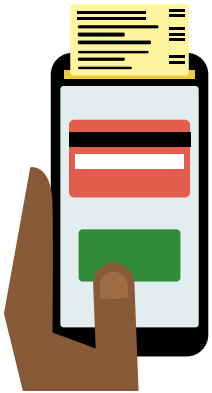

Tutorial 6
Question 1

Group 9
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(a)(i) Describe in detail the micro-payment network CEPAS.

CEPAS
Contactless e-Purse Application Specification

1. Implemented Across Singapore
2. 2 Primary Players
   - NETS FlashPay
   - EZ-link
2. Seeks to level playing field for micro-payments by allowing cross platform payments between NETS and EZ-link

NETS

- Motor (ERP, car park, retail space)
- NETS FlashPay Card new generation contactless multipurpose stored value card
- Retail micro payments
- Provided by banks

EZ-link

- Transportation
- First introduced fro MRT, LRT and public buses
- Recently, increasing use in retail sectors for leisure, dining or shopping
- Singapore's first contactless multipurpose stored value card (MPSV)
- Provided by LTA

2014 CEPAS specification for contactless e-purse application

- Result of a collaboration spearheaded by IMDA, working closely with LTA to develop a cashless nationwide e-payment platform
- 3 widely used MPSVC infrastructure: NETS FlashPay, ES-LINK card and Concession card
- CEPAS brought a "win-win-win" situation for consumers merchants and card issuers

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

Land Transport Authority
We Keep Your World Moving

(a)(ii) Do you think CEPAS can be classified as a form of "electronic money"? State the reasons for your answer.

CEPAS as E-Money

1. **Ownership of token = Ownership of Money**
   Having the card will allow you to use the money in the card
2. **General Multipurpose**
   Able to use in transport, retail and motoring
3. **Stored electronically**
   Money is stored as a debit on a card
4. **Dominated in any currency or pegged by its issuer to any currency**
   The CEPAS is pegged against SGD 1-1

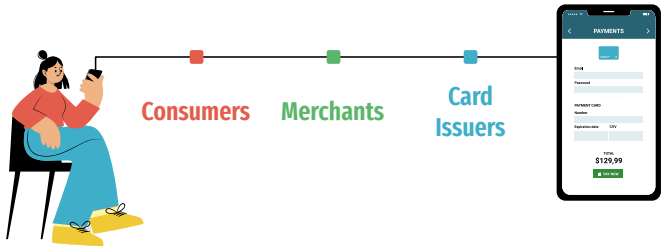
CEPAS as E-Money

5. **Accepted by another person other than issuer**
   Cards accepted in retail store, transports etc
6. **Has been paid in advance to be use as a payment**
   Top up the cards at kiosk / atm to be used
7. **Represent a claim on its issuer**
   Issuer has the obligation to ensure the card is reliable

(b)(i) What are some of the proposed benefits of CEPAS?

Proposed Benefits of CEPAS

" Win - Win - Win " Outcome



Proposed Benefits of CEPAS

Consumers

1 Convenience of having a single card

- Can make transit, motoring & retail payments with a single card instead of having multiple cards for different purposes
- Able to use one card seamlessly & safely in various payment scenarios
- Can be used for other payments e.g. ERP payment, EPS, payments at shops…
- ⇒ interoperability of card payment schemes

2 More choices of service providers

Proposed Benefits of CEPAS

Consumers

3 Gives full access of the card's stored value

- Ez-link card has a $3 travel deposit which is not shown as the card balance
  - The deposit can only be used for travel on train & bus
- CEPAS-compliant card does not have a travel deposit & shows the real balance
- Users have access to the full value of the card for non-transit payments

4 Higher security

- Specifications contain security features
  - E.g. encryption keys for credit, debit and issuer that determine what operations are allowed

Proposed Benefits of CEPAS

Merchants & Card Issuers

1 **Cost & time efficiency**

- Can deploy a single reader for transaction processing instead of using multiple readers
- Lower maintenance cost, easier transactions

1 **Ensure a level playing field**

- Allows more card issuers (e.g. banks and financial institutions) to participate in micro-payment space
- Gives access to a much larger nation-wide level playing field

Proposed Benefits of CEPAS

Fulfilling Government's Objective

Reduce # of paper-based transactions

Double the annual value of transactions of card-based payments, e-money schemes & mobile payments from S$24.6 billion to S$50 billion by 2010

↓

Market growth & Greater potential for exportable payment services

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

Why there is a need to propose CEPAS ?

Enable multi payments

with unique security and high-performance features

- Enable multiple payment applications offered by different issuers to be on a single smart card
- The move away from a transit-centric system to CEPAS-based multipurpose smart cards offered consumers the ability to use a single card for a wide range of transactions
  - from bus, rail and taxi payments, to ERP and parking fees, as well as for retail purchases.
- gave consumers more control and access to a wider range of top-up infrastructure island-wide including bank ATMs

Why there is a need to propose CEPAS ?

Increase usage of contactless payment

Safe, reliable and convenient

- government-driven mass market deployment of CEPAS in transit played a significant role as it demonstrated that contactless payments could be a **safe, reliable and convenient** experience for commuters
- helped consumers and businesses overcome their initial resistance to new technologies and gradually make the transition from cash towards contactless e-payment solutions
- in tandem with the global landscape which saw increasing levels of adoption from 2010

Why there is a need to propose CEPAS ?

Before CEPAS

- payment methods are not interconnected
- For example, you may have different cards with different usage
- This did not align well with consumers, making some consumers prefer to carry cash instead.

After CEPAS

- With the introduction of the CEPAS card, it became a multi purpose smart cards that can be used for multiple transactions
- such as bus, taxi, ERP, parking fees as well as retail payments.

Why there is a need to propose CEPAS ?

Minimization of revenue leakage

Reduce missing transactions

- The novel feature of being able to upload previous transactions enabled LTA to greatly reduce missing transactions
  - occurred when buses that collected the transaction information and downloaded them at the end of the day at the depot did not do so
- As a result, about three to four million transactions were not recorded each year.
- With this new feature, enabled by CEPAS, missing transactions reduced significantly from over S$2 million to less than S$100,000 a year.
  - This was primarily due to capturing the previous and current transactions on the card and uploading them at every touchpoint.

(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?

The common factor among underlying components that led to the success of CEPAS was its level of adoption

1. Minimizing Seigniorage

- Via LTA support and integration with NETS to start with widespread use in public transport infrastructure

2. Ensuring Security and Interoperability

- Interoperability and security is achieved by multiple sets of keys residing in the terminal readers and in the card. Smart card readers contain debit keys of all the participating issuers, but not their credit keys. Credit keys are limited to selected terminal readers.

3. Backend systems for processing e-payments and clearing settlement

Critical to that adoption were the resources allocated by the government to incentivize commercial use

4. Incentivizing participants (two-sided network issue)

a) **Incentivizing commuters** to exchange their current EZ-link / nets cards. 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.

b) **Incentivising Vendors** All merchants/businesses benefited from a waiver of setup fees and monthly terminal rental fees for at least a year

Thank you !