Combating Identify Theft: A Theoretical Framework

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Agenda

- Why should we study the identity theft problem?
- What are the parties involved in combating identity theft?
- What are the further research questions?
The serious problem of ID theft

- ID theft is a rapid growing epidemic
- For the criminal, ID theft is a low-risk, high-reward endeavor
- For the victim, it is a sudden and long-term nightmare
- But for some banks, they prefer writing it off as a cost of doing business rather than prosecuting the thieves
- ID theft also threatens the national security
Why should we study the identity theft problem?

- Identity theft: a serious and growing problem
- We have heard a lot of stories
- But we do not have an effective, systematic solution to the problem
- To solve the problem, we should have better understanding of the problem
What is Identity

In our identity theft study, identity is considered as identity certificates and identity information that can uniquely identify the identity owner for granting services and thus is the main targets of identity theft.
What are the parties involved in the normal use of identity?

- **the identity owner**, who owns and legally uses various kinds of identity for different social and financial activities;
- **the identity issuer**, who authorizes and issues identity to provide the owner the proof of identity and the right to acquire related social and financial services;
- **the identity checker**, who verifies the identity of the identity owner and permits related services;
A Normal Identity Management Process
Identity theft

- Identity theft (ID theft or IDT) is a crime resulting from unauthorized and fraudulent use of someone else’s personal identity and other relevant information.
Who are the identity thieves?

The identity thief steals and counterfeits identities for financial or other purposes, and fraudulently abuses the rights and interests of the identity owner and authorized service providers.
ID theft Activities

- **Identity Owner**
  - Issue ID
  - Apply for ID
  - Authenticate service

- **Identity Checker**
  - Submit ID

- **Identity Issuer**
  - ID verification
  - ID confirmation

- **Identity Thief**
  - Steal ID
  - ID fraud
  - ID counterfeit

Activities:
- ID verification
- ID confirmation
- Authenticate service
Identity Theft Activities

Identity thieves commit fraud through two steps:

- The first step is to steal someone’s identity or create a fake identity.
- The second step is illegally using a fake identity, to gain access to the victim’s financial services or to commit crimes under other one’s name.
- Understanding and analyzing identity theft is a very important and basic step in combating identity theft.
Who is the thief and who is the victim?
Picture of Embezzlers

We need to investigate the ID theft: Who, When, Where, How, Why...

- Managers are 16 times more than Employees
- Men are 4 times more than Women
- 60+ Years Old are 28 times more than 25 & Under
- Post Graduates are 5 times more than High School Graduates

Ref: F. W. Abagnale, The Art of the Steal
References


How to combat identity theft?

- How can we minimize the risk of identity theft?
- How to detect and prevent identity theft? Has government done enough to stop the criminals?
- Can encryption technology prevent identity theft? Should we use more secure IC card?
- Should we use more advanced biometrics and online authentication? Will customer like it or not?
- Will fingerprint help to prevent terrorist?
- Have we paid enough attention to helping the victims?
Who is responsible to combat identity theft?

- The customer?
- The bank?
- The IT professional?
- The government?
- The police?
- The e-commerce companies?
- ...
- What are the roles they play in combating identity theft?
Who are responsible to combat identity theft?

- The identity owner?
- The identity issuer?
- The identity checker?

and

- The identity protector, whose major duty is to safeguard the rights and interests of other stakeholders through legislation, detecting and prosecuting identity thieves
Combating ID Theft

Identity Owner

Identity Checker

Identity Issuer

Identity Protector

Identity Thief

Authenticate service
Submit ID

Issue ID
Apply for ID

ID verification
ID confirmation
ID theft Protection
ID theft Protection

Steal ID
ID theft Protection
ID theft Protection
ID theft Protection
ID theft Protection

ID fraud
ID theft Detection
ID counterfeite
How to combat identity theft?

Prevention:

- Identity theft can be prevented by various measures and technologies, including education and guidance, prevention technologies, and prevention mechanisms and policies.
- Build-in security feature, Digital certificate, Biometrics authentication, PKI encryption…
How to combat identity theft?

**Detection:**

- Early detection of identity theft will clearly reduce potential loss, and early detection of identity theft provides better evidence that is essential to prosecute criminals.
- Biometrics and online authentication
- Monitoring and auditing
- …
How to combat identity theft?

**Protection and Prosecution:**

- Certain laws have been enacted specifically to protect identity owners and their personal information, and to prosecute identity thieves.
- Notification of Risk to Personal Data (2003)
- Canadian Personal Information Protection and Electronic Documents Act
The potential use of the framework

■ Understanding:
  ■ Assessing identity theft risks and vulnerabilities
  ■ Identifying the roles and interactions of various stakeholders
The potential use of the framework

- Development:
  - Developing a systematic and effective security strategy
  - Context analysis for multiparty security solution development
  - Supporting multiparty collaboration in the identity management process
The potential use of the framework

- **Evaluation:**
  - Examining the efficiency and effectiveness of countermeasures from multiple perspectives
  - Studying the impact of changes in one activity on other activities and stakeholders
  - Evaluating the balance between the need for privacy protection and the need for identity information gathering to combat identity theft
References

Some further Research Questions

- Identity Theft Risk Management
- Cost and Benefit Analysis of Countermeasures
- Multi-party Coordination in Combating Identity Theft
- Privacy issues
- ...
Identity Theft Risk Management

- Identity theft is a risk that businesses must manage.
- Risk management is the systematic application of management policies, processes, procedures, and technologies to the tasks of identifying, analyzing, assessing, treating, and monitoring risk.
- The objective of risk management is to protect assets from all external and internal threats so that the losses resulting from the realization of such threats are minimized.
References

Cost and Benefit Analysis of Countermeasures

- It is imperative to analyze costs and benefits of all kinds of identity theft countermeasures in order to achieve a reasonable and effective level of security management.

- Comparing Passwords, tokens, and biometrics for user authentication (O’Gorman, 2003)

- Should study not only the effectiveness of against different attacks, but also cost/benefit analysis and user acceptance
Multi-party Coordination in Combating Identity Theft

- The success in combating identity theft relies on joint efforts and coordination among all stakeholders, including identity owner, identity issuer, identity checker, and identity protector, in every relevant activity, such as prevention, detection, and prosecution.

- A chain is only as strong as its weakest link
Privacy Protection Issues

- Authentication requires identity presentation and the collection of identity information.
- However, excessive and inappropriate collection without the owner’s consent may result in privacy violations and damage to customer trust, effectively driving customers away from the business.
Proposed ORNEC ID Theft Research Program

- Project 1. Defining and Measuring ID Theft (McMaster, Queen’s)
- Project 2. Management Approaches to Combating ID Theft (McMaster, Carleton)
- Project 3. Technical Tools to Address the ID Theft Problem (U. of Ottawa)
- Project 4. Legal and Policy Approaches to Identity Theft (U. of Ottawa)
References

Questions and Answers

Thanks