TUTORIAL 6

Group 6:
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PART A

"Describe in detail the micro-payment network CEPAS. Do you think CEPAS can be classified as a form of "electronic money"? State the reasons for your answer."

HISTORY OF CEPAS

Prior to 2009, Singapore had a fragmented e-payments landscape driven by 2 major card issuers- (LTA) ez-link and (NETS)

LTA with its ez-link farecard monopolised the public transit market such as MRT and Bus

NETS with contact CashCard held exclusive rights to the ERP system and dominated retail payments

CEPAS (CONTACTLESS E-PURSE APPLICATION)

- With the help of IDA, CEPAS was introduced in 2009.
- CEPAS is a **network** that **standardises** the interoperability of multi-purpose stored value card payment schemes from different card issuers and system operators.
- Examples of CEPAS-compatible cards include NETS cards, NETS FlashPay cards and EZ-Link cards.

CEPAS FEATURES

Atomicity	Signed Certificate
No corrupted or partial updates to the card were allowed, to improved reliability of transactions across multiple interface	Signed certificate generated after each successful transaction. Ensure Integrity and authenticity of transaction record
AutoLoad	**Partial Refund**
Automatic add-value to purse balance	Useful for retail and bus fare transactions that required 'at start, deduct maximum, upon end, and refund unused amount'

Can CEPAS be classified as a form of "electronic money"?

E-Money = **Ownership of Token** + **Multi-purpose**

- Ownership of Token: Stored value card, not linked to centralised Bank Account
- Multi-purpose: Can be exchanged for paper money but more convenient electronically
- Multi-purpose: Used in Retails, Transits, ERP gantries

PART B

"What are some of the proposed benefits of CEPAS?

Why do you think there is a need to propose this new payment system given the wide range of options currently available (e.g. NETS, credit card, etc)?"

PROPOSED BENEFITS OF CEPAS

- Nationwide interoperable micro-payment platform, bridging multiple sectors
- Minimize market fragmentation

Consumers	Merchants	Card Issuers
Convenience	Reduce cost of operations Access to larger market	Access to micro-payment market space

"Win-win-win" for consumers, merchants, card issuers

PROPOSED BENEFITS OF CEPAS

- Encourage enterprises (especially SMEs) to adopt CEPAS → move to reduce paper based transactions
- Boost growth in micro-payment market
- Create greater potential for exportable payment services to the region

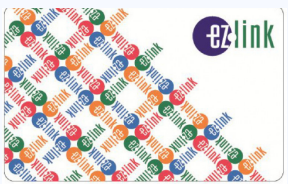
PART B

"What are some of the proposed benefits of CEPAS?

Why do you think there is a need to propose this new payment system given the wide range of options currently available (e.g. NETS, credit card, etc.)?"

RECALL

EZ-LINK: TRANSIT



NETS: MOTORING, RETAIL

ISSUE 1: LACK OF INTER-OPERABILITY

ISSUE

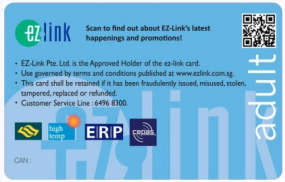
- Consumers must use separate cards for payment of different goods and services
- Merchants and public service providers hold multiple readers for different cards
  - NETS CashCard: Swipe or Insert at retail, only Insert for In-Vehicle Unit (IU)
  - EZLink: Tap at MRT/bus gantry

HOW CEPAS ADDRESSES THE ISSUE

- Allow interoperability of **multi-purpose** stored value card payment schemes
- 2008: CEPAS Compliant EZ-Link Cards
  - Increasing variety of merchants: can be used in retail spaces
- 2009: NETS Flashpay (CEPAS Compliant)
  - Contactless payment
  - Can be used in transit space
- 2009: (2nd generation) Dual mode IU
  - Accepts contactless payment: NETS FlashPay, CEPAS-Compliant cards (e.g. EZ-Link)

ISSUE 1: LACK OF INTER-OPERABILITY

CEPAS-COMPLIANT EZLINK CARD



NETS FLASHPAY

ISSUE 2: OPERATION COSTS

ISSUE

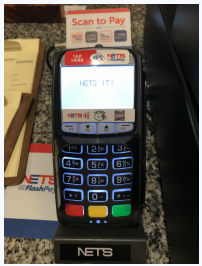
- High cost to install separate card readers and overall system
- Intangible costs
  - Service time
  - Risk of customer unsatisfaction

