

A Research Report Submitted to ODA ESCOR

**Personnel Records:
A Strategic Resource for
Public Sector Management**

(summary of report)

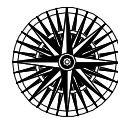
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Overview of Findings

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1 Introduction

1.1 Overview of the Issues

Empirical studies indicate that the failure of rates for computer-based information systems is at least 80 per cent and often higher.

Korac-Boisert and Kouzmin (1995)¹

The rapid developments in information technology are often seen by policy makers as an opportunity for economically disadvantaged countries to ‘leapfrog’ onto a higher level of economic development for a relatively low level of investment. Certainly, the cost of the equipment and software is comparatively small, although significant in terms of foreign exchange. However, this study demonstrates that the preconditions for successful computerisation projects are often not in place, and attempts are being made to layer computerised systems on top of collapsed paper-based information systems.

The preconditions for sustainable computerised systems include professional skills, senior management with a realistic understanding of the issues, an appropriate technical infrastructure and reliable, conveniently organised source data. In the short term, creating these preconditions will add significantly to the projected cost and speed of the information revolution in Sub-Saharan Africa. In the longer term the creation of an appropriate infrastructure will be far more cost-effective than the present approach.

In recent years, projects to implement automated personnel management systems have been a prominent feature of the IT effort of many civil services in Africa. The projects absorb a relatively large proportion of the discretionary expenditure of the civil service in the purchase of equipment, and they rely heavily on expatriate consultants for project management and technical implementation. Typically they take a minimum of three to five years to implement from start to finish, which represents a substantial opportunity cost. These automation projects have a relatively high failure rate *vis-à-vis* their stated objectives.

Improved human resource management is central to current development policy thinking. In 1989 a World Bank report² identified weak public administration as one of a number of factors inhibiting sustainable economic growth in Sub-Saharan Africa. The report called for better personnel management in terms of staff testing, competitive entrance examinations, regular appraisals, promotion on merit, selective improvement in the pay structure and accurate personnel records. Moreover, the debt crisis of the 1980s forced governments to attempt radical economic reform, often as Economic Structural Adjustment Programmes (ESAPs) designed with advice and finance from the Bretton Woods institutions. ESAPs in Sub-Saharan Africa typically include a significant reduction in the size of the public service, thus making more urgent the need for improved human resource management.

¹Nada Korac-Boisvert and Alexander Kouzmin, ‘Transcending soft-core IT disasters in public sector organisations’, *Information Infrastructure and Policy*, Volume 4, 1995, p131.

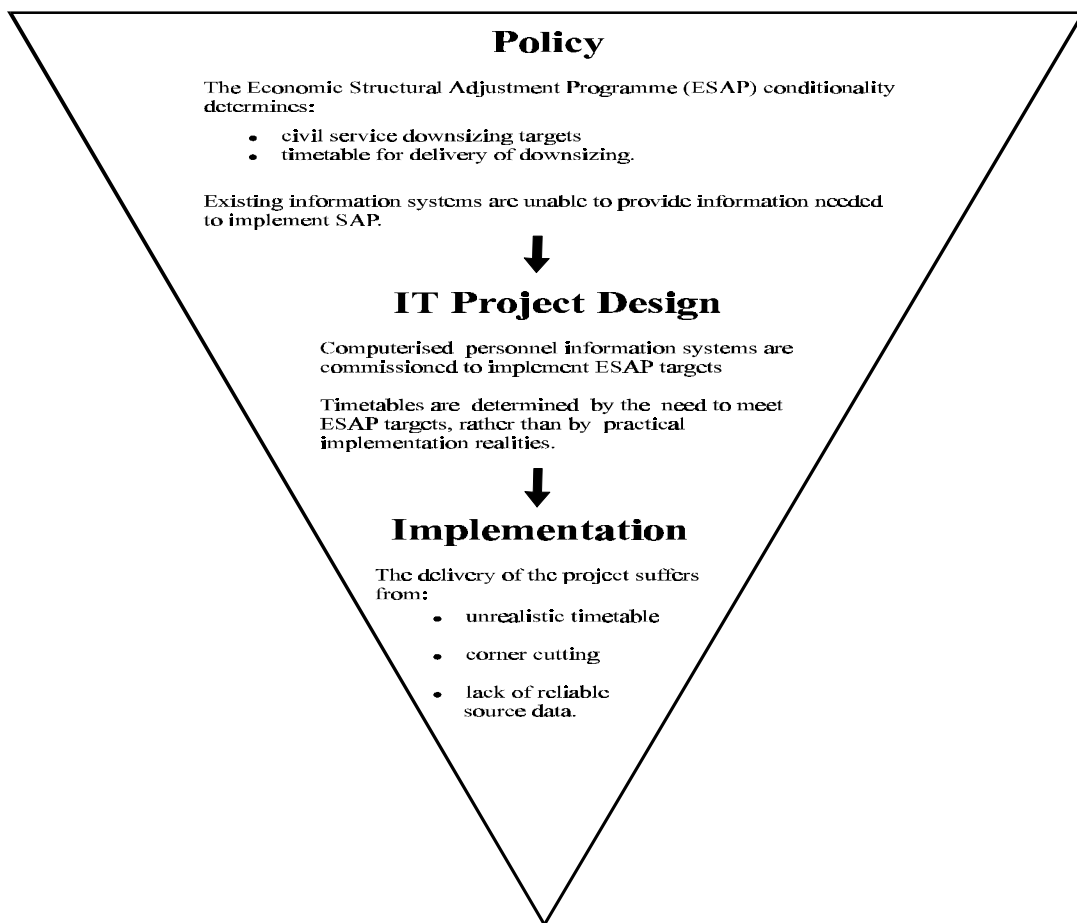
²World Bank (1989) *Sub-Saharan Africa: From Crisis to Sustainable Growth - A Long-term Perspective Study*, World Bank, Washington DC.

ESAPs usually specify targets for reducing the number of civil servants, tied to a timetable for implementation. Yet, when the governments attempt to reduce civil service staff numbers, they often discover that they are unable to find the basic information they need to accomplish this task, such as accurate staff numbers, or details of staff grades and location. Consequently, donors usually advise the countries to create computerised personnel management systems to assist in achieving their reform objectives.

The need to meet ESAP conditionalities places pressure on governments to implement the personnel management automation projects very quickly. External consultancy firms bidding for the contracts to manage and implement these projects tend not to recommend realistic project timetables for fear of losing the business to a rival. Too often projects are designed with unrealistic timetables, which leads to corner cutting and the rejection of more time consuming options that might have a better long-term chance of success.

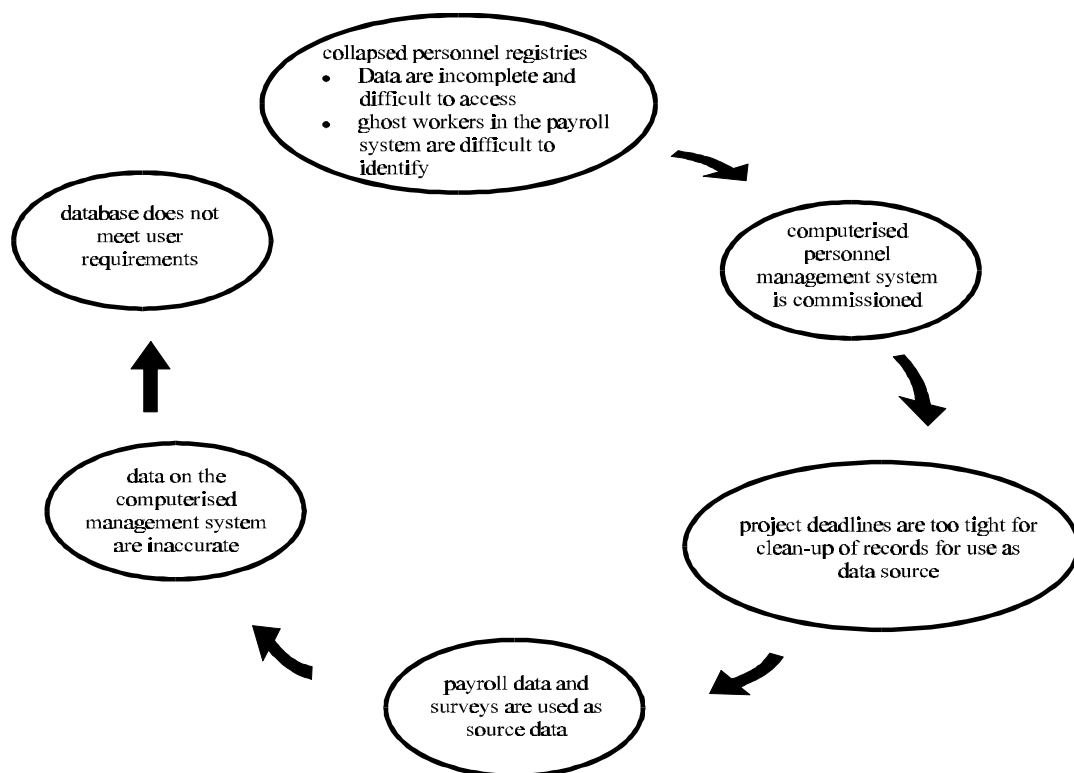
In particular, there is a lack of realism about the source data upon which the systems must be built. This reflects the pressures of macro-level policy objectives on the implementation of IT projects as well as a simple underestimation of the importance of reliable source data to the long-term success of automated human resource management systems.

How policy drives implementation:



The paper-based personnel records held in registries tend to be so disorganised and incomplete (and the time frame for completing the automation project so short) that the option of reorganising the personnel registries is typically rejected out of hand. Automation teams are then forced to resort to techniques for gathering *secondary sources* of information, such as surveys and head counts. Typically there is no time for checking the information gathered for accuracy against the available records. Yet the personnel files are the only authentic *primary sources* for the data needed for the automated system. They record key events as they happened, such as promotions or gaps in service, and they can be verified for authenticity. The result is that the data entered on the new computerised database are often inaccurate or unreliable in key areas.³ The ‘source data trap’ is sprung. The database cannot be used for the personnel management functions it was designed to fulfil because the data cannot be trusted. The process has come almost full circle.

Source data trap



Finding a way out of the ‘source data trap’ is thus the key to improving the usefulness of computerised personnel management systems and supporting the macro-policy objectives of improved human resource management and sustainable economic development. The findings of this study illustrate the ways in which records management can contribute to the success and sustainability of computerised human resource management systems when integrated into the project design.

1.2 Objectives of the Research Project

³The integration of the payroll and personnel functions on one database and a system of ‘manpower budgets’, as has been done in Ghana, can do much to reduce inaccurate data. However, there is still a problem with verifying the accuracy of key information, such as dates of birth, dates of joining the service or breaks in service, which are essential for calculating pension entitlements.

The introduction of information technology to developing countries inevitably has major consequences for public administration, yet there has been little research on the issues involved. In the area of personnel management, there is a requirement for computerised personnel information systems which are workflow-based and text-based. Such systems have been developed in a number of African countries and some work has been done on paper-based personnel records. To date these initiatives have been carried out largely in isolation from one another, and there has been little attempt to link the paper and automated approaches despite the fact that the same resource is being managed. This study demonstrates that these linkages are fundamental to the effective management of personnel information.

