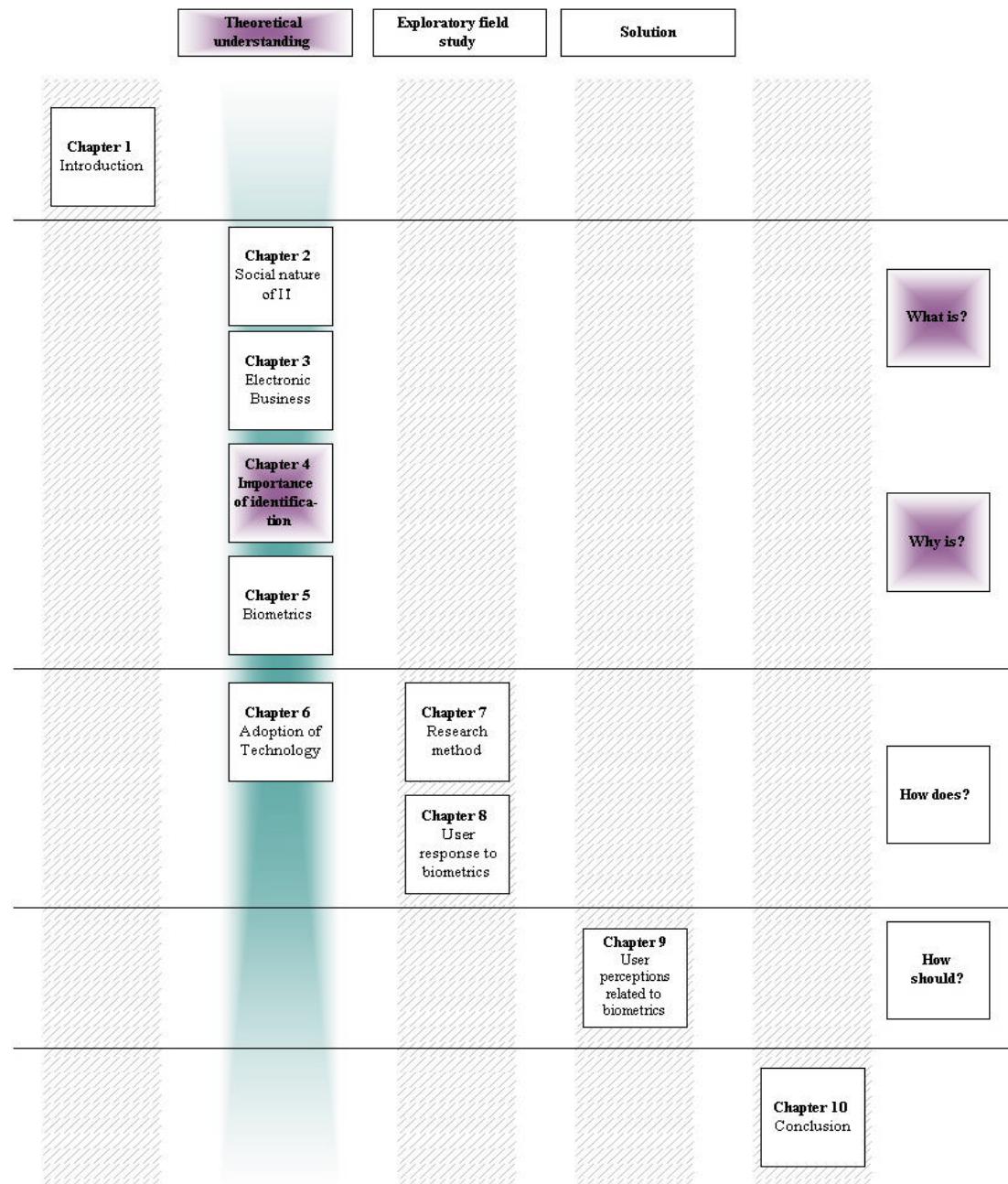


4. CHAPTER 4: THE IMPORTANCE OF IDENTIFICATION

“Advances are made by answering questions. Discoveries are made by questioning answers.”

