
The Electronic Funds Transfer System of Selected Banks

in Metro Manila: An Analysis of Benefits and Problems

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Introduction

The innovations in the world of computer, software, hardware, and microelectronic have resulted in a number of improvements in banking system and financial services.

As the philippine banking industry rides with the surge of computer advancement, more and more banks are promoting better service innovations to their clients through the use of Electronic Funds Transfer or EFT.

One of the major steps undertaken by private and government financial institutions to improve and modernize their services is the introduction of electronic and computerized equipments in their operations.

Automated Teller Machine or (ATM) and point - of - Sale Terminals or (POS) are two of the most visible manifestations of EFT in the philippines. ATM and POS which are directly connected to financial computers are owned by financial institutions.

Autmoated Teller Machines (ATM) are

high technology computer hardware that have changed the life style of people in the urban areas. Automated Teller Machines (ATM) have made convenience banking possible by allowing clients to withdraw, deposit, transfer funds. Or inquire about their balances anytime and anywhere (Paglomaton, 1991).

On the other hand, point - of - Sale Terminal or (POS) is cashless payment scheme that allows a card holder to buy on cash basis without having to carry cash (Factsheets on Electronic Fund Transfer [EFTs, 1991]). The amount of purchase is automatically transferrd from the account of the cardholder to that of the store at point - of - Sale (POS) which are located at the check - out counter of stores, hotels, restaurants, hospitals and other business establishments.

Electronic Money and The checkless Society

In the long span of time, since exchange was based on barter, there have been three

innovations in payments media; commodity money and eventually metal coins, fiduciary paper money and token coins, and checking accounts. The next logical move in the evolution of payments media appears to be the implementation of an electronic monetary transfer system which involves a substantial reduction and perhaps eventual elimination of the use of checks and credit cards and would also reduce the need for currency. Thomas (1982) described this development as follows:

Technological advances in the areas of electronic data processing, information retrieval, and communication systems have made it technically feasible to implement an electronic monetary transfer system in which bank deposit balances can be transferred instantaneously to any area of the nation by electronic impulses. In a fully implemented system, a nationwide computer network would monitor the credits and debits of individuals, firms, and governmental units as transactions occur in the economy, individuals would be issued plastic, electronically coded identification cards. Retail establishments would be equipped with on line terminals capable of reading the ID cards, receiving information regarding transactions, and transmitting information to the system's computer center.

There remain, though, some problems to be worked out before a full - scale EFTs becomes a reality. Large transition costs would be involved in the move to the system. Some kind of back - up system must be provided for in

the event of computer failure or a systems breakdown, there is the possibility of invasion of privacy since a mass of data on individuals is stored and is easily accessible. According to Sanders (1985), although the EFTs being implemented by banks and other financial institutions are not intended for surveillance, they could be easily adopted to this purpose in the future. The use of cash in transaction reveals little or no information about the parties to the transaction. But if all transactions were normally to be processed through EFTs computers, a daily record could be easily prepared. EFTs proponents, however, maintain that adequate laws can be passed to prevent surveillance abuse.

Moreover, there is always the problem of initial public resistance. Some thousands of banks, millions of retail establishments and millions households will need to change their habits. However, since the EFTs entails economic benefits for banks, firms, and the general public, resistance to the scheme is likely to be forthcoming only from a rather small minority. This is borne out by the fact that since the first ATM was set up in 1982 in the country, banking has not been quite the same. Three ATM networks (Bancnet, Megalink and Expressnet) have since then emerged, making convenience banking available to more than a million cardholders (paglomatou, 1991).

Theoretical Framework

This study is anchored on the postulate of

Thomas (1982) that the great potential social benefit of the EFTs lies in the tremendous efficiency of such a system which gives obvious advantages to the banks and the public.

Banks benefit from the system in that the huge and rapidly expanding costs associated with the current paper oriented system would be greatly reduced. On one hand, an obvious advantage for the system's users is that checking account balances are made known to the payee (via electronic feedback) prior to a transaction. This eliminates bad check risks. This fact, coupled with the substantial reduction in currency required by individuals and retails establishments would impede criminal activities.

The chart shows the benefits derived from the system as perceived by the bank personnel and cardholders. In the operation of the system, certain problems are incurred by both the bank personnel and system's users. Considering the benefits and problems, future plans are formulated by the bank in connection with the system's operations. Like - wise, cardholders suggest measures to improve operation and enhance the efficiency of the system.

