CHAPTER 1

INTRODUCTION

1.1 Introduction

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1.1 INTRODUCTION:

1.1.1 Computers today have become an essential part of life in the west, where a child is exposed to computer based games before the child learns nursery rhymes. Even in our own country the range of activities to which computers are being applied is ever increasing. There are today a few aspects of working and leisure lives which are not influenced one way or the other by computer technology. While computers were introduced in India in the fifties, with Indian research centers trying to manufacture computers on their own yet it's substantial influence and growth/expansion has taken place in last decade. In the sixties IBM introduced the powerful computers IBM 1401’s in India and number of departments of Government of India such as Railways, Reserve Bank etc. started using them. But with exit of IBM from India in the seventies, there was sort of a lull in the growth of this technology. It remained more as a research tool used in our academic institutions and research centers. Whereas in USA & Europe this technology grew by leaps and bounds. The PC or personal computer was promising to bring this powerful machines from huge, centrally located monsters to the user's table.

Growth of Information Technology In India.

1.1.2 In the eighties there was a sudden impetus received to the growth and expansion of computer systems in India, owing to the interest exhibited by the then Prime Minister of India, Mr. Rajiv Gandhi, who himself was a computer buff. One of the result of this impetus was government departments were enthused into setting up computers in their offices and field units. The sectors of government which had a large
public interface such as Railways, Indian airlines, Customs & Excise, State Transport undertakings were the first wings of the government who went for developing & implementing large size computer based systems. Curiously the sector of service industry, which is claimed to have derived optimum benefits from computerisation in the western world namely insurance and banking, has taken maximum time in India to adopt to this technology, due to stiff resistance from unions. Today computerised banking is becoming the in thing. Even in India now the younger generation can comfortably talk about Internet’s & Ethernets and multimedia. In non government sector the senior executives are seen moving around with their ‘lap-tops’ rather than briefcases.

1.1.3 In the government system the scenario has changed from the eighties but not to that extent. One of the reasons is that the impetus received in the period of Mr.Rajiv Gandhi & his team of ministers, lost it’s steam later on. There were some departments where the computerisation succeeded beyond anybody’s imagination while in other departments they proved to be a hindrance rather than improving matters. Vast resources of the nation have been invested into these systems and more will follow.

**Study Background:**

1.1.4 As a government officer I had the opportunity of getting exposed to the latest in this technology in the eighties after spending over a decade in the ‘field’ areas of Railways. Indian Railways perhaps was one of the few departments of Government of India which had a sustained exposure to computers from sixties and took up in the eighties a major on line real time application of passenger reservation and then set up a separate organisation for taking up computerisation of freight management systems.
management systems. It also tried computerisation of field units like the divisions. Somewhere the efforts succeeded, somewhere they did not. Why did this happen? After all the technology was the same. While working as Chief Training Manager in Centre for Railway Information Systems (CRIS), a railway owned undertaking meant for developing latest computer based information systems for IR in particular, I had the chance to see closely various units of I.R. where computerisation projects were implemented or under implementation and I was able to interact with the managers and staff. I found that by and large wherever the applications had succeeded, the managers took the credit and where they failed the computer technology was blamed. Prior to working in this institution I also had the chance to be associated with the Railway staff college at Vadodara, the Indian Railway’s premier training center for Railway managers. I had done my management training there which included subjects such organisational development, organisational behavior etc. amongst others. Thus I realised that the key issues involved in success or failure of computerisation were really not the technology but the aspects of how was this technology introduced? What management practices were adopted in handling such a change? Would a study of some large computer projects which were executed in such bureaucratic environments provide any answers or help one in drawing out some guide lines for future applications? For obtaining meaningful answers to questions such as these a good way was to study two large projects of similar size and complexities, one of which could be said to be a success story and the other not so successful.
Management Of Change In Government:

1.1.5 Generally the managers are exhorted to act as agents of change to help move their organisations towards higher levels of excellence, or make the organisation, more alert or responsive to the users, yet the nitty gritty of change process is seldom understood by the managers. A large number of these changes fall under the category of internal changes and by and large it is the manager or sahib on the spot who is supposed to carry out a dual role of change agent as well as the executive. The success of any change such as introduction of new technology or new method of working etc. depends on what management practices does the manager adopts to handle various phases in execution of a project namely planning, actual work design or execution of planning & implementation. A lot depends on how the manager over comes the resistance to change and how the transition phase is controlled. The approach the managers who execute such transitions adopt thus affect success of these changes to a very large extent. These aspects attain more significance in case of government departments as the government officials have to ‘manage the desired change’ within the limitations prevailing in the government environment. This exercise becomes more pertinent if the concerned government department is also in a sector which has a large user base.