At present donors tend to invite different consultancy firms to develop solutions to the same problems in different contexts without a means of systematically harnessing lessons from one context to another. Because the consultants employed are accountants and computer systems analysts, rather than records and information managers, the focus tends to be on information technology. The critical significance of information management, which embraces documents in electronic and paper media, and which will be a significant field of study in the future, is only just beginning to be recognised. In particular, the significance of authentic, reliable records for accountability and as source data for automated systems is often underestimated.

This study is based on the hypothesis that information represents a strategic but under-utilised resource for public administration. It will explore one critical aspect of the management of public sector information, the management of personnel records in paper and electronic format. It will consider the proposition that too little thought is being given to:

- the use of paper-based personnel records as a primary data source
- the consequences of the automation of personnel records in African public administration.

The study will review the implications of these issues for the effective use of information.

This report explores the strengths and weaknesses of different strategies adopted by developing countries and donor agencies to gain control of personnel information management systems as part of public service reform. Case studies have been carried out in three African countries, Uganda, Ghana and Zimbabwe, to illustrate different strategies adopted for implementing systems and different stages in the process of implementation. The Ghana case study was chosen because it illustrates a strategy for a centralised integrated personnel and payroll. The Uganda case study was selected because it illustrates a strategy for a decentralised personnel information system based on personal computers and because the Ugandan authorities are beginning to give attention to the relationship of paper-based personnel records to the computerised system. The Zimbabwe case study was selected because the Government of Zimbabwe is still exploring the available options and because there is a more developed capacity for computerisation than in the other two countries.

This project, which is deliberately specific in its focus and short-term in nature, will contribute to a wider understanding of the bridge required between present realities of, and future capabilities for, managing information. It should help to set the direction for future research in this important area.

1.3 Acknowledgements

The support and courtesy extended by the officials of the Governments of Ghana, Uganda and Zimbabwe and their willingness to explore a wide range complex issues made the project productive and enjoyable. We should particularly like to thank Dr Robert Dadoo, Head of the Civil Service in Ghana; Mr Martin Orech, former Head of the Civil Service in Uganda; Mr N Masoka, Secretary of the Public Service Commission in Zimbabwe; and Mrs Angeline Kamba, Public Service Commissioner in Zimbabwe for their generous support for the project and their valuable comments.

We would also like to thank the legion of senior officials who contributed important insights and whose names are listed in the case studies. Mr Pino Akotia of the University of Ghana at Legon participated in all interviews in Ghana and offered important insights.

2 Methodology

This study has been undertaken by Piers Cain, Director of Research, International Records Management Trust, under the guidance of Dr Anne Thurston, Reader at the School of Library, Archive and Information Studies at University College London and Executive Director of the Trust. Jonathan Holley and David Crampin, having extensive experience in the management of personnel records and also experience of working in Africa, have also made valuable contributions to the approach taken. Dr Shirin Madon of the London School of Economics was unable to participate actively in the design of the methodology but did see drafts of the work in progress.

The research has involved a literature review; interviews with the key players involved in designing, developing and using personnel information systems; and a technical evaluation of the relationship between system capabilities and user requirements. Taken together, the information gathered through these approaches provides a basis for a critical analysis of the degree to which the systems being developed will be capable of underpinning effective personnel management.

Publications in the fields of development studies, personnel management and records management were examined. The study also drew upon the extensive collection of field reports of projects carried out by the International Records Management Trust in sub-Saharan Africa.

Following the literature search, a detailed list of questions was prepared for discussion with key individuals involved in identifying user requirements for the personnel databases. Piers Cain spent two weeks in each country: Uganda (April 1996), Ghana (August 1996) and Zimbabwe (October 1996). Arrangements for the visits were planned in close cooperation with senior managers from the countries concerned.

Interviews were carried out principally in the central institutions involved in managing the personnel and payroll functions. They were also arranged with officers in the bureaux charged with providing central computing services and with personnel officers (or administrative officers with responsibility for personnel management) and in several key ministries and agencies such as health and education.

Filing systems and proposed or existing database structures at the central, ministry and district levels were examined. This involved exploring, with systems and personnel managers, the process by which the validity of the data entered in a computerised system is ensured. The nature of the interface between existing paper-based records and the database was considered. In particular, consideration was given to the ease with which audit checks could be made between the payroll database, the personnel database and the paper-based files.

Drafts of the case studies have been circulated for comment to the relevant governments that participated in the project, as well as to Jonathan Holley, David Crampin and Dr Shirin Madon.

3 Policy Context for Automated Personnel Systems

3.1 Structural Adjustment

During the 1980s and 1990s most of the countries in sub-Saharan Africa have experienced economic hardship and have participated in structural adjustment programmes, often as part of conditionality for loans from the Bretton Woods institutions. Structural adjustment typically includes a civil service reform programme as a key element. Since the 1980s, Ghana, Uganda and Zimbabwe have all implemented structural adjustment programmes with varying degrees of success.⁴

Following a protracted period of serious economic decline, Ghana adopted its Economic Recovery Programme (ERP) in 1983. The ERP was formulated in an atmosphere of highly strained relations and mutual distrust between the Government of Ghana and the leading donors, notably the World Bank and the International Monetary Fund. Inflation fell from 142% in 1983 to 10% in 1991 and real GDP growth averaged 5% per year throughout most of the period.⁵ Relations improved somewhat as the economy recovered and the Government of Ghana took on a stronger role in determining the direction of its structural adjustment effort.

Uganda, too, introduced its structural adjustment programme in very difficult economic circumstances, having emerged from a quarter of a century of warfare and instability which had devastated the economy and left the country with enormous debts. The Government of Uganda responded to the challenge of restructuring and revitalising the economy by instigating the Economic Recovery Programme, which involved prudent fiscal and monetary management. The Uganda Government took a leading role in initiating the programme from the start.

In Zimbabwe the policy objectives of the economic reform programme initiated in 1991 were to make the policy environment more market-oriented, to accelerate growth and to expand employment. The programme included phased trade liberalisation, domestic deregulation and monetary/financial sector and public sector reforms. The Government's Economic Reform Policy Statement of 1991 outlined public sector reform measures designed to reduce the fiscal deficit from an unsustainable level of at least 10% of GDP to about 5% in five years.

3.2 Civil Service Reform

⁴There are other ways of measuring success, for example the UN Development Index, but these do not appear to be the dominant criteria among policy makers or their advisers.

⁵International Monetary Fund Press Release No 95/38.

In all three countries structural adjustment included substantial reductions in the size of the public service designed to reduce the size of government in relation to the size of the private sector.

Ghana has cut the civil service by about one third. During the first phase of the civil service reform programme in Ghana, the government (on the insistence of the World Bank) agreed to cut the number of posts in the public service by 15,000 a year for 3 years. In fact the number of civil servants has dropped from 143,260 in 1986 to around 80,000 in 1996 by a combination of cutting posts, privatisation and hiving off of functions to parastatals.⁶ There is a policy of progressively improving the compensation of the civil servants that remain, in order to attract and retain high calibre staff.

In Uganda the number of employees on the government payroll has been cut by half, from 320,000 in 1991 to 148,000 in 1996; the numbers in the armed forces have been reduced by 30%.⁷ In part the purpose of downsizing was to reduce the cost of government. It was also designed to create scope for increasing the salaries of those civil servants who remained, to the level of a 'living wage'. This would improve efficiency by eliminating the necessity for civil servants to 'moonlight' to earn enough money on which to live.

In Zimbabwe the focus of the civil service reform programme during the first phase of structural adjustment was a reduction in personnel costs, which comprised about 30% of the entire budget. The objective was to cut the public service wage bill from about 15% of GDP to 12% of GDP by cutting real wages and also cutting the number of posts. The number of posts cut in Zimbabwe was more modest than in Ghana or Uganda because the two largest spending ministries' departments, Health and Education, were exempted. Nonetheless, 23,000 posts were eliminated. In addition, although the armed forces, police and prison service were excluded from the exercise, subsequently the army establishment was reduced from 50,000 to 40,000.⁸ Notwithstanding the posts cut, most of the savings came from allowing wage increases to fall behind inflation.⁹ In 1996, for the first time there were strikes for higher salaries in the public sector, and these were extensive and well supported.

In all three countries the experience of civil service reform, and of retrenchment in particular, has highlighted deficiencies in the personnel information available to government. At the beginning of the civil service reform process, apart from ageing mainframe payroll systems, there were no computerised systems available to provide statistics on staff numbers. These were not designed to support human resource planning and lacked both the necessary data fields and the functionality to support this work.

In Uganda and Ghana the catalyst for computerising personnel information was the difficulty in finding reliable data on the size of the public service as a basis for implementing staff cuts. The records that existed were unreliable. In Uganda there were serious discrepancies between numbers of staff recorded on the nominal rolls (maintained by the ministries) and the numbers of staff appearing on the payroll (a mainframe maintained centrally by Uganda Computing Services). In the 1980s the number of 'ghost workers' in the Ghana public service varied between about 7% and 15%,

⁶Coopers & Lybrand in association with RIPA International Ltd, Civil Service Reform Programme Phase 3, Report September 1993, p4 and Appendix E. The figure for 1996 was provided by Hugh Marshall, Civil Service Performance Improvement Programme (CSPIP), in a conversation in August 1996. Presumably the 'productivity gain' assumes that the smaller number of staff are accomplishing the same amount of productive work as formerly was done by much larger numbers of staff.

⁷Conversation with Mr M Lagara, Commissioner, Compensation and Pay Reform, April 1996.

⁸*Zimbabwe: Fiscal Management Review*, Volume I: Executive Summary and Report, Report Number 15681-Zim, June 26, 1996, paragraphs 5.1-5.7.

⁹*Ibid*, paragraph 5.6. 'The big savings on the wage bill have come through an erosion of real wages, which fell 30-40 percent during the period'.

depending upon the ministry scrutinised. Officials were unable to determine with precision how many people were working for the public service, where they were working and the nature of their responsibilities.

In both countries there was a serious problem of 'ghost workers' which inflated the size of the payroll. It was unclear whether the government retrenchment exercises were cutting real people or 'ghosts'. In short, the governments lacked the data needed to make informed decisions about who should be retrenched. Of course this point was particularly important when reductions in the size of the public service were tied to disbursements of tranches of World Bank loans.

In Ghana, Uganda and Zimbabwe, projects to create human resource databases were started with donor funding. They were closely connected with the implementation of macro-economic programmes. The objectives of these programmes strongly influenced the direction, timing and pace of the computerisation projects. It should be noted that although the policy context, and especially the downsizing of the public service, provided a rationale and a framework for the creation of human resources databases in all three countries, in each case the downsizing operation was completed *before* the databases became operational. In other words, although the high cost of creating the databases was justified by the downsizing exercise, in practice the databases did not contribute to the implementation of the policy.

In addition to downsizing, the development community has in general accepted the requirement for better personnel management as a key factor in achieving sustainable economic growth in sub-Saharan Africa. Tyson and Fell have developed a 'building site' metaphor that helps to define the issues.¹⁰ They distinguish three roles:

- Clerk of Works: this role has only a minimal managerial content and has no strategic contribution. It corresponds to the personnel administration role, ie maintaining personnel records, administering conditions of service, monitoring staff levels and possibly also being involved with employee welfare.
- Contracts Negotiator: this is basically a non-strategic short-run focus of role, although it is critical in times of crisis. The contracts negotiator corresponds to the 'hard nosed' industrial relations negotiator.
- Architect: corresponds to the emergent human resources manager who is involved in top-level corporate planning and decision-making.