The following views on the operations of EFT system are included to reinforce the theoretical base of the study. The benefits derived by the banks from the system are reckoned in terms of speed of transactions, increase of clients, increase of bank's income and system's usability; whereas, system's users derive benefits in terms of speed of

transaction and system's usability (Factsheets on EFT System 1991).

The benefits from the system in terms of the aforesaid factors are made possible through the following:

1- Speed of transactions - Computerized facilities communication connections, number or stations, and instantaneous transfer of bank deposit or balances to member banks in the network.

2- Increase of clients - more public service, more convenience banking, and prevention of criminal activities from reduced cash carried by individuals.

3- Increase of bank's income - 24 hours banking service, increase of clients, increase of transactions and reduced costs of bank transactions.

4- System's usability - 24 hours transactions, time and energy saving, cash availability, minimized cash handling, location and security, and system's efficiency.

Physical security of the computer facility is also an important factor in the operations of the EFT system. Enger and Howerton (1980) mentioned that physical security considerations include such elements as the physical location of the computer facility; physical access control, fire, power, flood and water protection; the handling of magnetic media; and storage and disposal procedures. They deal with data processing property and capital equipment and the physical threats to the continuing operation of the computer facility.

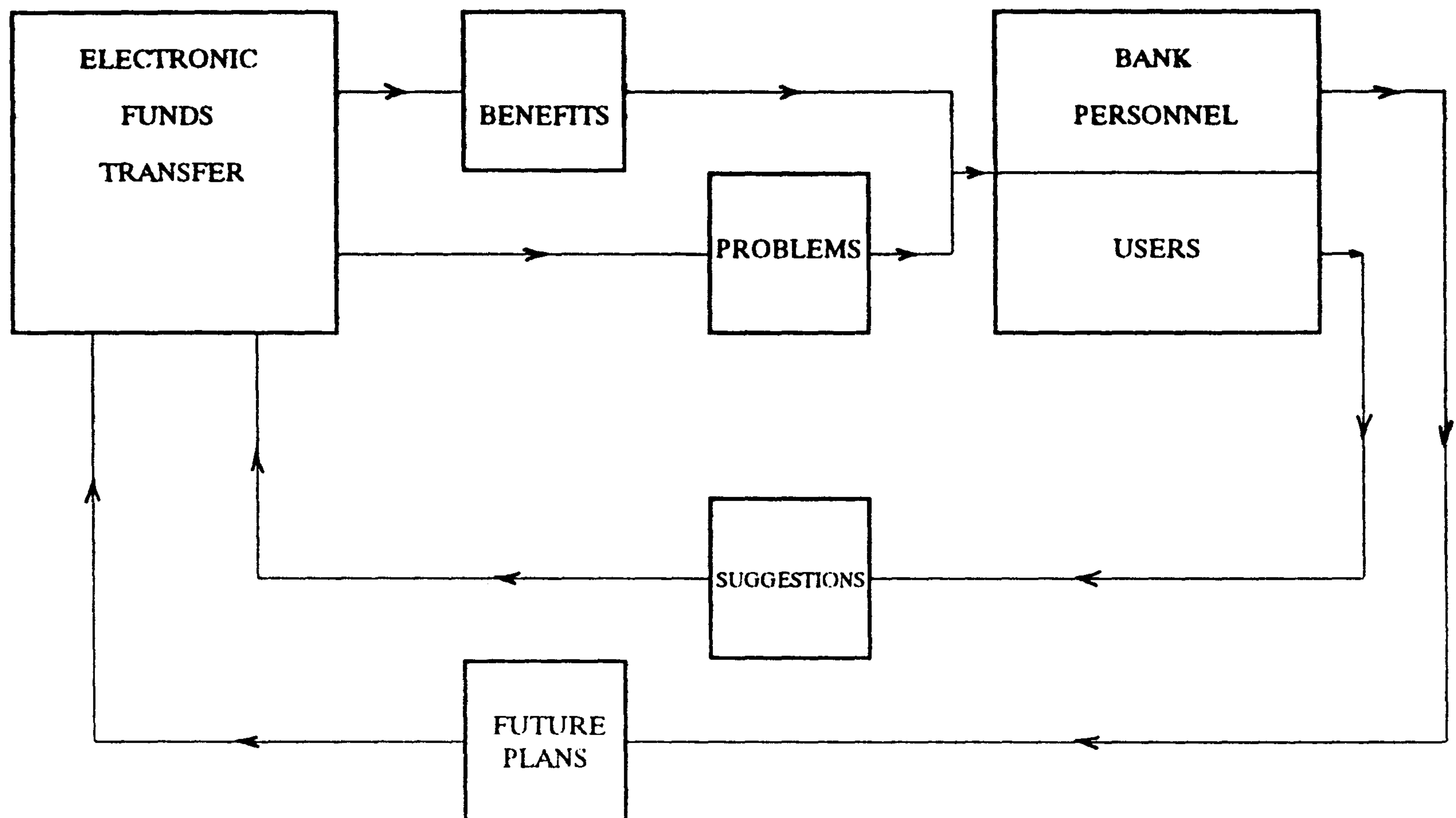


Figure 1- Theoretical framework of the study

Problems that are posed in the operations of the system are normally associated with the following factors (EFT Factsheets, 1991).

- 1- customers' complaints,
- 2- communication link,
- 3- maintenance and availability of spare parts,
- 4- location and installation of station,
- 5- personnel training, and
- 6- costs of operation.

Hence, Enger and Howerton (1980) viewed that the computer facility should be run as a closed shop with admittance through a single entrance, with other doors being used only as emergency exits. The computer site should be isolated by means of wall and barriers. There should be one controlled entry point to the facility, and after working hours, the site should be looked and guarded by intruder alarms. These alarms should also be installed in nonsecure ducts and vents to detect

intruders. Doors which use electronic keys should be operable during a power failure.

Statement of the problem

