

INNOVATION IN THE BANKING SECTOR - A STUDY
OF NEW TECHNOLOGY INTRODUCED INTO THE
COMMERCIAL BANKING SYSTEM IN GUYANA
AND THE CARIBBEAN
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INTRODUCTION

Statement of Problem:

The balance of payments/foreign exchange/foreign debt/exchange rate issues are dominating policy attention at this particular juncture in the developing countries, resulting in much scrutinising of financial institutions. In this regard, the role of the commercial banks as 'organisers' of the credit, money and payments system and as providers of an essential service is significant, for, even the International Monetary Fund (IMF) has been encouraging greater commitments from banks to countries with fund-supported programmes than probably ever before. In fact, the banks are recognised as an indispensable element in the financial intermediation process.

However, in this expanded role of these institutions, the issue of technological innovation/development is especially relevant since it has been observed that they are becoming increasingly computerized in this advanced age of micro-electronics. A revolution seems to be taking place, with technology playing an ever-increasing role in shaping the system for delivering banks' services. The innovation in technology is applied with a sensitivity to all concerned - employees using the equipment, customers enjoying the results and shareholders receiving improved earnings. In the light of this automation in banking, it is felt that a whole new world of convenience has been opened up for customers and that the banks themselves have become more efficient.

What is not too often appreciated, though, is that such innovation has serious consequences for developing countries such as Guyana and those in the Caribbean. Unfortunately, however, hardly any research has been done in this area. It is self-evident that technology is inseparable

from the processes of economic growth and development, and of capital accumulation. It is important, therefore, to investigate the impact of new technology (in this case, in the banking system) on the national and/or regional economy and on its goals. To what extent are those technologies relevant to the objectives set for technology nationally and regionally? Do they have linkages with locally - generated technologies or do they contribute to the processes of technological dependence, technological underdevelopment and technological dysfunctionality which are characteristic features of the technological condition of the region? Are they purely a function of expanding market size or are they the result of the expansion of the operations of the multinational corporations (MNC's)? Is there any special "policy" for technology transfer in this sector? What are the likely effects of the innovation on employment, income and productivity, and how do the customers benefit?

These are some of the questions and issues which need to be examined and explored in relation to the banking system. However, one may be tempted to ask what is the rationale for such a study.

Rationale for Study:

In view of what has been described above, there is obvious scope for a research of this nature. A brief review of the literature indicates that no previous work seems to have been done in this area. Thus, many of the issues raised above have not been treated or developed in the literature connected with the banking system in the Caribbean. The focus and emphasis seem to have been in the general area of the banks' role of financial intermediation, an important function of the banks.

Moreover, it should be pointed out that, from preliminary work done, there seems to be no special 'policy' for technology transfer in this sector, except for things implicit in the licensing of imports, etc., despite the fair amount of public comment/debate which has recently been taking place in this area.

It is against this background that the research is undertaken.

In light of the above, therefore, it is likely that this research will

contribute to new knowledge. This makes the study all the more challenging and interesting, and, of course, quite relevant to the Caribbean region. One hopes it will receive the blessings of all concerned. This is merely a proposal which will only be manifested into a substantial paper if the co-operation of those in authority is forthcoming.

Objectives of the Study:

Consistent with the preceding discussion, and considering the various issues involved in the research, it is hoped that the following objectives (both general and specific) will be achieved. There may be some overlapping here but it must be appreciated that it is very difficult to draw any hard and fast line of separation at this stage. The intention is to examine, as far as possible, the whole range of technological issues involved.

A. General Objectives:

1. To focus on the commercial banking system as 'organisers' of the credit, money and payments system and as providers of an essential service to the community.
2. To relate the whole range of technological issues to the banking system in the Caribbean.
3. To focus on the question of technology transfer/dependence in relation to the banking system.
4. To identify the types of technology introduced in the banking system in Guyana and the Caribbean.
5. To examine the institutional/legislative/administrative structure through which the above (i.e. No. 4) occurs, e.g. licensing laws, duties, copyrights, patents, service contracts, etc.
6. To investigate the impact of such technological innovation on the national and/or regional economy.
7. To make policy recommendations which should benefit the wider community.

B. Specific Objectives:

Arising out of the general objectives outlined above the following set of specific objectives will constitute the principal dimensions of the research:-

1. To investigate the impact of technological innovation in the banking system on the national/regional economy with respect to its own goals and objectives/policy, viz., technology and national development.
2. To see ^{to} what extent such innovation is linked to locally - generated technologies.
3. To observe whether such innovation satisfies local needs and whether they aid research and development activities locally, i.e. the appropriateness of the technology.
4. To examine individual bank policies (if these are identifiable) and the consequent sequence of importation of new technologies i.e. to ascertain which banks are likely to be receptive to this innovation process. Is it the banks which are larger in size?
5. To investigate the role of the Multinational Corporations (MNC's) in the innovation process.
6. To examine the effects on employment, income and productivity.
7. To find out what type of training is provided for employees as users of the new forms of technology.
8. To see to what extent consumers or customers benefit.
9. To identify the source of innovation.
10. To compare the levels/types of technological innovation of the different commercial banking institutions and of different countries in the Caribbean, if possible, e.g., Guyana and Trinidad and Tobago or Barbados.