The consensus in development community thinking is that the personnel function in the public sector in Sub-Saharan Africa needs to shift from being a 'clerk of the works' to the 'contracts negotiator' or even 'architect'.¹¹

This perspective clearly informed the thinking of the 1989 Public Service Review Commission (PSRC) in Zimbabwe, where concerns over the efficiency and accountability of the public service drew attention to the absence of reliable personnel information. The PSRC believed that the boom in recruitment in the early 1980s had led to a significant number of senior posts being filled by relatively young people, thus blocking career opportunities for younger junior staff. It noted that

¹⁰S Tyson and A Fell, *Evaluating the Personnel Function*. Hutchinson, 1986. Quoted by Harry Taylor 'Public sector personnel management in three African countries: current problems and possibilities', *Public Administration and Development*, Volume 12, 1992, p194-5.

¹¹*Ibid*, 1992, p195.

information on staff, such as age by grade data (together with other grade-related data on turnover and vacancies) was essential for sound planning of personnel and manpower policies to avoid the recurrence of similar situations. The report recommended that grade related information be collected and analysed as part of improvements in manpower planning.¹²

The PSRC concluded that improved personnel management was crucial to securing the reform and modernisation of the public service. The personnel function would have to move from the routine administration of regulations to the positive management of all employees as individuals and as members of a public service.¹³

In Ghana, Uganda and Zimbabwe the strengthening of the personnel information systems is directly connected with a major initiative to create conditions for sustainable economic growth and reform of the civil service. Good recordkeeping has an important contribution to play in the personnel function, irrespective of style of personnel management adopted.

3.3 Governance and Accountability

‘Good governance’ is broadly synonymous with ‘sound development management’.¹⁴ It encompasses a wide range of elements involving political legitimacy, accountability and official competence. Good governance is closely allied to public sector accountability, which in turn requires measurement and verification of government performance.

Peter Blunt has pointed out that there is a link between the bureaucratic accountability of government officers and organisations, transparency and the availability and validity of information. Efficient markets and bureaucratic transparency are heavily dependent on the availability and validity of information:

¹²Report of the Public Service Review Commission of Zimbabwe under the Chairmanship of Professor D Kavran, Harare, May, 1989, Volume 1, Main Report, p82-3.

¹³*Ibid*, p82.

¹⁴World Bank, *Governance and Development*, Washington DC, 1992, p1.

Quality of decision-making, and therefore risk and cost, are all a function of the quality of information supply. Government is clearly a major source of information as well as a major user. Government policies are vulnerable to poor-quality information in the same way that information about the economy and market conditions is essential to valid private sector calculations.¹⁵

In Ghana there is an explicit relationship between governance, civil service reform and improved personnel information systems. In part this is a question of legitimacy. As the Head of the Civil Service has pointed out, the second phase of civil service reform claims greater credibility in the public eye as more defensible and realistic than the first.¹⁶ There is an emphasis on the efficient delivery of services to the public by line ministries, which will take more responsibility for their performance. This will change the nature of the Civil Service and the personnel information systems it will require. At present, systems are centralised at the Office of Head of Civil Service; in future the line ministries will require access to more detailed and more sophisticated personnel information. Moreover, by eliminating 'ghosts' from the payroll, the government will be able to demonstrate transparency, accountability and efficiency in the management of its human resources.

In Zimbabwe, the Public Service Review Commission (PSRC) of 1989 reported that, among other key issues inhibiting the effectiveness of the public service:

The standard of management was not conducive to the effective and economical use of resources, the efficient conduct of public business *vis-à-vis* ministers and parliament, the efficient delivery of public services throughout the country, nor for accountability for what had or had not been done.¹⁷

The PSRC highlighted the relationship between the effective management of human resources and the achievement of the Government's reform objectives. The Review Commission found that heads of ministries were often overloaded and that the management system had become complex. The resources allocated were not adequate and were often inefficiently used due to poor allocation of both human and material resources.

¹⁵Peter Blunt 'Cultural relativism, "good" governance and sustainable human development', *Public Administration and Development*, 1995, Volume 15, p7.

¹⁶Office of Head of Civil Service, 'Report of the Steering Committee on Civil Service Composite Reform Programme and Workplan for 1994/4 and Beyond', November 1993, forward by E A Sai, Head of Civil Service.

¹⁷'Report of the Public Service Commission', May 1989, Volume 1, p12-15.

3.4 Decentralisation

With the declining cost of microcomputers and rapid improvements in hardware and software technology, a number of developing countries have recently been prompted to direct administrative reform toward achieving decentralised government planning through the diffusion of technology to a relatively small area of administration known as the district. A central goal of all these initiatives has been to improve access to information, thereby producing more informed, better-reasoned decision making....With all these initiatives, however, the main objective of improving development planning and monitoring systems remains unfulfilled The main reason for this stems from the fact that these efforts have been designed and developed at the level of central government without due consideration of the inherent characteristics of development administration at the local level...

Shirin Madon (1993)¹⁸

To-date, donor assistance has not succeeded in making real inroads into the poverty and inequality to be found in many developing countries. The development community has concluded that ‘participatory development and good governance must be central concerns in the allocation and design of development assistance’.¹⁹ Decentralisation is increasingly recognised as the key to affecting governance at all levels, by providing a framework for enabling the interests of communities to be represented in the decision-making structure of government.

The UNDP has defined local governance as encompassing both representational and technical aspects. The former involves ‘strengthening the participation and empowerment of all organisations, institutions, and individuals of local government, civil society and private enterprises in the local governance process’.²⁰ The latter – local governance – refers to ‘strengthening the management of programmes and policies concerned with effective resource development, service delivery, and programme implementation and maintenance at the local level.’²¹

All three countries visited have an official policy of decentralisation. On the whole, individual public servants in the line ministries studied appeared to be most comfortable advocating ‘technical decentralisation’, which involves devolving decision-making from public service commissions or public service ministries to line ministries. Individual officers were less enthusiastic about devolving power to representative local authorities. In Uganda, where there is a Decentralisation Secretariat, decentralisation to local authorities has progressed further than in Ghana or Zimbabwe.

¹⁸Shirin Madon ‘Introducing administrative reform through the application of computer-based information systems: a case study in India’ *Public Administration and Development*, 1993, Volume 13, p37-8.

¹⁹DAC Working Group Meeting (Paris, 1993) cited in ‘Participatory Evaluation in Programmes Involving Governance Decentralisation: A Methodological Note’, UNDP Management Development and Governance Division, draft (revised 22 June 1996), Section 1.

²⁰‘Participatory Evaluation in Programmes Involving Governance Decentralisation: A Methodological Note’, UNDP Management Development and Governance Division, draft (revised 22 June 1996), Section 2.

²¹Participatory Evaluation in Programmes Involving Decentralisation, UNDP, draft 22 June 1996, Section 2.

The case study in Uganda included an investigation of the impact of decentralisation on the personnel information systems in the localities. There the stated objectives of decentralisation are to shift responsibility for development to local authorities and to improve local democracy, accountability and the provision of social services. The central Civil Service retains responsibility for security, national planning, defence, immigration, foreign affairs and national projects, but in principle the District Resistance Councils have responsibility for all other activities. Line ministries are responsible for issuing regulations, policies and advice, setting standards, providing technical supervision and inspecting services to ensure the standards set by the centre are met and administrative efficiency is achieved.²²

With these objectives in mind, responsibility for finance and personnel management, hitherto carried out centrally, is being devolved to the districts. Each district has a District Service Committee with a mandate for the personnel management of the staff, including the recruitment, confirmation, promotion, discipline and dismissal of the local government authorities.

Dr Madon has noted that excessive central influence on the design of district administration information systems as a cause for their failure. The Uganda Decentralisation Secretariat has controlled the design and development of its own system. However, this too could bring problems, as the central government has a continuing need for personnel information about public servants in the districts, and these needs cannot be ignored. For the present, the majority of district staff are paid from central government funds by means of block grants. Consequently, the central government has a vested interest in controlling the total number of staff employed by the districts and will need to ensure that systems are in place to provide accurate and up-to-date information on district establishments and staffing levels. The development of personnel management information systems capable of furnishing this information needs to be a high priority objective.²³

In Ghana there are plans to devolve greater responsibility to the districts, and to some extent to the regions. Twenty-two decentralised departments have been identified as constituting part of the district assemblies. The Integrated Personnel and Payroll Database was designed to support decentralisation by giving managers access to accurate, timely, comprehensive and reliable personnel and payroll information and by strengthening their ability to manage and control manpower resources effectively. In practice, however, there appears to have been little input from the periphery in the design of the system, and constraints in the capacity to network the database make it very unlikely that it will be of much practical use to decentralised administrative units in the foreseeable future.

Zimbabwe also has a policy of decentralisation involving primary education, district health care and some social welfare functions being transferred to the 57 Rural District Councils established in July 1993.²⁴ It is expected that in the medium term large numbers of non-ministerial public servants, such as teachers and health personnel, will be taken off the Public Service Commission payroll. At present however, this policy has had little impact on the day-to-day running of the personnel function.

²²Ministry of Public Service, *Report on the Proceedings of the Seminar of Ministers and Permanent Secretaries, at the International Conference Centre 19-20 August 1993*, paper by Hon S C Chebrot, Deputy Minister of Local Government, p58-69.

²³Ministry of Public Service, *Civil Service Reform Status Report 3, 1 March - 30 September 1994*, [1994], p19.

²⁴*Zimbabwe: Fiscal Management Review*, Volume I: Executive Summary and Report, June 26, 1996, Report Number 15681-Zim, paragraphs 5.14 - 5.15.

4 Impact of Computerisation in Africa

4.1 Global Trends

A new kind of economy – the information economy – is emerging where trade and investment are global, and firms compete with knowledge, networking and innovation on a global basis. These changes dictate, for all countries, a major adjustment which involves harnessing information for economic and social development. Government is playing a strategic role. For instance the G7 group of industrialised countries has initiated the Government On-Line programme designed to replace paper-based operations by on-line operations, so that ‘by the turn of the century, most administrative business is conducted electronically’.²⁵ If they do not participate, developing countries risk exclusion from the global economy and severe competitive disadvantage for their goods and services. They are threatened with a new and dangerous form of information poverty that could further widen the gap in economic competitiveness.

Most writers focus on the importance of information technology in providing solutions to the problem of information poverty. Yet, developing countries are entering the ‘information age’ from a starting point of extreme vulnerability. Not only do they face huge obstacles in affording and obtaining access to the new technologies, but in many cases their existing paper record systems – the foundation of their current national information infrastructures – are in a very poor state or even collapsed. Automating a chaotic situation is likely to create yet more chaos. Far from being in a position to take advantage of new technology, developing countries face formidable difficulties in attempting to build upon unstable foundations.

Public sector records, which are the most fundamental source of government information, are only just beginning to be managed as a strategic resource, and there are still widespread problems in retrieving and storing them. Almost all information entering a ministry in Sub-Saharan Africa still does so in the form of paper and is processed through a centralised registry system. Developing countries are moving rapidly toward an era of computerisation of public sector information without adequate preparation. This situation has had major consequences for the ability of these countries to implement administrative reform programmes.