This study attempted to determine the role and importance of Automated Teller Machine (ATM) and point - of - Sale Terminals (POS) in bank operations and to assess the system's benefits and problems to banks and users. The following problems were answered:

1- What is the profile of the banks selected in the study with respect to:

- 1-1- Number of years in operation
 - a. since first established, and
 - b. since EFT system was used;

1-2- EFT systems

- a. Number of Automated Teller Machines (ATM) in use,
- b. Number of points - of - Sale

Terminals in use?

2- As perceived by the bank personnel, to what extent are benefits derived by the bank from the use of EFT system in terms of:

- 2-1- speed of transactions,
- 2-2- increase of clients,
- 2-3 increase of income, and
- 2-4- system's usability?

2-1- Are there significant differences between perceptions of bank personnel on the effects of benefits derived from the EFT system when grouped according to network in terms of:

- 2-1-1- Speed in transactions,
- 2-1-2- Increase of clients,
- 2-1-3- Increase of income, and
- 2-1-4- System's usability?

3- As perceived by EFT users, to what extent are benefits derived by them from the use of ATM and point - of - Sale Terminal in terms of:

- 3-1- Speed of transaction, and
- 3-2- System's usability?

3-1- Are there significant differences between perceptions of bank personnel and EFT users on benefits derived from ATM and Point - of - Sale Terminal in terms of:

- 3-1-1- Speed of transactions, and
- 3-1-2- System's usability?

4- As practiced by bank personnel, to what extent are the following problem incurred by ATM for the bank?

- 4-1- For the bank as perceived by bank personnel.
 - a. Customer's complaints,
 - b. Communication link,

- c. Maintenance and availability of spare parts.
- d. Location and installation of stations,
- e. Personnel training, and
- f. Costs of operations?

4-2- For EFT users as perceived by cardholders

- a. Knowledge and understanding of the system's procedures,
- b. Use of the equipment,
- c. Technical malfunctions of the equipments.
- d. System's instruction to users, and
- e. Location and security?

5- What are the future plans of the selected banks on the operations of the EFT system? What do EFT users suggest to improve the operations of the systems?

Hypotheses

In the light of the problems of the study, the following null hypotheses (H₀) were formulated.

1- There are no significant differences among perceptions of bank personnel on benefits derived from the EFT system when they are grouped according to network in terms of:

- 1-1- Speed of transactions,
- 1-2- Increase of clients,
- 1-3- Increase of income, and
- 1-4- System's usability.

2- There is no significant differences between perceptions of bank personnel and

EFT users on benefits derived from the system in terms of speed of transactions and system's usability.

