

The Fault in our Cards A Consumer's View On Payment Card Security Swarnalakshmi M Iyer, Dr. Kathryn C Seigfried-Spellar



Background

- In the past couple years, attacks on the Payment Card infrastructure in the United States have spiked.
- Data breaches at major organizations have led to the compromise of credit card data of several customers
- Magnetic stripe cards, that are non-compliant to EMV standards continue to be used in the USA leaving cardholders vulnerable to unsophisticated frauds
- Unlike in most other nations, in the US EMV has given the issuers an option to choose between issuing cards as Chip-and-PIN or as Chip-and-Sign.
- The transition from magnetic stripe to chip has been moving at a slow pace owing to merchants being unhappy about cost of upgradation of POS terminals.

Research Question

- Assess consumer awareness regarding technical security vulnerabilities in the current implementation of Payment Cards in the United States.
- Survey consumer's preference for a specific card technology over others before and after being briefed about vulnerabilities in each technology.



Magnetic Stripe Cards

- Takes less than 10 seconds to complete transaction
- Unencrypted data can be easily stolen from the card
- Requires no secret PIN
- If lost/stolen, card can be used to make fraudulent charges
- Card is compromised if merchant database is breached
- Liability on banks



Embedded Chip Cards

- Takes more than 10 seconds to complete transaction
 - Encrypted chip data is difficult to steal
 - Requires a secret PIN...or maybe a sign would do just fine?
- | Sign | PIN |
|---|--|
| • If lost/stolen, card can be used to make fraudulent charges | • If lost/stolen, card cannot be used to make fraudulent charges |
| • Card is compromised if merchant database is breached | • Card is not compromised if merchant database is breached |
| • Liability on merchants | • Liability on cardholder |

- Waiting in checkout line is enough waste of time already
- Steal my card data! That would hurt :(
- My PIN....was it 5241 or 5421? Or maybe it was 8793?!
- I don't lose my cards...they are safe here in my wallet....Wait! Where's my wallet!?
- Reputed merchants can't be breached... but Target, The Home Depot and even Wendy's!
- Hmm...Let go of Security or accept Liability – The struggle is real



Proposed Study Design

- Using survey questionnaires to assess participant's knowledge about payment card security features, preference for a specific card type before being briefed about vulnerabilities and after, their attitude towards change and levels of passive risk-taking behaviour.
- Simulate a payment environment and have participants test with different card types. Gather post-test feedback regarding ease-of-use, time taken for transaction and participant's order of preference for different card types.