4.2 World Bank *InfoDev* Programme

The World Bank is turning increasing attention to how it should harness the information revolution for its mission of poverty alleviation and sustainable economic development. It is changing its emphasis towards a strategic advisory role on information policy and the brokering of effective partnerships for infrastructure deployment. The assistance strategy includes accelerated deployment of national information infrastructures and the inclusion of information components in the entire range of World Bank operations. The key concept underlying this strategy is that developing countries are in a position to ‘leapfrog’ several stages of economic development by investing heavily in information technology. The World

Bank exerts a powerful influence on public sector investment on information technology in

²⁵G7 Government On-Line Project Executive Summary, viewed 24/1/1997 at web site <http://www.open.gov.uk/govonline/g7exsum3.htm>.

Sub-Saharan Africa, and this forms part of the context in which computerisation projects are carried out and evaluated.²⁶

The World Bank Group has identified four objectives in its information development strategy:

- widespread and equitable access to communication and information services through accelerated deployment of national information infrastructure and effective integration into international communication and information networks
- systematic improvements in the functioning and competitiveness of key economic sectors through strategic information policies and systems
- new ways to use information technology to help solve the most pressing problems of human and economic development – education, health, poverty alleviation, rural development and care for the environment
- increased impact of the entire range of World Bank Group operations through inclusion of effective information components.²⁷

The World Bank *InfoDev* programme is designed to create ‘a place where information on building an information infrastructure, accessing social services, organising production and creating an investor-friendly environment can be shared’.²⁸

The present study shows that World Bank funded structural adjustment programmes are having a significant impact on the direction of the IT effort in Sub-Saharan Africa by highlighting the need for public-sector-wide automated human resources information systems. In some cases, such as in Ghana, the World Bank is funding parts of these projects and is thus directly affecting their design and implementation by means of its procurement rules. The *InfoDev* programme should play a key role in disseminating best practice for IT projects both by means of its publications and through its role in shaping World Bank policy in this area. It is essential that the importance of records as source data for automated human resources information systems and the role of records management in improving project success rates are incorporated into *InfoDev* thinking.

4.3 UN Economic Commission for Africa

The UN System-wide Special Initiative on Africa is the first attempt to co-ordinate the efforts of all the agencies in the United Nations system (including the Bretton Woods institutions) to support priorities identified by African governments themselves. Harnessing information technology for development and identifying the opportunities for ‘leapfrogging’ have been identified as key elements in its strategy for poverty alleviation and good government. The leading agencies will be the World Bank, the Economic Commission for Africa, United Nations Industrial Development Organisation (UNIDO) and United Nations Educational Scientific and Cultural Organisation (UNESCO).

²⁶Eduardo Talero and Philip Gaudette, *Harnessing Information for Development: World Bank Group Vision and Strategy*, World Bank, draft, July 1995, p19-25.

²⁷*Ibid*, p8.

²⁸*infoDev* publicity material.

This initiative is likely to ensure that the policy of investment in national information infrastructures and the doctrine of ‘leapfrogging’ will be the orthodoxy in the development community for the next few years. As with the *InfoDev* programme, the Special Initiative on Africa must frame IT policies that take into account the need for reliable records for accountability purposes. In the area of automated human resources information systems, failure to do so may put the rights both of individuals and of the state at risk.

4.4 Role of Donors

Many administrators and development advisers assume that the problem of inadequate information systems to support development and the growing threat of ‘information poverty’ can be by-passed by the introduction of computers. The present study shows that this view is overly simplistic. Computerised information systems undoubtedly are an essential component in a strategy to combat information poverty, but they do not by-pass the problems of the existing systems. The present study shows that the need for reliable source data for automated personnel systems forces implementation teams to confront the failing manual systems.

The case studies of computerised personnel information systems in Ghana, Uganda and Zimbabwe show that automated systems cannot in themselves create well structured information and that they are likely to fail unless the issue of source data for the system is addressed from the start. Moreover, the pressure to meet macro-economic conditionality targets (which are heavily influenced by donors) has led to the setting of unrealistic deadlines for IT projects. This has harmed the projects by encouraging exaggerated expectations among senior managers and by leading to corner-cutting. The most glaring example of corner cutting is the wholly unrealistic plans for data acquisition for the databases, which are both under-resourced and technically impractical.

The introduction of computers without adequate preparation can worsen existing problems and can actually be dangerous. It can put administrators in a position whereby they cannot ensure transparency and legal accountability. Not only are they not able to access source documents, but electronic records are difficult to maintain over time due to changes in hardware or software.

Information technologists from industrialised countries tend to assume that developing countries have a records management capacity in place which will be capable of providing support to automated systems. Unfortunately, in many countries in sub-Saharan Africa, the national archives, which have statutory responsibility for government records, remain locked into a role as custodian of pre-colonial records. Very few play an active role in the management of the current or semi-current records held by ministries, and still fewer have either the training or the experience to provide records management support to information technology projects. There is no capacity at all for the management of electronic records in the countries visited.

Donor agencies can play an enormously important role in encouraging and supporting the development of a records management capacity in the public sector in sub-Saharan Africa capable of managing paper and electronic records and thus of supporting IT projects. They can promote best practice in project design to ensure that, where needed, a records management component is built into IT projects.

5 Outline of the Projects Investigated

5.1 Uganda

The Computerised Personnel Management Information System (CPMIS) project was commissioned to monitor the size of the civil service. At the outset of the project the plan was to move towards a networked implementation to allow on-line interrogation of a central database held on a PC file server. The software chosen was the Peodesy relational database package produced by Unibit Software in the United Kingdom. To-date, two pilot projects have been implemented in the Ministry of Public Service as a stand-alone system using six ICL IBM-compatible personal computers and two dot-matrix printers.

The original timetable was overly optimistic and had to be redesigned. Phase I of the project ran from June 1994 until January 1995. It involved the identification of the information requirements; the selection, procurement and installation of software and hardware; and training of staff in the use of the equipment. Phase II ran from February 1995 to July 1995. It involved only a pilot project by the Payroll Monitoring Unit in the Ministry of Public Service rather than data entry for the whole Civil Service as originally envisaged. At the same time a parallel pilot project was carried out in the Ministry of Trade and Industry as part of the ODA-supported Records Management Project.

Since the completion of Phase II, work on the project has come to a halt while a decision is taken on its future direction. It would appear that no data have been added to the system since at least July 1995.

5.2 Ghana

The Integrated Personnel and Payroll Database (IPPD) Project is the largest and most complex IT project ever undertaken by the Government of Ghana. It is believed to be the first of its kind in West Africa. IPPD is a relational database. The software is a package called SIGAGIP supplied by CGI Informatique in Paris, France. The database is accessible through 150 Personal Computers and dumb terminals over an Ethernet network using the TCP/IP protocol.



Office of Head of Civil Service, Ghana

The original project objectives of IPPD centred upon the need to provide more reliable and useful information on Item 1 of the national budget (Personnel Emoluments) and manpower. They also included improving the efficiency, responsiveness and timeliness of personnel administration, enabling the use of manual personnel records to be minimised and allowing for a substantial rationalisation of personnel registries.

By 1993 the essential thrust of the project had not changed, but there were changes of emphasis in the light of developing policy objectives and the experience of the Civil Service Reform Programme. There was greater stress on the importance of providing information for use in personnel management and to support an ambitious staff training and development programme designed to strengthen institutional capacity. The objectives also placed greater importance on the need to allow a wider and much more geographically distributed clientele of end users.

The IPPD project was scheduled to take 18 months to complete. In retrospect this would appear to have been highly optimistic, given the technical obstacles and the prevailing culture of the Ghana Civil Service. The project timetable was extended several times, and in the end IPPD went live in July 1995, 45 months after the project began. The delays included software procurement problems and severe difficulties in capturing accurate data.

5.3 Zimbabwe

In the Spring of 1993 consultants began work in the Public Service Commission on a project to implement a Human Resources Information System (HRIS). When the project ran into difficulties and the team lost its understanding of the project objectives and user needs, the project lost direction. By 1996 the work of the consultants was deemed to be unsatisfactory and the contract was terminated. At present (October 1996) a new set of consultants is being selected. Although the technical solution has yet to be fully defined, ideas for a country-wide networked database are under consideration as the long-term objective.

6 Implementing Computer Projects

6.1 Economic Considerations: 'The Brain Drain'

The requirements for trained staff to implement and support government-wide information systems are very considerable and often grossly underestimated. The technical skills required in the implementation and support of these systems are rarely present within government due to long-standing problems of lower salaries compared to the private sector...

H M Davies, A Hashim, E Talero (1993)²⁹

In Ghana, Uganda and Zimbabwe public servants are paid significantly less than workers in the private sector.³⁰ In all three countries, managers complained of a 'brain drain' of skilled information technology staff. In fact, in Ghana and, possibly to a lesser extent, in Uganda, this problem extended to anybody, such as word processor operators, who had training in the operation of computers. It would appear that in many cases staff joined the civil service in order to get training (particularly access to overseas training) and as soon as this was achieved they transferred to more lucrative jobs in the private sector.

The consequences for the public sector are that the most able, technically skilled and highly motivated staff stay in the system for only a short period. In all three countries database projects have suffered delays because staff trained to input data onto the systems have moved on to new jobs soon after completing their training. The impact of the 'brain drain' is particularly acute where the skill is in short supply in the private sector, such as computer audit in Zimbabwe. In contrast, there is a lower turnover of staff supporting manual systems. In this sense, 'low technology' solutions to information problems can be more sustainable. More generally, projects suffer from a lack of continuity and the investment in training is wasted. It is likely that this situation will become exacerbated as the AIDS epidemic has an impact in all three countries, since many of the staff being trained to operate computer systems are of the most high risk age groups.

6.2 Impact of Aspirations of Senior Management

Throughout the world, the role of senior management in relation to IT projects can be problematic. Managers are mainly drawn from a generation that has had little direct experience of using computers themselves. This is particularly true in Sub-Saharan African civil services where until recently in many cases the most common (and sometimes only) use of computers was the use of mainframes to run the public service payroll. Only in the last five years have personal computers come into common usage in African civil services, often as a by-product of donor assisted projects.

Senior managers have had little 'hands on' contact with computerisation. Many are aware of the computer revolution and have seen the outcome of successful projects in industrialised countries.

²⁹Hywel M Davies, Ali Hashim, Eduardo Talero, *Information Systems Strategies for Public Financial Management*, World Bank discussion paper 193, 1993, p20.

³⁰There would appear to be little in print on the current relative wage costs between public and private sector in the IT area in the countries studied. However, a recent UNDP funded report for the Zimbabwe Public Service Commission cited by the World Bank estimated that senior officer wage levels in the public sector in general were about 170 per cent lower than comparable jobs in the private sector and about 80 per cent lower than the parastatals. *Zimbabwe: Fiscal Management Review*, Volume I: Executive Summary and Report, June 26, 1996, Report Number 15681-Zim, paragraph 5.6.

However, they have little understanding of the limitations of computers, nor are they conversant with the numerous pitfalls that can bedevil automation projects. As illustrated by the Ugandan and Ghanaian cases, the consequence is that senior managers tend to have exaggerated expectations for IT projects and to underestimate the resources (both human and material) needed to achieve them. Consultancy firms, competing for business, are often reluctant to state plainly that projects will take longer (and cost more) than their clients believe, for fear of losing a contract. Both the Ugandan and Ghanaian project plans had initial timetables that turned out to be wildly unrealistic, with overshoots of years in both cases. Lacking experience of the particular issues associated with IT projects, the senior managers tended to underestimate the risks.