Having set out the objectives of the research, it is necessary to provide a brief review of the range of innovation taking place in the metropole and some of the attendant consequences. This is important because it is from the metropole that the technology emanates. Such a review will therefore provide some indication of the type of technology

to expect in the Caribbean banking system and enable one to make appropriate comparisons.

Review of the Range of Technological Innovation in the Metropole and some Consequences:

Even a cursory view of the literature¹ would reveal that technological innovation in the banking system is proceeding with such tremendous pace in the developed countries that there seems to be a strong competition among the banks for the expanded range of products offered by technology in order to attract more business from the customer. In fact, a number of banks in those countries are working on enhanced and rationalised telecommunications net-works to provide new capacity and optimum customer service.

In this era of dynamic technological change, the customers of the banks in the developed countries have been demanding services of greater volume and complexity. This has prompted the banks to rely very heavily on the greater use of automated equipment and processes. Consequently, there has been an ever-increasing sweep of computer-based technology in the banking systems.

Automation is the application of new technology to traditional services so that these services may be delivered more efficiently to the customer. Thus, automatic banking systems have evolved as a natural extension of the banks' traditional function as financial intermediaries and their central role in the payments system. As a financial intermediary, a bank facilitates the transfer of financial resources between savers and borrowers. As a member of the payments system, it enables depositors to write cheques against their deposit accounts to the order of other persons

¹ See the recent issues of such journals as: Banking World, The Canadian Banker and The Bankers' Magazine.

and, conversely, to receive payments in the form of cheques (or other similar instruments) from other persons.. While financial intermediation and cheque clearing are the most obvious functions of banks, another important function is the information processing which necessarily accompanies bank transactions. Whenever a deposit is made, or a cheque negotiated or a loan processed, an accurate record must be kept.

Applications of new technology include the adoption of Electronic Funds Transfer Systems (EFTs) and information retrieval systems, the introduction of Automatic Teller Machines (ATMs), and the extension of the credit and debit card services. Today, money is changing hands with the help of plastic cards, magnetic stripes, magic middles, lasers, microwaves, satellites, computer terminals, telephones and television. Even the signature is disappearing, giving way to thumbprints, voice analysis, electronic signatures and PINs (Personal Identification Numbers). Robots residing in bank walls stoically pay out money, take in deposits and handle other routine teller transactions.

In spite of all this, however, the basis of banking, that is, equal and off-setting entries in two or more set of accounts, has not changed. Also, it is felt that cash and cheques will continue to dominate the payments system for many years, and it is extremely unlikely that the completely "cashless society" will ever materialize. In Canada, for example, about 80% of the dollar amount of all payments are made by cheque. In 1982, the volume of cheques issued (excluding the federal government) exceeded 1.3 billion items, and these had a dollar value of C\$5.7 trillion. While 30 million cheques are written in Canada each week, 100 million cheques change hands each day in the United States. Without automation, it would be impossible to process such a volume.

Perhaps at this stage, it will be apt to provide a brief description of some of the new types of technology which have been adopted in the banking systems of the metropole:

1. Electronic Funds Transfer (EFT)-

This is a system which transfers funds through electronic messages instead of by traditional means, such as cheques or cash. For

example, an EFT system is used if someone on holiday wants to make a withdrawal from an out-of-town branch of his bank. His withdrawal is electronically deducted from his account back home.

The inefficiencies in the cheque payment system have spawned the emergence of EFT just as cheques replaced currency as 'a better way'. Electronic banking replaces the written transaction and offers additional convenience to the consumer. The improved delivery system which it has generated has helped the banks cope with rising operating costs, increasing transaction volume, the paper deluge and emerging non-bank competition. In fact, economies of scale are achieved by aggressive marketing of the expanded product range made available through such technological innovation.

There are three basic methods of providing service in EFT:

(i) Transaction Services

a) - ATM'sdesigned to accept and move instructions.

- Cash Dispensers

- Point of Sale (POS)

b) - Credit Cardsidentification media.

- Debit Cards

- Cheque guarantee

(ii) Bill Payment Services

- Pre-authorized payments

- Electronic Bill payment (Pay by phone, etc.)