Scope and Delimitation

This study was focused on the benefits and problems from the use of Automated Teller Machines (ATM) and point - of - Sale Terminal (POS), two of the most visible types of directly connected computerized EFT system in selected banks in Metro Manila. Benefits, on one hand, refer to speed of transactions, increase of clients, increase of income and system's usability.

Perceptions on system's operation which included the types of EFT, the services and procedures in operating the system's facility were also touched by the study.

The problems incurred in operating the system were: as regards the bank, these included customer's complaints, communication link, maintenance and availability of spare parts, location and installation of stations, personnel training and costs of operations. For the users, the problems were normally associated with knowledge and understanding of the system's procedures, use of the equipment, technical malfunctions of the equipment, system's instructions to users, and location and security.

The feature plans of the banks on the operations of EFT system as perceived by the personnel as well as the suggestions of cardholders to improve the system's operations were also covered by the study.

This study was limited to the perceptions of selected bank employees occupying managerial and supervisory position in administrative, operational and technical categories from 18 selected banks in Metro Manila and the 108 cardholders, randomly selected from banks.

Importance of the Study

This study is important to the reader who would gain realistic knowledge about directly connected computerized and automated funds transfer system (Automated Teller Machine and point - of - Sale Terminals).

However, the findings of the study would be important particularly to the following: the banks management, the EFT users and financial institutions.

The findings of this study would be very helpful to the bank's management who would be able to know how the employees of the bank view is's modernization of banking services, thus be able to formulate more meaningful and realistic programs of rendering better services to the public. On the other hand, the cardholders or EFT users, would have a better understanding of the operations of EFT and would get more knowledge of the systems usefulness and benefits.

The results of this study can be utilized as basis for other financial institutions in making decisions of installing EFT and modernizing their banking and management system.

Functions of ATM

The personal Identification Number (PIN) is a secret (one to nine) digits (Alphanumeric) password chosen personally by the depositor as the rightful ATM cardholder. So even if the ATM card is properly inserted into the machine, the transaction will not be processed or accepted, unless the depositor enters the correct PIN. The ATM is composed of the following parts:

- 1- Magnetic Card Reader / Writer (MCRW)
- 2- Display / Viewing Screen
- 3- Cash Issue Slot
- 4- Depository Slot
- 5- Transaction Receipt Issue Slot
- 6- Customer keyboard
- 7- Journal Tape Slot

Detailed descriptions and functions of the above parts are as follows:

a- Magnetic Card Reader / Writer Slot (MCRW) - used to insert the magnetically-coded ATM card to start a transaction.

b- Display/Viewing Screen provides a six line message that guides the customer step-by-step through the transaction.

c- Cash Issue Slot - used to issue money to customers who complete withdrawal transactions.

d- Depository Slot - used to insert an envelope containing a deposit.

e- Journal Tape Slot - used to keep track of the beginning and ending balance of the cassettes. This is for bank use only.

f- Transaction Receipt Issue Slot - used for

the automatic issuance of transaction receipt to the customer after every deposit, inquiries fund transfers, payment and withdrawal transactions and other unsuccessful transactions.

g- Customer keyboard - generally, the keyboard is used to enter identification and transaction information. An audible tone indicates that an entry in the keyboard has been sensed by the terminal.

There are four (4) main types or groups of keys, namely:

- 1- Account keys
- 2- Transaction keys
- 3- Numeric keys
- 4- Action keys

The following briefly describes the functions of each of the above keys:

1- Account keys: used to enter types of accounts.

After the customer has inserted his ATM card, selected the language desired, and entered his correct personal identification Number (PIN) the BET terminal displays the type of accounts to be pressed.

Note: These Account keys will not be used any more for a SPECIAL FAST CASH Transaction.

The following Account keys are available for selection:

- 1-1- Savings
- 1-2- Checking
- 1-3- Credit Card
- 1-4- Other account

2- Transaction keys - used to enter types of

transaction. After the customer has selected the type of account, the BET terminal displays the following keys:

- 2-1- Withdraw cash
- 2-2- Special Fast Cash
- 2-3- Account balance
- 2-4- Transfer
- 2-5- Deposit
- 2-6- Payment from account
- 2-7- Cash check

3- Numeric keys - used to enter the personal Identification Number (PIN), or the selection code or the amount of transactions.