This situation is not confined to developing countries. Korac-Boisvert and Kouzmin point out that 'delays, sky-rocketing costs, poor documentation and estimates are common in IT development.'³¹ However, managers in developing countries are further disadvantaged because they have less exposure to IT projects than their industrialised country counterparts and because of the dearth of in-house expertise in modern information systems. In particular they are often unaware of the risks of allowing IT project teams continually to add new user requirements which can lead to a loss of focus.

The expectations of senior management determine the context within which IT projects are developed. Unrealistic expectations can distort the fundamental framework of the project design and in practice can make it difficult or even impossible for the projects to be successful. Their expectations can place unreasonable burdens on middle level managers.

In the cases studied, middle managers responded to this situation in a number of ways. Typically, with little experience of information technology and little or no experience in managing projects (both IT projects or conventional projects), they were unaware of the potential pitfalls and enthusiastically sought to implement their project until they hit problems they were untrained to confront. Some tried to pass on responsibility to more junior, technically literate staff to do the work. In the event of the project going wrong, the junior staff members became scapegoats. Alternatively some did as little as possible in the hope that senior level enthusiasm for the project would wane or they would have been moved to a different post before concrete results could be expected.

There is a clear need for both senior and middle managers who are not IT specialists to be educated in the constraints and issues of information technology projects. Middle managers will also need training in project management. The object of this training should be to produce non-specialist managers. They need an understanding of the uses to which computers can be put and also sufficient technical knowledge to collaborate with fully qualified IT technician project managers.

³¹Nada Korac-Boisvert and Alexander Kouzmin, *Information Infrastructure and Policy*, Volume 4, 1995, p133.

6.3 Role of Central Computing Services

Each of the three countries visited had a bureau charged with providing central computing services to the public service. Created in the era of the mainframe, they were, to a greater or lesser extent, encountering difficulties in adapting to the age of the networked microcomputer. Users of these services complained that central computing services were slow to respond to their needs (for example, making modifications to programmes or providing technical support and advice) and tended to have a 'we know what is best for you' attitude that ignored user needs.

On the other hand, the central computing services complained of having lost the initiative to donor funded projects. In many cases the computing services were not consulted about the technology adopted and are often simply unaware of what systems are being developed in the line ministries. IT managers said that often the first time they heard of a new system was when the project went wrong and they were asked to provide technical support. This has led to a multiplicity of software products being used for similar tasks (eg word processing) and to unnecessarily high support and purchasing costs because the lack of co-ordination prevented the public service from making economies of scale. As central computing services become increasingly isolated from technical developments, senior public servants are forced to become increasingly reliant upon external technical advice, either directly from donors (who may have their own agendas) or from consultants with little long-term commitment.

Moreover, the central computing bureau complained that senior staff are regularly poached to jobs in the private sector, and often posts are left unfilled for extended periods. For example, in Zimbabwe the Central Computing Service has had seven Directors since independence in 1980 and at present is being managed by an Acting Director. The remaining IT managers are typically overwhelmed by the difficulties of covering the duties of unfilled positions and have little time to develop and implement a strategic vision for IT for the public service; nor do they have the relevant training to do so, although some managers interviewed indicated that this was the direction in which they wished to go. The consequence is that central computing services tend to be reactive and defensive in the face of new technological developments.

6.4 Socio-organisational Issues

... most studies on information technology for development planning tend to focus on problems relating to infrastructure and human resource development with little explicit mention of the social, political, cultural and organisational factors that prevail in the planning environment and the way in which these factors interact with the process of technology adoption.

S Madon (1993)³²

Writers are beginning to focus on the social and cultural obstacles to the successful implementation of information technology in developing countries. The findings of the present research project tend to support this approach. In Ghana and Uganda, where computerised personnel information systems have been designed, the governments are seeking to control the 'ghost worker' problem. Given that at least a percentage of the 'ghosts' on the

³²Shirin Madon 'Introducing administrative reform through the application of computer-based information systems: a case study in India' *Public Administration and Development*, Volume 13, 1993, p38.

payroll have been deliberately placed there by individuals operating or supporting the mainframe payroll systems and who stand to lose financially if the new personnel databases succeed, a certain level of 'passive resistance' during the development phases has been almost inevitable.

Moreover, in Ghana it was observed that the computer system was very vulnerable either to a natural disaster or to industrial action.³³ All the file servers and all the data backups (which were held in four fire safes) were in one large room in the Controller & Accountant General's Department. Backups were not undertaken daily, contrary to the recommendation of the supplier, for secure management of the database.³⁴ There was a backup machine in the same room, but if the room were to be destroyed (the site is in a flood zone and an earthquake zone), the nearest machine capable of running the system was thought to be in South Africa or Europe. No backups were held elsewhere, there was no vital records programme and there was no plan for what to do in an emergency; nor was there evidence of the backup procedures having been rehearsed or tested.

The introduction of automated systems shifts the balance of power from senior administrators and professionals to information technology technicians. The databases viewed were highly vulnerable and entirely dependent upon a small number of technicians. The IT staff knew they were a scarce resource, and under prevailing civil service conditions of employment they were practically irreplaceable.

The concentration of large volumes of strategically important information in a single system greatly enhances the ability of the state to manage its resources effectively, but it also creates new risks. Without adequate safeguards, a strategic financial and information resource is no longer fully under the control of the government but is open to manipulation by individuals for their own benefit. By concentrating so much power on technicians, who cannot easily be replaced or disciplined, there is a risk that the civil service reform objectives of greater transparency and accountability will be undermined.

6.5 Technical Capacity

The technical capacity available to the public services of all three countries is comparatively limited. The central computing services are small compared to the overall size of the public service and the 'brain drain' mentioned above makes it difficult to acquire and retain staff with up-to-date skills. In particular there is a shortage of staff to support local PC-based applications in line ministries. In all three countries users complained that they had difficulty in obtaining technical support for equipment and systems and this had significantly delayed projects.

In Ghana there were also problems with technology transfer. The UNIX operating system for the Integrated Personnel Payroll Database was selected to comply with World Bank procurement guidelines. It had never been used in Ghana before, and the IT staff did not have the necessary technical knowledge of the system. Although the allocation in the project for training in UNIX for the IT staff was doubled in an attempt to compensate for their lack of enthusiasm for the project, the technology transfer was not successful. When the system went live, the IT staff were reduced to solving problems on a trial and error basis, an inefficient approach that has led to lengthy delays. Thus the requirement to use a system technology with which the local IT technicians were uncomfortable has had an adverse effect on the success of the IPPD Project.

³³'IPPD User and System Requirements Prospectus', May 1992, p14, 63. World Bank Archives ISN 12600, Accession R96066.

³⁴'IPPD Review: Project Management and Technical Report' by NCC Services Ltd for ODA, August 1996, p27.

6.6 Management Capacity

The Ghana project was the only one sufficiently far advanced to provide lessons on management capacity. The framework of the management structure lacked clarity, and at times this caused the project to descend into 'buck passing' and damaging 'office politics'. Unsurprisingly, the most important conclusion was that good management and senior management support were crucial to the outcome of the project.

The management capacity within the IT area was weak. A recent consultant's report highlighted poor communications skills and poor project management skills as serious problems.³⁵ Finally, the capacity to manage and enforce contracts with suppliers was also a key weakness. In several cases serious technical problems were left unresolved for months where the suppliers were contractually obliged to remedy because the suppliers were unaware there was a problem.

The capacity to implement IT projects has been influenced by official recruitment policy. The policy would seem to be rooted in the needs of mainframe computing, in particular in the recruitment of staff with programming and systems analyst skills. For example, the Public Services Commission in Ghana recruited entry-level staff with first degrees in computer science as the basis of its IT capacity acquisition. There appeared to be a lack of awareness of the project management and leadership skills that are essential for the successful installation and management of modern IT systems. The assumption seemed to be that these skills could be acquired 'on the job'. The evidence suggests that in many cases this is not happening.

6.7 Infrastructure Capacity

The technical infrastructure varied from country to country, but had a definite impact on the projects. The projects in all three countries are centred in the capitals, where the best facilities are available. The districts are nowhere near as well serviced.

A reliable electricity supply is an obvious requirement for any computerised system. Uganda had the worst supply, which was subject to power cuts and current fluctuations. Ghana also experienced problems of power fluctuations. Zimbabwe was by far the best provided, at least in Harare, and power supply did not appear to be an issue. In the other two countries, problems with the current have seriously affected the personnel information system automation projects. Power supply difficulties can be improved through the use of generators and uninterruptible power supplies, but these add to the cost of automation.

³⁵NCC Services Ltd for ODA, August 1996.

In Ghana and Uganda the suppliers of the software used did not maintain a presence in the country. In fact, the supplier of the system used in Ghana provided support from Paris, either by telephone, or by flying out technicians. The difficulty both projects had in finding suppliers with effective and cost efficient user support illustrated the high overhead that governments in Sub-Saharan Africa must bear in terms of a much more restricted choice and higher costs than in industrialised countries.

In Ghana and Uganda local access to computer equipment, consumables and maintenance is virtually non-existent outside the capital. Scarcity pushes up costs and can be a serious obstacle to automating information systems in the districts.

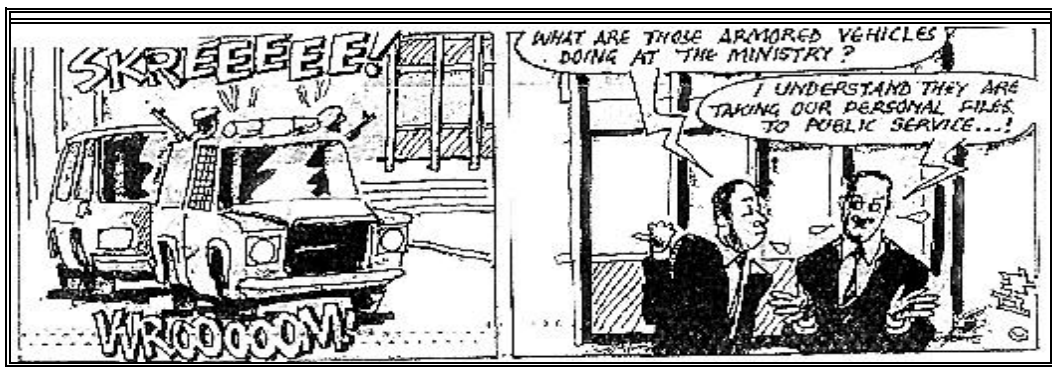
In Zimbabwe the situation appears to be better, although for reasons of time it was not possible to check conditions in the districts. There is an annual information technology trade fair in Harare which is supported by major international IT companies as well as local companies.

7 The Role of Records

7.1 Data Sources

A major constraint on the rapid improvement in efficiency and productivity created through IT initiatives in the public sector is the inadequacies of the information systems. Serious flaws in the system are present in many less developed nations: these include the general ignorance on the location and scope of accessible information, the inability of the feeder to furnish timely primary data, operating constraints in processing data and the uneven coverage of published tables.

R Adkins (1988)³⁶



From 'Senior Quarters Corner', *The New Vision*, Uganda, [1996]

The data for computerised personnel information systems tend to be drawn from several sources, including paper-based personnel files held in registries, nominal rolls, other databases and surveys, including head counts. The issues involved in using these sources are discussed below.