Bernhard Haisch

Figure 4-1: Thesis roadmap – Chapter 4



4.1 Introduction

This chapter provides a theoretical understanding of “The importance of identification” within Electronic Business, addressing the research question: “Why is identification so important in Electronic Business?” This chapter has the following sections:

- ❑ Defining the term identification.
- ❑ Discussing the importance of identification within Electronic Business.
- ❑ Listing different means of identification before moving on to the chapter’s summary and conclusion sections.

4.2 Identification defined

As mentioned in Chapter 3, one of the many factors that impact on the success (user adoption) of Electronic Business is the security of conducting on-line transactions. One method aimed at improving the security of on-line transactions is accurate identification.

Human identity is a delicate notion, which requires consideration at all levels of philosophy and psychology (Clarke 1994). The term “identity” itself can be defined as “*the condition of being a specific person*” (Concise Oxford Dictionary), or “*the condition of being oneself... and not another*” (Macquarie Dictionary). It clusters with the terms personality, individuality and individualism – an existence for each individual (Davis 1994). According to Clauß and Köhntopp (2001) the identity of a person comprises a huge amount of personal data with respect to individuals, all subsets of the identity represent the person (or components of the person), some of these “partial identities” uniquely identify the person, others do not.

Human identification, on the other hand, is a practical manner (Clarke 1994) and the term “identification” can be defined as the act or process of “*establishing the identity of, (or) recognizing*”, or “*the treating of a thing as identical with another*” (Concise Oxford Dictionary), or “*the act (or process)*

of recognizing or establishing as being a particular person”, but also “the act (or process) of making, representing to be, or regarding or treating as the same or identical” (Macquarie Dictionary).

In the context of Information Technology, the purpose of identification is more concrete: it is used to link a stream of data with an individual – in other words, human identification is the association of data with a particular human being (Clarke 1994).

4.3 Importance of identification

Davies (1994) explain that identification involves conflict between **two** conditions:

1. Flawed identification, which results in unnecessary duplication, fraud and client disruption, with resultant costs and risks.
2. Rigorous identification, is on the other hand, invasive and its unpopularity and resultant falsification and evasion may undermine its effectiveness.

The original need for identification was social rather than economic in nature; however, as complexity of economic transactions developed, the need arose for parties to know with whom they were dealing (Clarke 1994). According to Clarke (1994) the purpose of interchange of identification includes providing a gesture of goodwill, developing mutual confidence, reducing the scope for dishonesty, enabling either party to initiate the next round of communication and enabling either party to associate transactions and information with the other party. Accurate identification of individuals is a key concern for many government agencies and organizations. Davies (1994) states that it is important because it contributes significantly to administrative efficiency, controlled fraud and other client benefits.

Clarke (1994) adds to this by stating that organizations have a need for reliable identification of the individuals with whom they deal to provide a better

service to them; to protect the individual e.g. a list of allergies the individual might have; to protect the organization e.g. to ensure that the individual can be contacted and located in the event where the individual does not fulfil obligations such as payment of a debt; and to guard against individuals misrepresenting their status to the organization e.g. educational qualifications, age, income, medical condition, etc.

Lastly Clauß and Köhntopp (2001) re-iterates that the lack of trust in privacy and security is a main hinderance for the success of Electronic Business, therefore, methods to establish privacy and security have to be directly implemented in Information Technology systems. That way, users may justifiably develop trust when using an Information Technology system e.g. for Electronic Business. Achieving trust is an aim of multilateral security, which empowers the user to assert his or her rights, e.g. to informational self-determination. Accurate identification enable the user to control the nature and amount of personal information released, this is an important feature for users' informational self-determination. This, accurate identification can act as means for realizing and/or supporting privacy and security concerns within Electronic Business.

In the sub-section below, on-line (Internet) credit card fraud will be discussed to illustrate the importance of identification in Electronic Business.

4.3.1 On-line credit card fraud

“Two out of three consumers fear that their personal information could be exploited if they use it on the Internet.”

