Biometrics Technology and the New Economy:
A Review of the Field and the Case of the United Arab Emirates

Ali M. Al-Khouri, Emirates Identity Authority, Abu Dhabi, UAE

ABSTRACT

Over the past decade, biometrics technology has evolved from a technology used primarily in forensics and a narrow scientific and technological field to an indispensable technology in public and private sectors expanding into areas calling for advanced security. Biometric technologies provide high levels of security and reliability to address requirements related to identification and verification of personal identities. In light of the ever increasing requirements for robust identity management, biometrics industry is evolving to play a central role in shaping the future economy. This article provides a comprehensive overview of biometrics technologies, its functions, areas of application, related international standards, and recent advances in the field. The second part of the article looks at the application of biometrics in the government sector worldwide, and the emerging pivotal role of biometrics in consolidating the foundations of the digital economies and sheds light on the experiences of the United Arab Emirates in deploying different advanced biometrics technologies in a wide range of applications. It also outlines the government plans to develop an identity management infrastructure to address multiple strategic objectives, some of which are related to revolutionizing public services and supporting the development of the digital economy.

Keywords: Biometrics, Digital Economy, Digital Society, Identity Management, United Arab Emirates

1. INTRODUCTION: BIOMETRICS HISTORY AND CURRENT STATE

Human race has always been beset with the need for highly secure identification and personal verification methods, arising from various reasons spanning social, economic, commercial and legal considerations. Identification is a process through which one ascertains the identity of another person or entity. It has always been recognized that every human being has unique traits that can define his or her identity.

Recognition started from the faces that are as unique as they may appear. However, larger populations, advances in surgical alterations and modern citizen centric service models have

necessitated varying methods of recognition and unique identification.

Derived from the Greek words: Bios (Life) and Metron (Measurement), biometrics represents the science of identity recognition. Biometrics as a science and an automated means of identification may only be a few decades old, but as a concept, it has been in existence for thousands of years (Figure 1 and Table 1). Today, biometrics identification is recognized worldwide as a definitive personal identification method with specific metrics that gives both the service provider and the end user the assurance of a rapid, secure, and convenient transaction.

Clearly, personal identification has become a key requirement for today's increasingly digitised global economy. Indeed, trust in electronic transactions is essential to the vigorous growth of the global economy. Although markets shrink and expand in cyclical fashion, emerging nations continue to present emerging new markets with endless opportunities. However, globalisation is generally raising the level and intensity of competition to deliver better, faster, cheaper services and products in a secure and trusted environment. Businesses find themselves in need for modern identification solutions ever than before to establish such trust basis, i.e., for denial and accordance, and for acceptance and refusal.

Businesses and governments alike in the past decade have therefore paid high attention to protecting their infrastructures from impersonating and/or infiltrating activities; a crime that was reported to cost 35 billion dollars in the United States alone in 2011 (Vamosi et al., 2011). With such justified attention to identification requirements, methods of identification assumed greater prominence.

In addition, as e-government and e-commerce initiatives proliferate, offering more online electronic services, robust identification and authentication methods are needed to address control and security requirements. The existing literature referred widely to the fact that one of the main challenging issues facing e-government and electronic society's development is identity management and the issue of trust in online transactions and digital identities. Ultimately the digital identity needs to become the same as real-world human identity. Using biometric identifiers for identity management provide strong credentials and higher levels of identity assurance.

According to a recent research report by RNCOS E-Services, the global biometric market is anticipated to grow at a CAGR of around 22% between 2011 and 2013 (RNCOS, 2011). At a regional level, North America was reported to dominate the global biometric market share of over 30% in 2010. The Asian, Middle East and Africa region were expected to emerge as growing markets for biometrics by 2013.

Figure 1. Late B.C. - Picture writing of a hand with ridge patterns was discovered in Nova Scotia
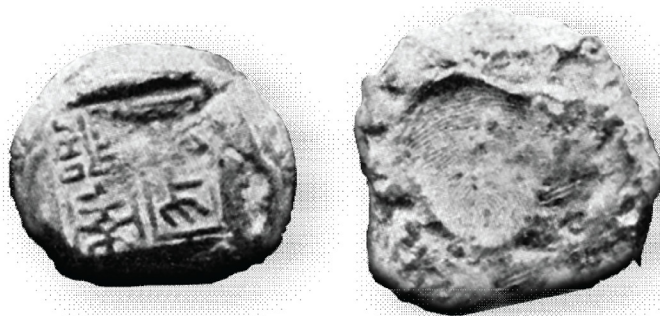
Related Content

An Investigation into Tenacity Levels at CoderDojos1
Nigel McKelveyand Pamela Cowan (2017). *International Journal of Innovation in the Digital Economy (pp. 35-48).*
www.irma-international.org/article/an-investigation-into-tenacity-levels-at-coderdojos1/181481

Cultural Accommodation in Consumer E-Commerce: A Theoretical Exploration in the Context of Ethnic Culture
Rui Chenand Sushil Sharma (2011). *E-Adoption and Socio-Economic Impacts: Emerging Infrastructural Effects (pp. 219-232).*
www.irma-international.org/chapter/cultural-accommodation-consumer-commerce/55009

Results-Based Project Follow-Up: A Method for Ongoing and Completed Projects
Gideon Mekonnen Jonathan (2020). *International Journal of Innovation in the Digital Economy (pp. 14-30).*
www.irma-international.org/article/results-based-project-follow-up/247463

Managing and Enhancing ICT Uptake in Rural Communities in Botswana
Godson Gatshaand Regina K. Masalela (2012). *Cases on Developing Countries and ICT Integration: Rural Community Development (pp. 211-217).*
www.irma-international.org/chapter/managing-enhancing-ict-uptake-rural/57998

Information Technology and Economic Development in Developing Countries
Muhammed Karatasand Selahattin Bekmez (2008). *Information Technology and Economic Development (pp. 14-30).*
www.irma-international.org/chapter/information-technology-economic-development-developing/23507