Paper-Based Personnel Files

³⁶R Adkins, 'Organisational implications of information technology in third world countries', *Public Administration and Development*, 1988, Volume 8, p376.

The most significant finding of this study is the fundamental importance of traditional paper personnel records to the success of personnel systems. These systems need to capture information about staff members from the point they joined the civil service until the present day. Inevitably, a large proportion of the staff will have joined the civil service many years before the introduction of the computerised personnel information system and the only original source data will be found on paper records.

Ghana, Uganda and Zimbabwe are all former British colonies and their information systems are all based on the paper registry. All three countries surveyed had very similar registry systems, but they varied in levels of efficiency from country to country and from ministry to ministry. A well run registry depends heavily upon the management and leadership skills of the supervisor because of the large numbers of staff involved and the need for meticulous application of filing rules and procedures to large volumes of documents.

The differences in the management of the registries in these countries reflect the histories of their economic and political fortunes. The registry systems in Ghana and Uganda had largely collapsed, although in both cases improvements, which have been made where the ODA funded registry improvement projects, have renovated selected registries. In all three countries, civil servants complained that personnel files were incomplete (and sometimes non-existent) and that finding missing information was a significant cause of delay in dealing with personnel issues.

Automated personnel systems must ultimately rely heavily on the personnel records stored in the registries as the only authentic, reliable and legally valid source of most of the data required for the systems. Personnel systems must be complete if they are to be of use for making decisions about individuals. The degree of their reliability as a data source for statistical analysis of employment patterns for the civil service as a whole also depends upon their completeness. This means having access to information going back thirty years or more, which is the typical length of service of a career civil servant. Where the paper records are incomplete or fragmented, it is very difficult to populate the database with meaningful data.

Paradoxically, despite the importance of personnel files as a source of personnel data, personnel records are not a popular source of data with those responsible for designing and implementing computerised personnel information systems. In Ghana, personnel files were very quickly rejected as a source, and in Uganda it took several years before it was accepted that they were the only reliable source of much of the data needed for the new system.

There are several reasons for this:

- Shortcomings in the manual systems (ie mainly the registries) are typically cited as a justification for creating the automated system and there is little confidence that the manual systems will provide the required data.
- The timetables for delivering the database projects are too tight for a records management based approach to be realistic, and in any case the resources required to restructure the paper records are not available.
- The personnel files at headquarters (office of head of civil service) are often very incomplete and tend to be restricted to personnel recruited as established staff.

- Records tend not to be available for non-established staff or established staff initially recruited in non-established posts.
- Personnel files held in the line ministries may be more complete than those in the headquarters, but they are located in different buildings from the computer where data entry is being carried out.
- Other data sources – such as nominal rolls compiled by each ministry, dumps of data from existing payroll databases, or staff survey questionnaire forms – appear at first to be more suitable and more convenient for data entry.

If these problems are to be overcome there is a need to develop a methodology for obtaining reliable records sources. The steps involved are analysed in Section 11.

Nominal Rolls

In all three countries, line ministries are required to maintain lists of staff employed in the ministry. Initially this may appear to be a useful source of the basic data needed for a personnel database, such as name, age, position, etc. However, unfortunately it is often the case that maintaining the nominal rolls is regarded as a task of low priority and the record is out of date. For example, in Uganda a sample survey found that 6.5% of those who had left the ministry (retrenched, retired, deceased, etc) still appeared on the staff list. Moreover 38.2% of Ministry of Public Service officers at headquarters were being held against non-existing posts.³⁷ Moreover, because the nominal rolls are typically compiled from other records, if there is a discrepancy in the information, it is necessary to go back to other records to resolve the problem. In this sense, nominal rolls are ‘second hand’ information. On their own, nominal rolls are not a sufficiently accurate source of information on which to base a new personnel system.

Databases

The advantage of using other databases as source data for personnel information systems is that data can be transferred automatically without re-keying. However, there are problems and limitations in the approach. Firstly, the source database may be inaccurate. In both Uganda and Ghana there were serious problems of ghost-workers on the payroll database. In Uganda, the personnel database was in fact intended to act as independent source of data to ensure that the payroll database would remain free of ghost-workers, after the exercise to remove them from the payroll database had been completed. In Zimbabwe, where the central payroll database is widely regarded as being a very accurate source of data, dumps of data from the payroll system will probably be an important source for a new personnel system.

Secondly, the source data may not be structured in a way that is suitable for the new database. It may be cheaper to re-key the data, though of course this creates the opportunity for inaccuracies caused by keying errors.

Thirdly, unless the new database is simply an upgrade of an older system, the source database will have been designed for an entirely different purpose, for example payroll. Thus it is likely there will be fields on the new personnel database that cannot be completed from other databases.

³⁷Ministry of Public Service, ‘Impact evaluation report on feasibility study of the registry based computerised personnel information system at the Ministry of Trade and Industry’, June 1995, p4.

Surveys

Surveys to gather data about personnel have several advantages. The information is up-to-date, the survey team can decide what information should be collected and the survey forms can be designed to arrange the data collected for ease of data input. There are also disadvantages.

For example, in Ghana the surveys relied heavily upon the integrity of those individuals completing the forms. The data collection survey forms were not checked against available establishment files held in the Personnel Registry of Office of Head of Civil Service or in line ministries. With the benefit of hindsight, the decision not to use personnel files for checking the date of birth and the date of appointment to the Civil Service was a mistake. The former date determines date of retirement and the latter has a bearing on pensionable benefits. As the IPPD system was to be used to generate lists of staff about to retire, it was in the interest of individuals wishing to avoid retiring to enter false dates. At the time that the survey was collected it was widely believed that the implementation of IPPD would lead to the abolition of the establishment files, or at least lead to a major running down of the Office of Head of Civil Service Personnel Registry. The notion that there would be no means of checking data submitted on the data entry forms may have encouraged false entries.

The methodology and level of resourcing for the surveys is also important. In Ghana the resources were far short of what was required to cover the whole Civil Service. In retrospect, given the resources available it would probably have been better to limit the focus to specific ministries to ensure a more complete resource and to audit the information against the available paper records.

Another problem with the survey approach is that unless the survey is carried out as a census, in other words the data are gathered on the same day throughout the country (which requires a large, well trained and well organised team), there is a large chance that discrepancies will occur. These may be caused by differences in the way the data are gathered in different locations or, if the data gathering exercise is protracted, in staff being posted from one location to another and appearing in more than one set of statistics. Finally, as the Ghana example illustrates, the data very rapidly become out of date. Unless the new personnel database is fully functioning and the data can be entered into it quickly, and unless there are efficient procedures for gathering changes to the data and entering those on to the database, the problems can be serious.

7.2 Data Entry

As the case studies illustrate, the technical implementation of a database system is only the first stage in the creation of a useful tool. The database needs to be populated with accurate and comprehensive information and the data have to be kept up to date. If regular updating does not happen, the database rapidly ceases to be useful. The example of the Ugandan pilot project illustrates this point. At the time of the present study, data entry had been discontinued for over a year, rendering the data unreliable and the system virtually useless as a tool for decision-making.

It is essential that staff be allocated to updating the database and that this be reflected in their overall work programme. This is particularly important in the light of the widely recognised problem in Africa of an absence of a 'culture of maintenance'.³⁸ One of the problems in Uganda has been that despite the enthusiasm for designing and setting up the database, little thought had been put into who would maintain it. Initially it was not appreciated what this would involve and it was thought that

³⁸Evans E Woherem, 'Towards a culture of management of software systems in Africa', *Information for Technology and Development*, March 1995, Volume 6, pp6, 10.

data entry could not be simply added to the existing workload of a staff member without creating time for the new task. It is important to ensure in advance that realistic provision is in place for maintaining the system. In the case of IT projects, maintenance includes not only maintenance of equipment, but also maintenance of the data.

The study highlighted the difficulties in obtaining data to update the database. In part this reflected poor communications infrastructures. For example in Uganda, telephones are in short supply or non-existent, and messenger services are slow and infrequent. This inevitably slows down the speed at which information can be sent to the capital, particularly from the more remote districts.

There is also the question of procedures for ensuring that the information is complete. Procedures for filing paper documents were inadequate in all three countries, and the files were frequently out of date. Unless the procedures are improved, the problem will remain, irrespective of whether the system is computerised or manual.

In Ghana incentives and penalties have been introduced to staff linked to pay increases and to managers linked to manpower budgets. The strategy has been a qualified success. However, the project team has been unable to devise incentives to encourage the updating of certain kinds of information, for instance, a record of training and qualifications. In these areas the personnel database has not succeeded in maintaining up-to-date information. The result is that the data are not uniformly accurate. Certain fields have a high degree of accuracy, others are significantly less accurate.

It would be valuable to the designers of future public service personnel databases for case studies of best practice to be made available. For example, an effective solution to the problem of providing an incentive to maintain fields about training courses attended or qualifications obtained after joining the public service would be valuable.

Conversely, when assessing the risks and potential benefits of investing in a computerised personnel system, it is important to ensure that the incentives and procedures for ensuring that the data on the database will be kept up to date are in place. This should be done by breaking down the database into groups of fields and then checking that the procedures and incentives for maintaining them are credible. This should be included in any checklist of necessary preconditions used to evaluate the viability of projects to automate personnel information. Such an approach would contribute to reducing the large sums of development aid and years of effort currently wasted on such projects.

The processes of data input and data output inevitably generate large volumes of paper. In Ghana there are stringent, tightly controlled manual procedures to prevent data being fraudulently entered on to the system. This involves supporting each data change request form with appropriate documentation. Moreover, the data entry teams track and record individual data changes on paper. This paper needs to be managed. In Ghana, where this is not being done, the procedures to ensure accountability are already being undermined by the flood of paper the IPPD database is generating. In the Payroll Processing Sections visited, used data input forms have overflowed from the available filing cabinets and are piling up on floors and tables. The papers are becoming increasingly disorganised and difficult to locate. In Ghana, within another year the paper trail designed to provide accountability for the data on the system will have collapsed completely.

Finally, manual paper records systems and electronic records systems were not linked in any of the countries studied. Yet there continues to be a need to maintain paper personnel files for legal reasons and because some personnel records are not suitable to be stored in a database. Paper records are

also needed to provide evidence for data stored on the database for reasons of accountability. Data input and output forms can be stored on files to provide an audit checkpoint. There is thus a need to ensure that computerised personnel databases are closely linked into the existing personnel registry systems. This should strengthen both systems and increase the value of both.

None of the personnel databases examined included a field that linked the electronic record to the relevant personnel file in the registry. This is a missed opportunity to link the paper and computerised systems and to create an automatic index to the personnel registries. In each country there already existed at least one unique identification number that might be used, either a unique employee number or a tax or social security number. There would be obvious benefits in using such a unique ID number both in the database (to facilitate the import of relevant data about individuals from other national databases) and as the key to locate paper personnel files.

7.3 Data Outputs

Computers generate large volumes of paper output. Much of this is ephemeral and need not be retained but some of it should be held for varying lengths of time as an audit trail. Typically the output is left out of the existing records management regime (where such exists) leading eventually to untidy, disorganised offices and wasted space. The outputs and the uses to which they are put should be analysed to determine how the outputs should be arranged for ease of retrieval, the linkages to paper-based personnel files and the application of disposal criteria.

8 Data Exchange

The ability to exchange data between databases greatly enhances the return on the investment made in gathering the data. It is a key building block in the creation of a national information infrastructure.