The numeric keys (white keys) are identified as

0 through 9,	Decimal point and	Correction.
1	2	3
4	5	6
7	8	9
Correction	0	Decimal Point

The Decimal point key is used to place the decimal point when entering a transaction amount. For example, to enter 500.00, the 5 should be depressed first; then 0, twice. Then the Decimal point key; then 0, twice.

The Correction key is used if a mistake is made. After pressing the Correction key, the correct amount is re-entered.

4- Action keys - used to perform specific transaction and functions.

a- Cancel key - used to cancel a transaction at anytime before cash is dispensed, before a fund transfer is made and before the depository has accepted a deposit.

b- Change key - used to select an option

or to see the next page of a multi-screen message.

c- Ok key - used to indicate a verification that the entries keyed in and displayed are complete and accurate.

Note: It is also used to perform transactions chaining (i.e., to do another transaction, after finishing one, without removing and re-inserting the EFT card.

The Automatic Teller Machine Networks: Its Structure and Development in the Philippines.

Although Automatic Teller Machines (ATMs) started as proprietary systems (since they were initially installed by banks exclusively for the use of their clients), the economies of sharing has led some banks, to turn toward the development of shared ATM networks (Staff Memos CRC 1991).

The first ATM was set up in 1982 by the Philippine National Bank, the ATM networks: Bancnet, Megalink, and Express Net, have since then emerged, making convenience banking available to more than a million cardholders so far. The member banks in the three existing ATM networks are as follows:

A. Megalink

- 1- Asian Bank
- 2- Boston Bank
- 3- Equitable Bank
- 4- Far East Bank
- 5- Philippine National Bank
- 6- Pilipinas Bank
- 7- Prudential Bank
- 8- Traders Royal Bank

- 9- Union Bank
- 10- United Coconut Planters Bank
- 11- Urban Bank
- 12- Asian Trust Bank

B. Bancnet

- 1- Allied Bank
- 2- China Bank
- 3- Citibank
- 4- City Trust Bank
- 5- Interbank
- 6- Metro Bank
- 7- Phil Commercial Industrial (PCI) Bank
- 8- Rizal Commerical Banking Corp.
- 9- Security Bank

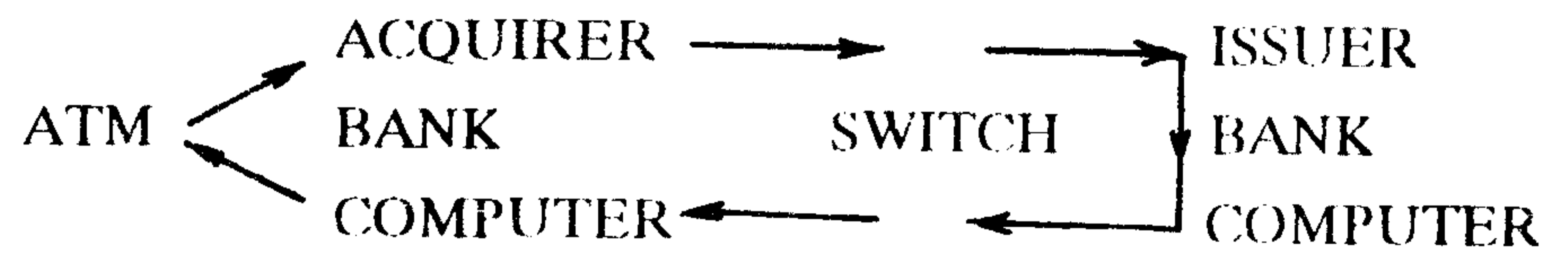
C. Experssnet

- 1- Bank of the Philippine Islands
- 2- BPI - Family Savings Bank

The shared ATM network is a truly beneficial application of information technology as represented by the integration of computers and communications, that translate into services that customers can avail of through a very simple transaction process.