Anthony Riem

Fraud can be defined as a deliberate deception to obtain assets or resources, and according to Wetzel (2000) this deception, specifically in a digital world

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where speed and anonymity reign, can be costly and pervasive. Wetzel (2000) terms the Internet as a “Gateway to Digital Fraud”. He states that the Internet has opened tremendous opportunities for commerce and due to the relatively small cost of doing business on the Internet and the continued growth in Electronic Business, it is believed that the exponential rate of growth in this sector will continue – but despite these positive indicators, the presence of fraud tempers this tremendous opportunity. Bequai (1996) adds to Wetzel’s statement by saying that Electronic Business has a bright future, but without adequate safeguards in place, the growth of Electronic Business could face some obstacles in the coming years. Therefore, according to Bequai (1996), security will play an important role in shaping the format and direction of Electronic Business.

The criminal elements of the world have been quick to recognize the significant opportunities Electronic Business offers, as it enables them to operate across international boundaries and use multiple aliases. Therefore, Internet-related fraud is definitely a matter of concern (Noie 1999).

Wetzel (2000) lists **two** factors that make fraudulent transactions easier on the Internet:

1. **A faceless dimension** – Electronic Business creates a faceless dimension and therefore, an individual can easily misrepresent his or her identity. There is no face-to-face contact that might reveal suspicious behaviour, or a card imprint or an individual’s signature to substantiate a merchant’s claim.
2. **The speed of the e-transaction** – The speed of Electronic Business plays a role in credit card fraud. While an in-store approval process may take several minutes, high-volume Internet merchants handle hundreds of transactions per second. These merchants may save tremendous amounts of fiscal and human overheads through the use of real-time Internet transactions, but they can equally experience a high number of fraudulent

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transactions, particularly from an individual who submits one fraudulent credit card number to hundreds of sites simultaneously.

Noie (1999) mentions that trust in credit card transactions over the Internet plays an important role for consumers debating whether to purchase on-line or not, linking to the social factor of trust discussed previously (as being one of the major concerns as perceived by consumers for using and adopting the Internet and Electronic Business as defined by Karakaya (2001)). Therefore, it is important that merchants and individuals are protected from fraud in the on-line world of Electronic Commerce and that privacy aspects are respected and protected (Technews 2002). Riem (2001) concludes that the problems of today will still be the problems of tomorrow, unless everyone is prepared and committed to assist with finding a suitable solution and implementing it. Based on the above statements it is clear that identification within Electronic Business plays an important role, for merchants, financial institutions, e-payment processors and on-line users, and that identification should be used to combat fraud on the Internet.

4.4 Means of identification

Clarke (1994) lists a variety of means for identifying an individual, in order to associate data with them:

1. **Appearance** – or how the individual looks. Appearance is supported by still images such as descriptions used in passports e.g. height, weight, colour of skin, hair, eyes, visible physical markings, gender, race, facial hair, wearing of glasses, etc.
2. **Social behaviour** – or how the individual interacts with others. Social behaviour is supported by video-film such as habituated body-signals, general voice characteristics, style of speech, visible handicaps, etc.
3. **Names** – or what the individual is called by other individuals, although using names as a basis for identification lack constancy and reliability.

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Therefore, names are a challenging and risky foundation on which to build an organization's identification system.

4. **Codes** – or what the individual is called by an organization. Codes are commonly based on a set of digits, but may incorporate alphabetic characters as well.
5. **Knowledge** – or what the individual knows. Knowledge-based approaches to personal identification seldom provide organizations with an adequate basis for operation of their Information Systems.
6. **Tokens** – or what the individual has. A “token” is some “thing” which an individual has in his or her possession e.g. identification document, driver’s license, security card, etc.
7. **Bio-dynamics** – or what the individual does e.g. the manner in which one’s signature is written, statistically analyzed voice characteristics, keystroke dynamics, particularly login-id and password.
8. **Natural physiography** – or what the individual is e.g. skull measurements, teeth and skeletal injuries, thumbprint, fingerprint sets, handprints, retinal scans, earlobe capillary patterns, hand-geometry, DNA-patterns, etc.
9. **Imposed physical characteristics** – or what the individual has become e.g. wearing of dog-tags by soldiers on active duty and identity cards of employees and visitors within secure premises.

For the purpose of the research study (motivation provided below), biometric identification methods, which will be discussed in detail in Chapter 5 – Biometrics, will be discussed as the preferred means of identification. The term “biometrics” can refer to a variety of identification techniques, which are based on some physical and difficult-to-alienate characteristic of the individual. These include appearance, social behaviour, bio-dynamics, natural physiography and imposed physical characteristics (Clarke 1994). The techniques are sometimes referred to as “positive identification” because it is

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claimed that they provide greater confidence that the identification is accurate (Clarke 1994).