(iii) Techniques or Facilities

- Automated clearing houses (includes such systems as SWIFT, CHIPS, BASE 11, etc.)

2. Automated Teller Machines (ATMs)-

These are terminals which perform many of the everyday banking functions required by the consumer. They are activated by a magnetically-stripped plastic card used in conjunction with a "Personal Identification Number" (PIN) which the card holder keeps to himself. The card is inserted into the machine followed by the personal identification number

and a screen on the machine then guides the consumer through the transaction he wishes to perform. They are often installed in bank walls but are also to be found in shopping centres, office buildings and other sites.

Through the use of ATMs, consumers can do their banking without the assistance of a teller, using them to get cash, make deposits, transfer money between accounts, borrow against a line of credit or make bill payments. Many of them are accessible 24 hours a day and 7 days a week. Thus, customers are afforded the opportunity of using them outside of normal banking hours and without queuing up at the bank counter.

The growth of ATMs has been almost exponential. More than 17,000 are now in use in the U.S.A., some 3,000 in the U.K. and about 450 in Canada. Whereas a teller can handle about 2,500 transactions per month, some ATM's have been able to perform over 12,000 transactions per month. It is felt that ATM use is like the "peanut syndrome": the more the banks instal, the more customers use them.

3. Point-of-Sale (POS)-

This is an electronic system to transfer the purchase price of goods from one's bank account to the store's account. A debit card (or any type of card that a bank issues to access the POS system) is inserted into a counter top terminal in a merchant's store. The customer then independently and privately enters his PIN, thus confirming his identity. After verification of the customer's identity, the funds to cover the purchase are electronically transferred from the customer's account to the merchant's account. It is estimated in the U.S.A. that 45% of all cheques are cashed outside of the branch banking network. POS gives customers instant access to their accounts, and offers retailers the ability to cut down on bad cheques.

4. Bank Cards -

These are convenient means of making payments, instead of using cash or a cheque. They also give customers access to ATMs. They are of

two (2) types:- (i) credit card and (ii) debit card. The credit card offers the customer access to a pre-arranged line of credit without having to visit a branch. It also establishes the banks as partners in the buying of merchandise at the point of sale. Merchants are afforded the benefit of granting credit without having to issue their own card or to establish their own lines of credit with each customer.

The debit card is a logical extension of the credit card system but this time it allows consumers to pay retail merchants directly at the store, the purchase being debited to the buyer's bank account.

Merchants accepting bank cards as payment instruments rely upon the support of authorization networks, an electronic process that can provide authorization within less than a minute. For charges incurred abroad, the banks' authorization centres are linked to worldwide authorization networks and it takes only minutes for the routing of information on a transaction in London to a customer's bank in Canada and just as quickly, authorization can be returned to London.

5. Cheque Truncation -

Cheque truncation means that the movement of a cheque is stopped somewhere in the processing cycle and does not end up at the branch of the account holder, or back in the account holder's possession. Ideally, it goes no further than the branch where it is deposited or cashed. The information on the cheque is sent to the data centre of the account holder's name and back to his branch, but the cheque itself remains with the processing bank. Such systems are in place in some European countries and in the USA. Because the return of cheques is a costly operation, truncation is potentially a savings to the consumer.

6. Automated Clearing Houses (ACH)-

Automated Clearing Houses allows groups or associations of banks to transfer funds among themselves electronically. Messengers have been replaced by powerful computers with which the banks and their

central bank communicate with each other. Each bank transmits and receives payment instructions through a so-called gateway computer. Messages, once accepted by the system as authentic, are irrevocable. These computers are often linked with the customers' computers.

Bank customers can now enjoy the benefits of same-day funds transfer, without the costly and inefficient paraphernalia of telegraphic funds transfers. The system is so designed that even a company's computer can be in contact with its settlement banks' computer. Company A could settle its debts, therefore, with company B, with all the transactions totally automated and settled through the banking system on the same day.

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7. Electronic Bill Payment -

This system allows personal customers to find out the state of their bank accounts, transfer money and pay bills using nothing more sophisticated than a domestic telephone. Via the telephone, a customer is linked directly with the bank's computer. A customer with a touch-tone telephone can dial directly into a data base, and enter his account number and personal identification number. A computer controlled audio-response unit acknowledges the information and then gives step-by-step instructions for paying bills. Through the use of codes, customers identify the person or company to be paid and the amount and date of payment. After each entry, the payment instructions are repeated by the audio-response unit so corrections can be made before the transaction is completed. This system has been introduced largely in the USA.

8. Home Television Banking -

Home television banking systems are also being introduced in the developed world. With these systems, a customer will be able to call up a variety of information and undertake limited two-way communication through home video terminals.

The development of such services relies on linking up computer and telecommunications technologies. TV companies are being encouraged to instal the type of network that can offer home banking as a by-product of mass entertainment.