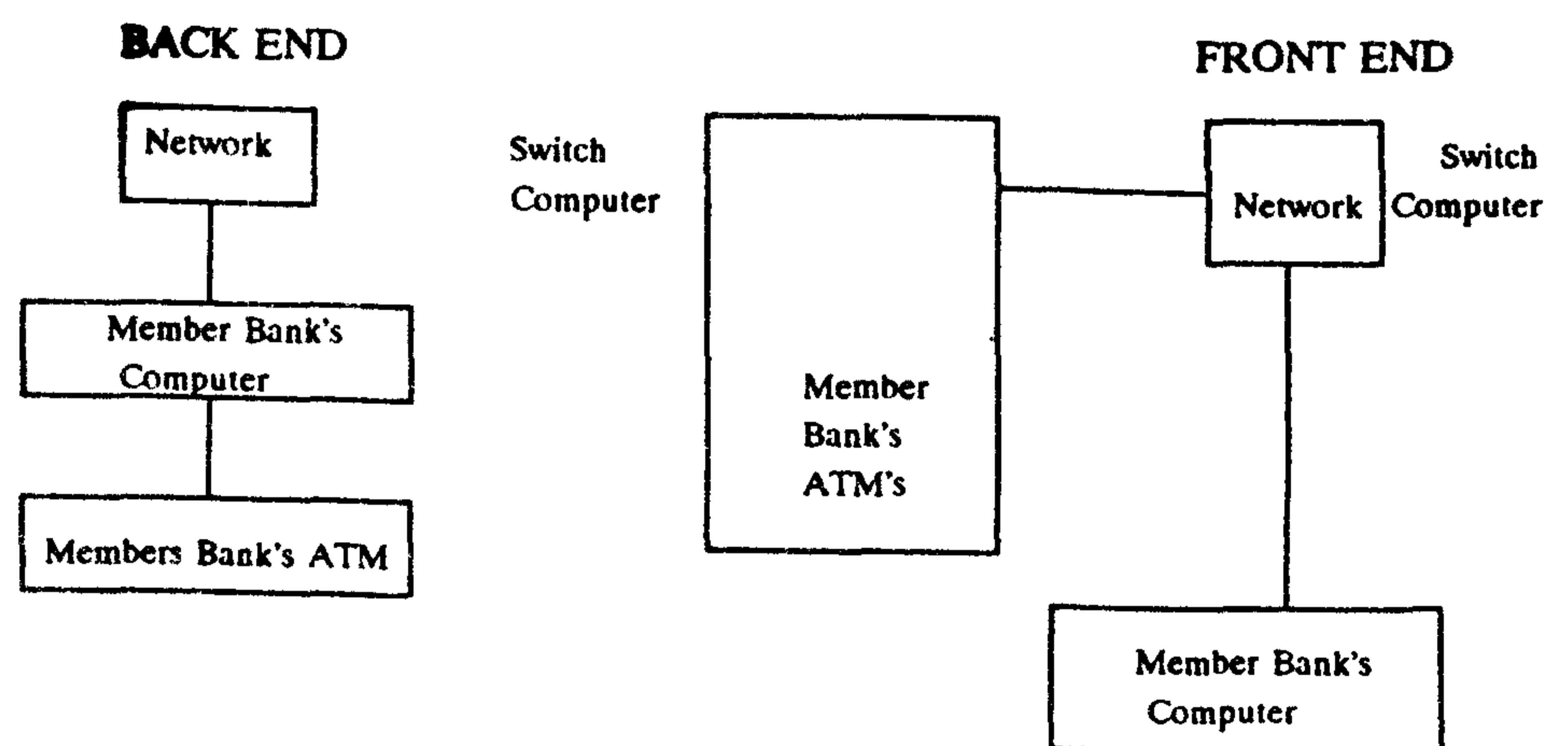
In an ATM network environment, cardholders of an institution are allowed to transact at the Automated Teller Machine (ATMs) of another. The customer of the Issuer (a depositor's home bank) transacts through the ATM of an acquirer (Another member bank). The acquirer sends a transaction to the Switch, which then routes this request for authorization to the Issuer. The Issuer sends back a response to the Switch, which in turn sends the response to the Acquirer. The Acquirer acts on the response

and completes the transaction with the customer at the ATM. This is graphically presented by the diagram below:



The Switch links the ATM network of the participating banks and basically functions as a route that direct message coming from the Acquirer to the issuer computer and vice-versa. To standardize the communication patterns, the open systems interconnection standard for Financial Applications set by the International Standard Organization is implemented. Adherence to international standards ensures Megalik's seamless adaptability and connectivity to other networks and switches both locally and internationally.