The study revealed that there was little understanding among users of the potential benefits of exchanging data between databases. Nor was there awareness of the need to keep this in mind when commissioning and designing databases. For example, data exchange would facilitate the decentralisation of personnel functions to local authorities, while at the same time allowing central government to have access to information needed for national policy purposes. It would allow local authorities and the central civil service to exchange key personnel information. Personnel information (combined with payroll data) is also essential to feed into computer systems used to model pay increase projections. This is particularly important in countries such as Ghana and Zimbabwe where industrial action in the public service is a distinct possibility and where there is a need to provide the information quickly to government negotiators.

Data exchange between databases is facilitated by common coding conventions and common data structures. At present, officials responsible for commissioning new systems appear, on the whole, to resent the idea of having to agree and abide by common data standards. Unless this attitude changes, it will be difficult to achieve national strategic objectives from automating personnel information.

In all three countries the personnel databases were designed and promoted on the basis that eventually they would provide a nation-wide service. Public service offices in the districts would be able to access the database directly by means of a network. This is a highly optimistic assumption; it will require a quantum leap in capacity and a well funded high priority national programme to implement a strategic network. It is difficult to see how the cost of a network of sufficient sophistication and capacity could be justified simply to service a civil service personnel database. Such a network would have to be justified as a strategic infrastructure investment in its own right as part of the government's economic development strategy.

For the present, nationally networked civil service personnel databases in Ghana, Uganda and Zimbabwe appear to be a remote possibility. Ghana has experienced serious delays in linking ministries only hundreds of yards apart. In Zimbabwe a senior technician expressed reservations about the current capacity to implement a nation-wide public service personnel database given the current difficulties experienced maintaining links between buildings only a few miles away.

9 Management of Electronic Records

Unlike traditional paper records electronic data are entirely dependent upon technology, not only to create the record but also to store and preserve it over time. Industrialised countries are becoming familiar with the problems of preserving electronic documents in an age of rapid technological change in the information field.

If electronic records are to be reliable for accountability purposes and if they are to be preserved over time, they require continued attention. Hardware is constantly being improved and, in industrialised countries, computers even five years old are virtual museum pieces. The storage media are also subject to obsolescence and degradation. For example, the National Archives of Canada, which recommends using digital audio tape for storage of electronic records, estimates that tape is only stable for five years because of the instability of the materials from which it is made.³⁹ Optical disks are much more stable, but the software used to access and retrieve the data stored on the disks is liable to become obsolete because typically it is proprietary software and there are no standards to ensure compatibility between different systems. Moreover, the data can become meaningless or

³⁹Report of the Working Group on Conservation Standards and Technologies', National Archives of Canada, May 1993.

misleading because the context in which the data have been created and used has changed. Usually databases lack sufficient contextual information or ‘metadata’ built into the systems to prevent this happening. This is a particularly dangerous problem where staff turnover has been high or where the organisation has been re-engineered.

Governments in industrialised countries are investing heavily in research programmes to address these issues, but as yet there is no comprehensive technical solution.⁴⁰ However, a basic strategy is emerging which involves refreshing the storage media, migrating the data onto new hardware and software, taking steps to validate their integrity and authenticity and addressing issues to do with the context of the data which preserve the meaning of the data. The objective is to retain the ability to display, retrieve, manipulate and use digital information in the face of constantly changing technology. The strategies require the development of highly specialised techniques which are also often relatively expensive.

The management of electronic records is a relatively new issue for developing countries, but the governments are already beginning to encounter problems. In Zimbabwe, the Salaries Services Bureau (SSB) has operated a payroll database from 1980. Unfortunately when a new system was introduced it was discovered that many of the older tapes could not be read. In the end it was only possible to convert data from January 1994 on to the new system.

The dangers of the vulnerability of computer data to degradation, outright loss or malicious alteration were not generally understood by the public servants interviewed. For example, in Ghana the procedures for creating regular backups were not implemented. There was no vital records programme to store copies of the backups and relevant system documentation off site in a safe location so that the system could be restored the event of a major disaster. Automation without effective procedures to protect the systems leaves the state highly vulnerable to losing records essential for accountability and the provision of benefits to individuals, such as pensions.

Organisations need to keep personnel information for long periods. For example, retention periods of 70 years or longer for personnel files are common in many countries. Thus personnel databases need to store data about individuals for decades – far longer periods than is typical for most database applications. Moreover, as public records, personnel databases come under the responsibility of the national archives if they are selected for permanent preservation. In practice, however, in none of the countries visited did the national archives have an active role in determining the fate of electronic records stored on the personnel databases; Nor did any of the national archives have the technical capacity to ensure their long-term preservation.

⁴⁰For instance the UK Public Record Office EROS Programme, the Government of the Netherlands ‘Back to the Future’ Project, the Government of Canada’s IMOSA Project, the German Government’s POLITeam Project and the United States Defense Department’s Task Force on Records Management.

In other countries, for example the United States and the United Kingdom, the national archives has a special unit dedicated to the preservation of electronic records of permanent value. The national archives in the countries visited do not have large enough budgets to develop such specialised units, nor are they likely to have in the foreseeable future. The absence such units within the public service is likely to become a serious problem in the future as government services become increasingly automated and increasingly dependent on records stored only in electronic formats.

A related issue is the auditing of computerised systems to ensure that they meet the necessary standards of security and accountability. In Zimbabwe the Office of Comptroller and Auditor General has a unit with responsibility for auditing applications controls (within the computer) and general controls (the environment within which the computerised system operates). However, staff with training in computer auditing can attract high salaries in the private sector. High staff turnover is undermining the ability of the public service to maintain a capacity in this key area.

10 Conclusions

10.1 General Findings

The case studies illustrate what can happen when aspirations for transforming the public service with information technology collide with the realities of the countries concerned. The preconditions for successful computerisation projects are not always present. There is a need for a clearer definition of the preconditions and a recognition that creating the preconditions will require greater investment and effort than hitherto recognised. The table below outlines the main issues encountered in the case studies and suggests solutions.

Problem	Solution
Institutional issues	
Support from senior management wanting	Develop strategies and interventions to foster management sponsorship of project
Central computing services tend to be reactive and defensive in the face of technological developments	Training for senior IT staff in developing and maintaining IT strategies
Project design issues	
Exaggerated expectations of ability of computerisation to solve all tasks	Provide training to sensitise users to capabilities of computers and what they are ill-suited to achieve
Weak project and general management skills in central computing services	Change recruitment policy to include staff with management skills as well technical skills
Unrealistic timetables	Recognise from the start that setting realistic timetables is key to a good final product
Expectation that computerisation will reduce need for personnel registries	Recognise that records will continue to provide essential legally verifiable information and that personnel registries should be strengthened
Problem	
Solution	
Expectation that computers will reduce delays	Recognise that any gains will be long term

in processing routine tasks such as promotions and retirements caused by gaps on the files	and are not guaranteed
Timetable for data entry too short	Assign more time/resources to the task of data entry
Project extends beyond original objectives	Project management training
High level priorities change leading to distortion of IT project objectives	Conduct regular formal reviews of project objectives and make explicit any changes in direction; ensure that new objectives are properly resourced and included in a revised project plan
Protection of information	
Strategic systems vulnerable to natural or other disasters	Ensure that backup procedures are followed and disaster recovery programmes are in place. Ensure that managers responsible for determining priorities understand importance of the issue. It is not sufficient to leave it in the hands of technicians.
Networked system vulnerable to hackers and fraud	Improve system security and ensure accountants have easy access to audit trail
Lack of understanding of security issues	Sensitise managers and users to realities; educate database managers on best practice
Automation results in shift in 'balance of power' in favour of IT technicians	Recognise issue and take steps to protect strategic systems
Legal requirements for preservation of original documents not recognised	Review national legislation on admissibility of electronic evidence
No provision for long term preservation of electronic records	Create dedicated unit in national archives
Sustainability issues	
Insufficient number of staff qualified to undertake audit of application and general controls of computerised system to ensure security and accountability standards	Ensure pay levels of auditors are competitive with private sector
High staff turnover (competition from private sector, AIDS epidemic)	Pay competitive rates; train larger numbers to allow for 'wastage'; use manual systems which show a much lower staff turnover; health education
Unreliable power supply	Provide UPS or devise procedures for manual operation while power interrupted
Hardware maintenance is not included in project design	Ensure host government makes a commitment in departmental budget to finance system maintenance

Problem	Solution
Software maintenance is not included in	Ensure host government makes a

project design	commitment in departmental budget to finance system maintenance
Staff time is not allocated to data entry	Include data entry in departmental work schedules; sensitise managers at outset of project to long term need for staff to be allocated to this task
Poor record keeping of computer operations	Ensure better supervision and include computer input and output records in records management schedule
Sharing of information: decentralisation requirements	
Tension between central and local information needs	Ensure joint representation of committee determining system requirements and projects objectives
Centre and districts require access to same personnel records	Agree which records will be held centrally and locally; copy key records; ensure shared access to personnel database data (initially in hard copy if necessary)
Need for centre and districts to share data	Standardise fields and codes
Difficulties with sharing personnel records of civil service staff transferred to local authorities where government pension schemes are still funded centrally	Ensure secure long term preservation of personnel records; provide copies (eg by microfilming) where feasible
Officials commissioning databases are reluctant to agree and abide by common data standards	Education
Disparate data structures and codes prevent sharing of data between databases created for different purposes	Standardise fields and codes
Difficulties in providing districts with greater access to centrally held data	Organise distribution of data by tape or diskette; assign high priority to national infrastructure project to create trunk cabling; make network available to wide range of government users so the cost is justified
Poor communications infrastructure in districts (no telephones, poor roads)	Select information systems that do not require state-of-the-art communications to operate successfully
Inadequate feedback systems compound poor communications with districts	Redesign procedures
Districts have poor capacity to manage their own records	Establish a training programme
Data input issues	
Appropriate source data have not been identified at the design stage	Incorporate identification and assessment of the quality of source data into every project plan

Problem	Solution
Data are of variable accuracy <i>within</i> a	Strengthen incentives to maintain

database (personnel data are often the least accurate)	up-to-date personnel information; identify best practice
Information does not arrive at centre to be processed, or arrives late	Strengthen incentives to maintain up-to-date personnel information
Personnel files are incomplete and disorganised	Introduce a records management programme
More information is held in ministry personnel files than in central establishment files	Decide what information should be held at centre and what in ministries
Large numbers of establishment files with only 1 or 2 sheets of paper in them	Decongest registry and build up files where necessary
Files are kept on individuals who had been accepted for recruitment, but had never taken up a post	Decongest registry
No files at centre are kept on non-established staff	Use ministry files for checking database entries, where these exist
Surveys used to capture data created before introduction of database fail to deliver accurate data	Use personnel records instead
Data outputs issues	
Computerised data do not provide contextual information needed to identify inaccurate data	Create links to paper records which are rich in contextual information
Large volume of paper output is clogging filing cabinets	Include paper output in records management schedule
Records management issues	
Users are reluctant to support the maintenance of manual systems	Introduce training to sensitise managers to the need to do so
No linkages between databases and personnel registries	Integrate design of database and manual systems (unique ID number to be used on both systems to identify staff records)
Data input forms are overflowing filing cabinets	Schedule the forms for transfer to Records Centre for storage and eventual controlled destruction
Manual systems are weakened by introduction of computerised system	Integrate design of database and manual systems
Large numbers of closed establishment files are still in current registry system	Decongest registry

10.2 Findings in Relation to Records Management

Many of the issues identified above relate to general systems design and management problems. The findings in relation to records management have not been articulated before and are critical to the success of computerised systems. As a consequence, development officers planning the projects have wrongly tended to assume that:

- appropriate and trustworthy source data was available for the systems or that secondary data sources would meet the requirements

- computerised systems had a records functionality already built into them
- the necessary records management capacity existed to support these systems.