9. On-Line System -

This is an automated system which can immediately update your account when funds are deposited or withdrawn. The customer presents his account number or his passbook and receives a complete update including the deposit or withdrawal he has just made. With its introduction it is said that automation emerged from the "back office" of bank branches to the front counter. As a result, customers are made much more aware of the evolution in technology.

10. Any-Branch Banking -

Through technological innovation, it is possible to have access to one's accounts from a branch of one's bank other than the one that is normally dealt with.

From the foregoing, it is clear that technology has really revolutionized the banking system.

Such is the pace of technology's advance that self-service banking is a reality. It has certainly changed people's banking habits for it has permitted the customer to conduct his banking both away from the traditional location of his branch and outside normal banking hours, and has also allowed him to transfer funds to other parties with decreasing reliance on the traditional cheque. Increasingly, there seems to be a marriage of both computer and communications technologies. The banks are operating in an intensely competitive financial services market and, therefore, have to adopt such technologies.

We must now turn our attention to the methodology that will be used in the actual investigation of the subject under consideration.

Methodology:

The methodology involved in this project is likely to take the form of a few stage processes. In the first stage, library research will be done in order to locate relevant literature and information on the subject. This is particularly important in the development of appropriate material. Concurrently, efforts will be made to determine the areas where the study is likely to be more "receptive" in the light of the needs of the programme (Monetary Studies) as a whole and the limited resources at its disposal. Of course, it will not be feasible or possible to undertake the research in every country or institution in the region. Thus, some indication of the project's acceptance and the resultant interest in it would be of immense value.

In the second stage, the focus is expected to be on interviews and discussions, wherever possible, with resource personnel at the various institutions in the region. There are likely to be serious problems here because it is generally found that bankers at the very top, being shrewd businessmen and, in several cases, expatriates, are not always sympathetically disposed to entertain interviews with members of the public, especially so when the business to be transacted has to do with the disclosure of information pertaining to the bank. Central Bank support then becomes imperative. Unless those in authority understand the enormity of the task and are willing to provide the necessary assistance in this direction, the research cannot be successfully pursued.

In the event that direct contact cannot be made with the bankers, one may have to resort to some type of sampling technique. This will of course involve some travel especially in light of the fact that it is envisaged that the study will encompass more than one country within the CARICOM region. Thus, Central Bank assistance becomes all the more important.

The third stage will involve the actual collection of data and information from the relevant sources and analysing them scienti-

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fically. It is this analysis that will comprise the meat of the research. Surely it will depend on the nature of the information obtained.

In the final stage, conclusions will be drawn and policy recommendations made, based on the analysis done in the previous stage.

In view of the foreseen problems, suggestions and recommendations from any source will be useful. Any relevant material will also be most welcome.

Anticipated Results of the Research to be Undertaken:

The results of the research to be undertaken are likely to be significant in a number of ways. It is hoped that much light will be thrown on the issue of technology as it relates to the Caribbean region. In this connection, it may even add to the findings of the CTPS projects and other on-going research. Both the local technological institutions and the commercial banking institutions are likely to benefit from the results of the research. The Regional Programme of Monetary Studies and the wider community as a whole are expected to be the real beneficiaries.

Moreover, there should be no serious constraints in getting people to pay attention to the results of the research. It is hoped that those results will be published and be made available to the public and policy makers, etc.

Present Status of Research:

The present status of the research is that it is in the embryonic stage with the researcher trying to conceptualize the problem in all its dimensions and locating relevant material through a perusal of the available literature. Some of the anticipated problems have already been mentioned. The analysis cannot proceed immediately until there is ready acceptance of this proposal and the problems referred to are dealt with. In addition, it will depend on the response one gets

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from the institutions concerned when contact is made with them.

The duration of the research is anticipated to be between eighteen (18) months to two (2) years.

Overview and Summary:

The issue of technology and its attendant problems is indeed a vexed one with regard to developing countries such as those in the Caribbean. It is an issue which must be addressed in all its dimensions if proper policies are to emerge. With the banking institutions rapidly adopting newer forms of technology almost everyday in the developed world, one would expect that their counterparts in the Caribbean will be similarly inclined or will be influenced to do so. For small countries as the Caribbean, such technological innovation is likely to have some very serious consequences since the banks themselves, as 'organisers' of the credit, money and payments system and as financial intermediaries are playing an increasingly important role.

Therefore, an investigation such as this paper purports to do will be in place and, hopefully, will add to the existing stock of knowledge on technology in the region. We must place the issue of technology in its wider context for us to understand our dependence and underdevelopment. Given the scope of the research and the problems likely to be encountered, it is incumbent on all to give their uninhibited co-operation.