Identification based on items such as codes, tokens and knowledge that people possess, has many weaknesses and Davies (1994) therefore, suggests that biometric identification methods, such as fingerprint verification, retinal scanning, iris scanning, voice recognition and signature verification, seem to be a more ideal solution. The potential benefits, as listed by Davies (1994) of a biometric identification system, include improvements in:

1. **The cost of administration** – flawed identity-checking results in unnecessary costs, but biometric identification can ensure accurate identity checking.
2. **The integrity of identification** – flawed identity-checking results in fraud and client disruption, but with biometric identification the integrity of the individual's identity can be guaranteed.
3. **The integrity of information** – again, flawed identity-checking results in inaccurate information being kept, but biometric identification can ensure that the correct information is linked to the correct individual.
4. **Access to information held by organizations** – with biometric identification an organization can make sure that only authorized personnel gain access to the information held by the organization.
5. **The speed of delivery of services and benefits** – with biometric identification systems, an individual can be identified within seconds, which will lead to improved customer service.
6. **The accuracy and quality of research and statistics** – the fact that integrity of identity and information can be guaranteed through biometric identification will lead to accurate and higher quality research and statistics.
7. **The level of technical security and communication** – the development and application of technical standards has meant that communication

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between the Information Systems of different organizations is increasingly simple.

Albrecht (2003) adds to Davies's list by stating that in comparison with conventional verification methods, biometrics can offer the following:

1. **Increased security** – biometric characteristics cannot be forgotten, stolen or transferred to another individual.
2. **Greater legal binding force** – biometric identification provides clear, trustworthy verification of an individual.

A biometric feature is not only related, but also bound to an individual and the characteristics used are usually part of an individual for his or her entire life and so irrevocably linked to them (Albrecht 2003).

To conclude, high-quality identification offers the promise of the avoidance of error and fraud, and privacy advocates often have difficulty expressing their opposition to it (Davies 1994). Furnell *et al.* (2000) states that although there is seemingly an element of reluctance amongst individuals to depart from familiar password-based identification systems, many are convinced that a need exists for the improvement of identification controls and they expect perceptible added value from a biometric identification system (Albrecht 2002b). Finally, the design criteria for organizations are to enable information to be associated with, and/or action to be taken in respect of, the right individual, with a degree of accuracy commensurate with the gravity of the information or the action (Clarke 1994).

4.5 Summary

This chapter first defined the term identification as linking a stream of data with an individual (Clarke 1994). Accurate identification is important to enable organizations to provide a better service to their customers and to prevent individuals from misrepresenting themselves to the organization. Effective and accurate identification, on the other hand, will improve

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administrative productivity, keep organizational resource secure, and streamline Electronic Business transactions (RSA Security 2002). A variety of means for identification are available, but the key focus should be to establish accurate identity. For the purpose of the research study, biometric identification methods will be discussed as the preferred means of identification. Biometric identification is based on physical and difficult-to-alienate characteristics of an individual and is claimed to provide greater confidence that the identification is accurate (Clarke 1994). According to Albrecht (2003), one of the fastest growing applications for biometric identification techniques is Electronic Business. In an ideal world, the participants involved in an Electronic Commerce business transaction should be able to identify whether the partners with whom they are dealing are in fact who they claim to be with biometric identification, this uncertainty can potentially be removed.

4.6 Conclusion

It was concluded in this chapter, **Chapter 4 – The importance of identification**, that identification was always social rather than economical in nature, but as the complexity of economic transactions developed the need arose for accurate identification (Clarke 1994). A variety of means of identification are available, but it was concluded that biometric identification is based on physical and difficult-to-alienate characteristics of an individual and is further claimed to provide greater confidence that the identification is accurate (Clarke 1994). Therefore, for the purpose of the research study, biometric identification methods were discussed as the preferred means of identification.

This chapter has therefore, addressed the research question: “Why is identification so important in Electronic Business?” The second-last chapter found within the literature study section of the research study will provide a discussion of “Biometrics”, selected as the preferred means of identification, in Electronic Business.