Indian Railways:

1.1.6 Indian Railways is one of the service oriented department of Government of India which has pursued the objectives of computerisation from sixties and were the largest users of IBM 1401 computers in Government of India as early as 1962. However, most of the applications taken up then fell into the category of off line processing jobs such as
payroll, material management, monthly statistic etc. It was only in the
eighties that an on line real time application which would have direct
impact on one of the principal the services rendered by railways namely
"passenger reservations" was undertaken, developed and executed. The
system is not only running for a few years now but is also expanding.

**Customs & Excise :**
1.1.7 Customs and excise department of Government of India, which is the
number one revenue earner for government, also undertook
computerisation of customs and excise work in the eighties. It did not have
a systematic set up like Railways when it went ahead with all India
computerisation of import procedures. This computerisation was done
around the same time that Indian Railways went ahead with their project.
The import/export procedure is a work with complicated procedures and
has a large customer interface. A system is now up and running all over
India. A number of weaknesses were noticed in this system after
introduction and for last few years the customs department has gradually
tried to straighten out the system and in last few years devised another
system. The work in excise department has been mostly off line in nature
and hence does not afford the same environment for critical study as that
offered by the computerisation of passenger reservation system of
railways, and computerisation of customs procedures.

**Reasons For Selection Of These Cases :**
1.1.8 The various reasons for selecting these two projects for study
besides what is stated in para 1.1.6 & 1.1.7 are as under:
a) Both these departments have a very large work force who have been doing this work manually all these years and were subjected to a basic change in their work culture through computerisation.
b) Both the applications have a large customer interface.
c) The organisational structure is similar e.g. the day to day working of railways is overseen by the Railway Board; while similar task is performed by the Central Board Of Customs & Excise.
d) The organisational set up in Railways and customs department is by and large managed by Group A officers of Government Of India, who are recruited through U.P.S.C. and have very similar training inputs in formative years.
e) Both these projects were expected to benefit not only the Government but also the customers/passengers in more than one way.
f) The basic frame work of the original system is still up and working and not totally outdated.
g) Workers and Managers who were associated in the implementation and transition phase can still be contacted.
h) Enough time has passed to judge success or failure of these systems.

Objective of This Study:

1.1.9 As Thompson¹ has observed correctly administrative practices & principle of management from West are derived from preoccupation with control and market forces and therefore have little value for administration in developing countries. It is therefore hoped that this study of the management practices adopted in these two departments to bring about these changes may lead to some useful conclusions from the perspectives
of management of change and would help both academicians and practicing managers to conceive, develop, implement and run large size computerisation projects in a more successful manner in future.

1.2 HYPOTHESIS:

1.2.1 The Indian Railways and Customs both are some of the oldest departments of Government of India, which are spread all over the country having similar work ethos , with a predominantly colonial influence. They are both managed by independent Boards and have similar hierarchical command structure. The educational & social background & method of recruitment to the gazetted cadres who manage these departments is similar. They have a well laid down system of working uniformly practiced all over India. Both are major revenue earners for the government, with a very large customer base and having large opportunities for malpractices. Both these departments out of sheer coincidence decided upon in the eighties more or less at the same time, introduction of large size computers in two of their major revenue earning departments namely Passenger Reservations Department of Indian Railways & Import - Export Department of Indian Customs. Major decisions involving investments in crores of rupees were taken by the top executives, as both were revenue earning departments and therefore not having any serious resource crunch. Once a directive or policy decision to computerise was taken, there was not much scope for lower functionaries to revise the decision. But they could suitably modify it so as to fulfill the objectives laid down. Both took up the pilot projects at those centers which had the heaviest work load. In no private or public sector or joint sector
organisations in India or abroad these key factors have come together as was seen from the various case studies in the referred books. But these factors were common in these two government organisations offering a unique opportunity to assess the results of such combination and analyse the data to verify following issues:

A) For successful implementation of large size computer projects in government departments in India the top management must take full interest & offer total support for the new project. The process of planning & implementation of the project should be done methodically with practical time frames. This work should be entrusted to a change team consisting of departmental persons as the internal change agents and a professional software agency as the external change agent. The departmental team should be headed by a senior officer having requisite background, as well as aptitude for this work. This leader should select at least one representative of all categories of staff & officials handling the existing manual system, as members of internal team. Wherever necessary involvement of customers/end users or their associations should also be ensured. This team should develop appropriate rapport with the external agents, to take care of unforeseen situations like temporary failures / equipment failures etc. For achieving sustained results intensive hands on training should be given to both officers and staff working at the place of implementation, by the internal team of change agents. The senior officers supervising and controlling the activity under implementation should be also made fully conversant with the new system & compelled to use only the new system.
B) The large size computerisation projects in Government of India are likely to flounder unless a separate directorate at the ministry level is created with adequate manpower, resources and status to ensure appropriate design, implementation, maintenance and planned growth of the project. Frequent change of the team leader during the entire project is extremely detrimental and should be avoided at all costs. Failure to stop the old system completely will result in new system falling in disuse even if the new system has helpful features. If the new system causes major departures from existing manual procedures or does not offer tangible improvement in work procedures and help quick decision making its acceptance will be difficult even if special sops in form of special pays etc. are offered. Lack of such intrinsic benefits will retard the implementation and dampen future timely growth and expansion of the system even if sufficient resources are made available later.

C) Planning, execution and implementation are the essential steps in any change process. The analysis of these cases indicate that the majority of factors which have had an impact on these large size computer projects were not exclusively in the field of software or hardware but in the way the change was managed by government functionaries. Since the basic issues involved in management practices adopted in general for carrying out these steps and application of them in government departments in India in particular, will remain the same and as none of the existing approaches propagated by Western authors adequately cover all the related aspects, it is felt that, the hypothesis made in para 1.2 A & 1.2 B can provide guidelines for the government departments whenever any project involving
a basic change in the work culture of the organisation / department is taken up by them.

1.3 METHODOLOGY:

1.3.1 The methodology adopted for data collection was by direct interviews with the key managers who were involved in the crucial stages of these projects. A number of questionnaires were developed for various tiers of management. The management was divided into four groups. First questionnaire was for the senior managers in the head office who planned and oversaw these computerisation projects. The second questionnaire was designed for middle level managers who were associated with these projects at head quarter level with the senior managers. The third questionnaire was for the leader of the team who executed the projects and other middle level managers who were members of the change teams at various places and the fourth questionnaire was designed for the field staff and supervisors who were associated with the implementation of these systems. Copies of these questionnaires are given in Annexure I.

1.3.2 The key personalities including middle level managers who contributed to these projects were contacted personally and exhaustive interviews were held with each one based on the questionnaire prepared. Some of these interviews from senior managers & team leaders of both departments are separately enclosed. The feedbacks from filed managers & other staff have been scrutinised and their summaries are enclosed. Annexure II has the interviews & these summaries of railways & Annexure III has similar documentation & customs department. A large number of the field level officers and staff who implemented these projects were
contacted and explained the focus of the study and requested to fill up the questionnaire. With constant monitoring it was possible to obtain excellent response to the questionnaires sent to concerned staff & officers.

1.3.3 Based on the interviews, transcripts were made & sent to officers concerned for signatures. Wherever further data on some aspects was considered essential, clarifications were obtained either by correspondence or by further direct contact with the persons concerned. These interviews are kept as record and only some of them have been enclosed with this thesis as annexures. This data was then critically examined keeping in view the literature available on this subject. Extensive library work was done to review the existing theories and approaches on the management of change both for Indian & Western situations.

