA), sensors used and vision of future trends in a connected world including online payments to authenticate users with the system directly or by involving the cloud. MFA is specifically expected to be used for human-to-everything interaction by enabling authentication that is fast, user-friendly, and reliable when accessing a service.

Qaddour, (2018) investigated the problems and challenges related to the security of cloud computing authentication. This means that someone can save his work around the world, retrieve, update, delete, and use data/information stored in the cloud from anywhere in the world at any time. The popularity of cloud in the business world has resulted in data centers that are growing rapidly and extensively, but

there are risks in the utilization of resource sharing, which leads to privacy and security issues. The new solution provided by Qaddour, (2018) was proposed to improve user authentication on Cloud Computing using biometrics with multifactor authentication techniques. Other researchers, Hussein and Scholar, (2018) have conducted a comprehensive survey of user authentication techniques using biometrics for cloud computing.

(Yang et al., 2019) Finance is the most mature biometric market outside the domain of law enforcement because the logic is that protecting money is a top priority for most people. Financial companies have become early adopters of biometrics. For example, cash machines with fingerprint readers are currently used at increased speeds. In addition, the new MasterCard, which includes an embedded fingerprint reader, seeks to introduce a biometric authentication layer for card payments, so as to increase customer comfort in terms of security and convenience. Compared to other biometric properties (eg, faces, irises, and sounds), fingerprint-based recognition systems are studied most widely and are used most widely. For fingerprints, valley patterns and ridges are determined after birth, and different fingerprint patterns are owned by even identical twins.

3 FUTURE WORK

Martani, (2019) stated in Figure 4 that there are 5 things to respond to the future: (a) investing in developing digital skills, (b) implementing a prototype of new technology, learn by doing, (c) education based on international certification and digital skills, (d) responsive to industry, business and technological development, (e) curriculum and human-digital skills-based learning.

Figure 4: Respond to the future.

Figure 5 shows there are five mastery elements that help the process of identifying and gathering accounting information in the Industrial Revolution era 4.0: (i) Business Acumen, (ii) Behavioral Competence, (iii) Digital Acumen, (iv) Data Interrogation, Synthesis, and Analysis, (v) Communication.

Figure 5: Mastery 5 elements of ICT.

Ometov et al., (2018) says in Figure 5 that there are five categories of authentication methods who you are, what you know, what you have, what you typically do and the context.
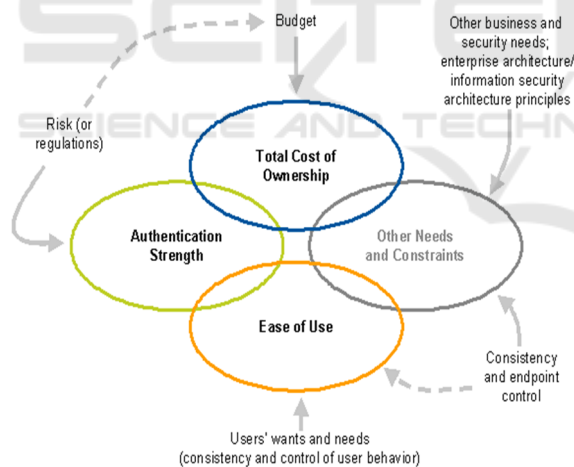

Figure 5: Determine the "Best" Authentication Method.

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