Connecting to the Switch is based on either of two concepts: front-end and back-end. When the ATMs are connected to the bank's host computers and those host computers are connected to the Switch, this is back-end connection. When the ATMs are directly connected to the Switch, this is called front-end connection. The process is shown by the diagram:



The Evolution of ATMs. The evolution of ATM networks progresses through five phases (CRC Reports, 1991):

- 1- Proprietary
- 2- shared
- 3- multiple memberships
- 4- direct links
- 5- universal sharing

The shift from one phase into the next is motivated by changing marketing strategies and network costs as financial institutions increasingly cooperate in the ATM network.

At the start, the bank may be satisfied with just operating its own proprietary ATM network. But as more banks put up their own networks, the marketing advantage of a proprietary system diminishes, promoting banks to get into the second phase: They start sharing their ATMs. Under the shared ATM network system the participating banks enjoy at least two advantages. They are able to:

- 1- increase customer convenience by offering them access to more machines, and
- 2- reduce units costs due to economies of scale.

Overtime, networks tend to expand by allowing membership in two or more unconnected networks.

Later, the continued multiple sharing among banks leads to a consolidation of ATM networks through direct links between or among networks.

As consolidation continues, the sharing of ATM machines will be universal, with all the ATMs of banking institutions connected by a

zone central switching system.

This final phase of universal sharing will inevitably be adopted by the banks as they realize that the economies of scale (Cost savings) and customers' conveniences are greatest under such an arrangement. Philippine Banking institutions have three shared ATM networks with a total of 705 installed ATMs as of June 30, 1991. Although these networks are Relatively new, they have been experiencing tremendous growth in the number of ATMs, the volume of transactions, and the number of access cards and member institutions. The most notable ones are the Megaling and Bancnet shared network. Megaling started in March 1990 with four members. After over a year, it increased its membership of 12 and its number of cardholders to 470,000. On the other hand, Bancnet started in July 1990 also with four members. As of June 30, 1991 it had nine members and 400,000 card holders.

A. Operations of POS

1- Cashier total purchases in the cash register then asks for the customer's Express Teller Card.

2- Cashier presses the "Sale" button, Swipes customer's Express Teller card in the EPS terminal and keys - in - total amount of purchases.

3- Cashier hands pin card to customer. Customer verifies amount keyed - in by cashier, selected account to be debited by pressing the saving or checking account

button. Then, he enters his PIN to authorize the funds transfer.

4- Computer responds with "Approved" or other appropriate messages.

5- For approved transactions, Cashier gives back the Card to the customer together with the transaction receipt. For rejected transactions, Cashier performs corresponding procedures depending on computer response.

B. Product Benefits from POS

1- Product benefits to Cardholders are as follows:

a. Convenience - No large bundles of cash to carry or checks to sign.

b. No need to go to the bank or ATM to withdraw shopping money.

c. Savings - No surcharge on supermarket and gas station purchases that are usually levied on credit card purchases.

d. Cardholders can avail of sale items at Sale prices with no add-on fees.

e. No minimum purchase requirement. Buy only what you need.

f. Security - No one else can use your card as long as you keep your PIN confidential.

A study by Braicheau and Colleagues (1989) information Resource Center (I.C.) of USA stated that:

Although some new services became available in the banking system in 1990's EFT, will continue to be the major instruments for several reasons:

a) availability

b) convenience

c) people are learning to use it

d) effectively increase banking transactions

The study of Felgran and Ferguson (1989) reported by CRC (1990) revealed the leading countries in ATM development. Of these countries, the US leads with 59,300 ATMs as of 1988 or 255 ATMs per million people. The number of shared networks totalled to 560. Japan is second with 38,366 ATMs but with 323 ATMs per million people representing 84.0 percent of the population with cards. On third is France with 7,172 ATMs and South Africa has the least number of 1,579 ATMs.

Reported studies on communication technology shows that this area is today's cornerstone of corporate success. Any business must communicate its information and decisions quickly and efficiently for it to be of use. Office automation or (OA) is the integration of computer and communication technology with human patterns of office work.

There are several arguments in favor of office automation that involves different aspects of productivity. In response to those arguments, several office automation technologies are now available.

A study by Motazed (1984) found out that majority of customers preferred to transact through human tellers rather than lobby ATMs. They resisted ATMs because of the absence of social pleasure of face - to - face contacts.

Methodology

The researcher used the descriptive method. Descriptive research describes "what exists" or "what is" about a certain phenomenon. This method seeks to find out the events happening in the environment, conditions or relationships; practices or attributes that exist; practices or attributes that are held; process that are going on; effects that are being felt or trends that are developing (Sevilla et. al., 1988). Thus, the method is appropriate for this study which, essentially, aimed to find out what exists and what are the effects of the EFTs. In the context of this study, documentary data and observations of respondents were considered descriptive facts.