1.4 SPECIAL FEATURES OF THE STUDY:

1.4.1 This study relates to two major revenue earning departments of government of India, both these departments do publish voluminous data on the revenues generated, passenger carried etc. But as these two projects focused on the working processes of the two activities rather than direct increase in the revenue outputs the availability of secondary data needed for adjudging success or failure of the systems is very hard to come by. Some documents which were sort of follow up departmental reports on these projects are available, but they only help in elucidating some aspects of the process of change.

1.4.2 These two projects were both conceived and executed in mid eighties. As the basic focus of this study is on the managerial practices adopted in handling the transition stages of these projects. By 1987-88
both these computerisation projects had been declared as complete by the departmental authorities. Therefore the time span for the close scrutiny of the two cases is limited to this period. The latest developments in both departments have been referred to and studied wherever relevant to the topic or to emphasize a point.

1.4.3. The main source of data collection has been the primary data obtained from interviews and feedback methodology as secondary data as mentioned in para 1.4.2 is not available. If a proper response is desired from such methodology, it is necessary to design the questionnaires in such a way that while they will elicit the desired responses / information, such information will also prove suitable for analysis and interpretation. Keeping the prevailing structure of both the organisations in view, it was decided to divide the management into head office management and field management. The head office management was further subdivided into senior managers and middle level managers who assisted the senior officer in the head office. The field management was subdivided into Managers which included the team leaders as well as other managers who were part of the change teams and & Supervisors and staff who were associated with development and / or implementation. For each of these four categories a separate set of questions was designed. It was ensured that the questions were mostly pointed questions. The questionnaires were suitably modified during the research as found necessary. Whenever additional information on some issue was called for, separate correspondence was done with the concerned person.

1.4.4. Some of the officers and supervisors were little wary of signing the answers. The answers were accepted and only their names have been later
endorsed on the questionnaires for internal record. Similarly the senior key officials of both departments were reluctant to answer questions in writing on their own. Therefore, person to person interviews were held and tape recorded based on the appropriate questionnaire. Transcripts of these interviews were made later and sent to them for approval & signatures. This person to person contact has helped in drawing out much more information. Some of these answers bring out the unique management practices adopted in carrying out the process of change in these projects, which otherwise may not have come out in mere feedback through questionnaires.

1.5 TERMINOLOGY USED:

i) AC - Assistant Collector/Commissioner

ii) AO - Appraisers/Appraising Officers

iii) BE - Bill of Entry

iv) CARES - Customs Assessment, Retrieval & Evaluation System

v) CBEC - Central Board of Excise & Customs

vi) CHA - Custom Handling Agents

vii) CMC - Computer Maintenance Corporation

viii) CONCOR - Container Corporation

ix) CPU - Central Processing Unit

x) CRB - Chairman Railway Board

xi) CRIS - Center for Railway Information Systems

xii) DEC - Digital Equipment Corporation

xiii) DEO - Data Entry Operator
xiv) DGCIS - Director General of Commercial Intelligence & Statistics
xv) DOE - Department of Electronics
xvi) EDP - Electronic Data Processing
xvii) EGM - Export General Manifest
xviii) GR - Reserve Bank of India’s Exchange Control Form
xix) I.R. - Indian Railways
xx) IBM - International Business Machines
xxi) ICES - Indian Customs Electronic System
xxii) IGM - Import General Manifest
xxiii) IMPRESS - Indian Multitrain Passenger Reservation System
xxiv) IRCON - Indian Railway Construction Company
xxv) IRFC - Indian Railway Finance Corporation
xxvi) KPO - Key Punch Operators
xxvii) KRCL - Konkan Railway Corporation Ltd.
xxviii) LAN - Local Area Network
xxix) MIS - Management Information Systems
xxx) MOR - Ministry of Railways
xxxi) NIC - National Informatics Center
xxxii) OIS - Operation Information System
xxxiii) ORG - Operations Research Group
xxxiv) RB - Railway Board
xxxv) RITC - The Revised Indian Trade Classification
xxxvi) RITES - Rail India Technical & Economic Services
xxxvii) UPS - Uninterrupted Power Supply
xxviii) WAN - Wide Area Network
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