HOW CEPAS ADDRESSES THE ISSUE

- All CEPAS-Compliant Cards can use the same reader (refer to next slide) → reduce setup costs to accommodate differently designed readers
- Intangible costs
  - Service time
    - (University of Canberra) 9 cents savings: 38s for contact payment → 20s for contactless payment
    - Small businesses: alleviate concerns of lacking cash change
  - Customer satisfaction and retention

ISSUE 2: OPERATION COSTS

UNIFIED POS TERMINAL



PART C

"The successful deployment and adoption of micro-payment networks and especially electronic money within a nation or society is never an easy task.

What are some of the **factors that will determine the success of CEPAS**?"

FACTOR 1: TWO-SIDED MARKET EXTERNALITY PROBLEM

Users	Merchants	Card Issuer
Enjoy the convenience of having a single card for making transit, motoring and retail payments instead of having multiple cards for different purposes.	Deploy single reader for their transaction processing, as opposed to having multiple readers; Avoid the cost of duplication involved in catering to multiple systems	Access to a much larger nation-wide micro-payment space

FACTOR 1: TWO-SIDED MARKET EXTERNALITY PROBLEM

To encourage merchants to support CEPAS smart cards…

- ✓ In December 2009 , IDA offered S$16 million in a Call-for-Collaboration (CFC), to fund the cost of local merchants who switched their POS terminals to contactless CEPAS-compliant readers
- ✓ All merchants/businesses benefitted from a waiver of setup fees and monthly terminal rental fees for at least a year as well as a shorter two-working day settlement period
- ✓ Transaction fees were capped at 0.85% for two years compared to prevailing market rates of 1% to 1.8%.

FACTOR 2: MONETARY POLICY

Support from Government Agencies

A collaboration spearheaded by IDA working closely with the Land Transport Authority (LTA) and the industry.

Banks were encouraged to issue credit and debit cards enabled with CEPAS for use in transit and other applications.

LTA set up multiple easy access options for commuters such as having roving centres in schools, extending ticket office hours, and enabling card replacement at post offices, community centres and bus interchanges. The replacement was on a free one-for-one basis, with automatic value transfer from the old to the new card.

FACTOR 3: SECURITY ISSUES

Designed to meet the security requirements of an open e-Purse system

- **Atomicity** - Updates were completed either in total or not at all, to ensure information was always complete. No corrupted or partial updates to the card were allowed, to improve reliability of transactions across multiple interfaces.
- **Signed Certificate** - After each Debit, Credit and ReadPurse, the card would return a Signed Certificate, which was cryptographically signed (encrypted) using the Issuer Key (signing key). Issuer Key could be different from Credit or Debit keys. Successful verification of Signed Certificate at the Card Manager's host proved integrity and authenticity of transaction record.
- **AutoLoad** - Automatic add-value service with a handling fee for each transaction increased purse balance by a specified amount when the debit amount was insufficient, provided the card was linked to a bank account or credit card.
- **Partial Refund** – Limited to the most recent amount debited, this was useful for retail and bus fare transactions that required 'at start, deduct maximum, upon end, and refund unused amount'.
- **Cumulative Debit (or Slicing)** – To minimise transaction processing overheads, debit operations for one card were accumulated into a final amount for example payphones and photocopiers.

FACTOR 4: INFRASTRUCTURE AND SUPPLIERS

25 May 2016 0 0 0

Source: Wirecard

Wirecard Singapore Pte Ltd, a Wirecard Group company, and Network For Electronic Transfers (Singapore) Pte Ltd (NETS) today said they will collaborate to provide a single terminal payment solution for Singapore government agencies.

The move will enable users of the services of Singapore government agencies to use their CEPAS cards such as NETS FlashPay, EZ-Link and concession cards on one single device.

Cessation of CEPAS Transactions at ActiveSG Facilities

The Monetary Authority of Singapore (MAS) announced on 30 September 2020 that it had directed Wirecard entities in Singapore (Wirecard SG) to cease their payment services in Singapore and to return all customers' funds by 14 October 2020[1].

THANK YOU!