Summary of Findings and Conclusions

1- The profile of the bank selected in the study showed the following features:

- a. Most of the banks were established a long time ago;
- b. Most of the banks were under the Magalink group of the ATM network,

2- The perceptions of bank personnel on the benefits derived from EFT system indicated that:

- a. ATM was more beneficial than point-of-Sale because of ATMs variable performance. It was more usable than POS.
- b. ATM has significant contributions to speed of transactions of the banks primarily due to computerized facilities, while in the case of point-of-Sale greater volume of business would be accrued to the banks with a

increased number of terminals.

c. Both ATM and Point-of-Sale have contributed to the increase of clients of banks through convenience banking, more public service and less incidence of crimes from carriage of cash, specifically, in the case of the latter.

d. Increase in income of the banks from ATM was largely based on round-the-clock operations, while for point-of-Sale (POS) cashless system contributed to increase in income of the banks.

e. In terms of system usability, the benefits from ATM were greatly derived from 24-hours transaction and cash availability, whereas, the benefits from point-of-Sale were principally derived from convenience through cashless purchases.

3- A comparison of perceptions of bank personnel on the benefits derived from ATM indicated the following:

a. In terms of speed of transactions and increase of income, perceptions of bank personnel were significantly different when grouped according to networks. This was attributable to the varying perceptions on benefits from the factors attached to this variable.

In terms of increase of clients, perceptions of bank personnel were not significantly different when grouped according to network.

c. In terms of systems usability, perceptions of bank personnel were significantly different since perceived benefits in most factors of usability differed among the networks.

4- The perceptions of EFT users on the benefits derived from the system indicated that:

a. ATM was popularly used by the banks clients than point - of - Sale and it was considered a convenient way of transacting business with banks.

b. In terms of speed of transactions of ATM, computerization of bank services and the shared networks contributed huge benefits by way of banking convenience, on the other hand, the integration of computers and communication along with the number of terminals were highly important in POS operations.

c. In terms of system's usability of ATM, round - the - clock operations and the system's ability to allow deposit- withdraw transaction at any particular time were important factors. On the other hand, benefits to cardholders, of point - of- Sale principally in the convenience of cashless purchases.

5- Comparison between perceptions of bank personnel and EFT users on the benefits derived from the system indicated the followings:

a. In terms of speed of transactions of ATM there were no significant differences between perceptions as regards, computerized facilities, communication connection and instantaneous transfer of bank deposit or balance to member banks in the network, on the other hand, significant differences existed as regard number of stations since users perceived the benefits relatively more than the bank

personnel.

b. In terms of systems usability of ATM there were no significant differences between perceptions as regards, time and energy saving, minimized cash handling and cash availability; on the other hand significant differences existed as regard, 24 hours transaction, location and security and system's efficiency since benefits in some factor were perceived outstanding by bank personnel and very satisfactory by cardholders.

c. Comparison between perceptions of bank personnel and EFT users on the benefits derived from point- of - Sale showed that there were no significant differences between perception in terms of speed of transaction and system's usability.

6- The problems posed by the EFT system as perceived by bank personnel and cardholders indicated that no serious problems could be attributed to the operations of both ATM and point - of- Sale.

7- The future plans of the banks regarding EFT system were focused at increase of number of ATM and point - of - Sale and use of quality communication link in the system and improving the system usability through expansion of networks. On the other hand, the suggestions of cardholders were to improve the technical problems and introduce more convenient system.

Recommendations

For the Banks

1- Adopt programs through the ATM that

would foster not only convenience banking but also savings consciousness of the public, especially the youth.

2- Install back - up power system for better services during frequent brown - outs.

3- Implement the suggestions of some banks personnel as regards:

- a. Installing drive - in ATM stations;
- b. Increasing the number of ATMs in different locations; and
- c. Increasing the number of point - of - Sale terminals
- d. Use of quality communication connection such as satellited, in order to handle more simultaneous transaction through out network system, and to lessen off line problems.

For the Cardholders

Utilize the ATM and POS as innovations not only for convenience in transaction business with banks and establishments, but also for developing thrift habits and saving consciousness.

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