The study has highlighted the importance of appropriate records as a precondition of successful computerised personnel management system projects. The key findings are:

- pressure to meet macro-economic policy objectives has led to unrealistic timetables being set for the personnel database automation projects
- projects are failing because they were unable to capture the data needed for the systems to meet their business objectives
- records represent the key legally verifiable data source needed for personnel systems
- strategies for capturing the data have been unrealistic
- insufficient resources have been devoted to the data capture problem
- designers and evaluators of IT projects do not have a means of systematically defining or evaluating the recordkeeping requirements.

Part of the solution is to organise the paper-based records that do exist so that they can be used as source data for personnel databases. Without the source data which only records can supply, the database projects will inevitably fail. Therefore, it is essential that far more attention and greater resources are devoted to this aspect of the automation project from the outset. See the outline of the steps needed to tackle the problem of incomplete or disorganised records required for computerised human resource management systems in Section 11.

The scale of the problem is enormous. Governments need to recognise it as a priority issue and build a capacity for large scale records management projects to support IT projects and to maintain stable systems in the long term. Restructuring existing records so that they can be used to provide source data for personnel databases is a crucial step, but it is not the whole answer. To achieve the objective of providing source data for an entire civil service within the time scale needed by the automation projects will require the restructuring of registries within a short period. Work will have to start at the earliest possible stage of the automation project and would require significant resources.

Often in developing countries, for one reason or another, some of the records needed for personnel management have not been created, have been lost or have been destroyed. It is unrealistic in countries such as Uganda, which have experienced a turbulent recent history, to have public records which are as complete as in countries that have enjoyed peace. For example, a review of civil service registries in Uganda in 1987 stated ‘No temperature, humidity or pest control exist, so paper is rotting, metal is rusting and there are layers of insects on or in files (termites have damaged shelving and wasps have nested among files)’.⁴¹ The challenge for records managers in developing countries now is to develop techniques for efficiently filling-in the information gaps and building a bridge between the traditional paper records and the automated personnel databases (see Section 11).

⁴¹‘Records Management Project, report of a visit to Uganda’ by A Mordell and K J Smith, 31-January - 21 February 1987 for the British Council Technical Education and Training Operations and Consultancies Group, p6.

Potentially, information gathering exercises such as surveys have an important role, but there needs to be a mechanism for verifying the information gathered against records and for making binding adjudications where the records are incomplete. The result should be a certified service record for every civil servant, capturing all the data needed for the database and arranged in a format to facilitate inputting on to the personnel database.

There would need to be an incentive to encourage civil servants to co-operate in this exercise and to search out any missing documents needed as evidence. An approach that might be worth exploring would be to link gathering of data about staff personnel histories to job evaluation exercises.⁴² The advantages of this approach would be:

- Most of the data needed for the computerised database would be needed anyway for making decisions about whether to retain, regrade or let go a staff member.
- The members of the team making the evaluation would be of a sufficient seniority to make definitive decisions where information is missing, for example to adjudicate on length of service for pension entitlement.
- By approaching the problem on a ‘ministry-by-ministry’ basis the speed of the team’s decision-making would be slow enough for a small data entry team to input the data.
- The data gathered by the team, together with certificates of its decisions, would provide a ‘baseline’ paper record as a foundation for accountability of the information stored on the computer personnel database. For reasons of accountability it would be essential that the paper record be arranged systematically to facilitate rapid retrieval and stored in a secure location.

There would need to be a field on the personnel database to link the information on the database with the relevant certificate.

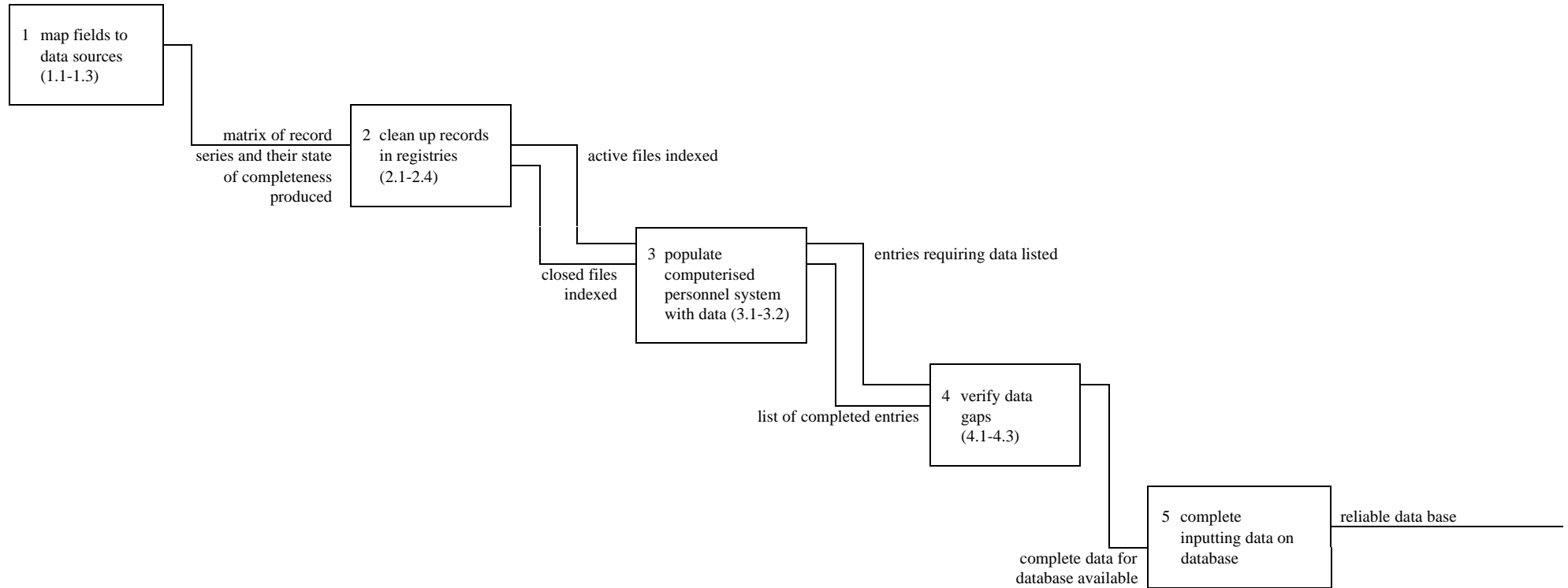
⁴²We are grateful to Emily Crowley for this suggestion. This approach does not appear to have been applied in recent years in Africa, but there are parallel examples elsewhere. In the British colonies, for example in East Africa, ‘legal fictions’ were used to establish dates of birth where documentary evidence did not exist or to create surnames where these did not exist in the indigenous culture. More chronologically distant examples, such as medieval England during the period of transition from an oral to a written culture, might also be relevant. Where written records of obligations tied to land holding were not extant, manorial courts summoned the ‘oldest and wisest inhabitants’ of the manor to determine what were the customary rights and obligations of inhabitants to the lord of the manor. Their findings were then written down in the court roll. From that time onwards, instead of relying on memory and oral testimony, decisions were based on the written court record. See Michael T Clanchy, *From memory to written record, England 1066-1307*, 2nd ed, London, 1993 and Giles Jacob, *The Complete Court-Keeper: or, Land-steward’s assistant*, 4th ed, London, 1741.

Clearly such a team would have to command legitimacy and its members would have to be seen to be impartial. Probably there would have to be an appeals procedure in instances where individuals disputed facts such as date of joining the service but the documentation was inadequate. The process of gathering the missing data should be a 'one-off' catching up exercise. Once the new database was fully operational, there would have to be procedures to ensure security of the system and data backups and that the paper-based personnel files were kept up to date with records needed for long-term use.

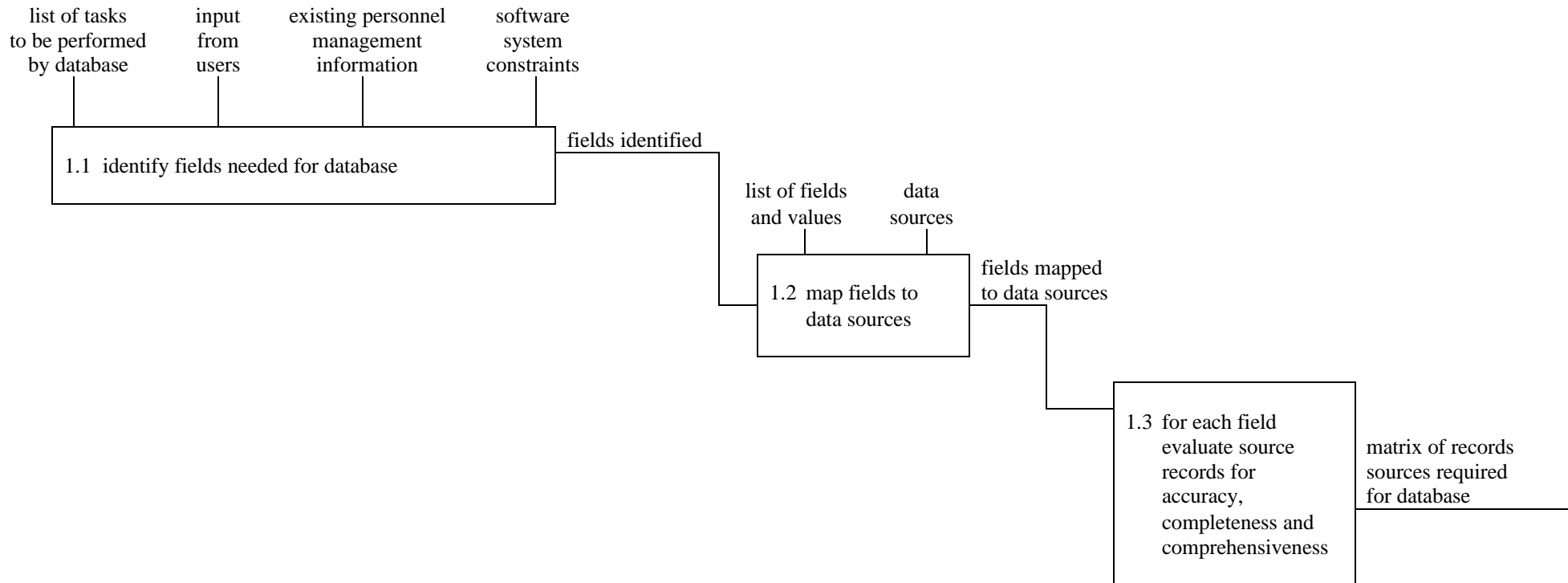
Finally, the study has revealed the absence of guidelines and criteria for evaluating whether computerised personnel management system projects are creating and maintaining authentic, reliable records. There is a need to develop such a tool that could be used to evaluate project proposals for IT systems and to verify that completed projects would generate records needed for accountability.

11 Business Process Analysis: Obtaining reliable records sources for a personnel database

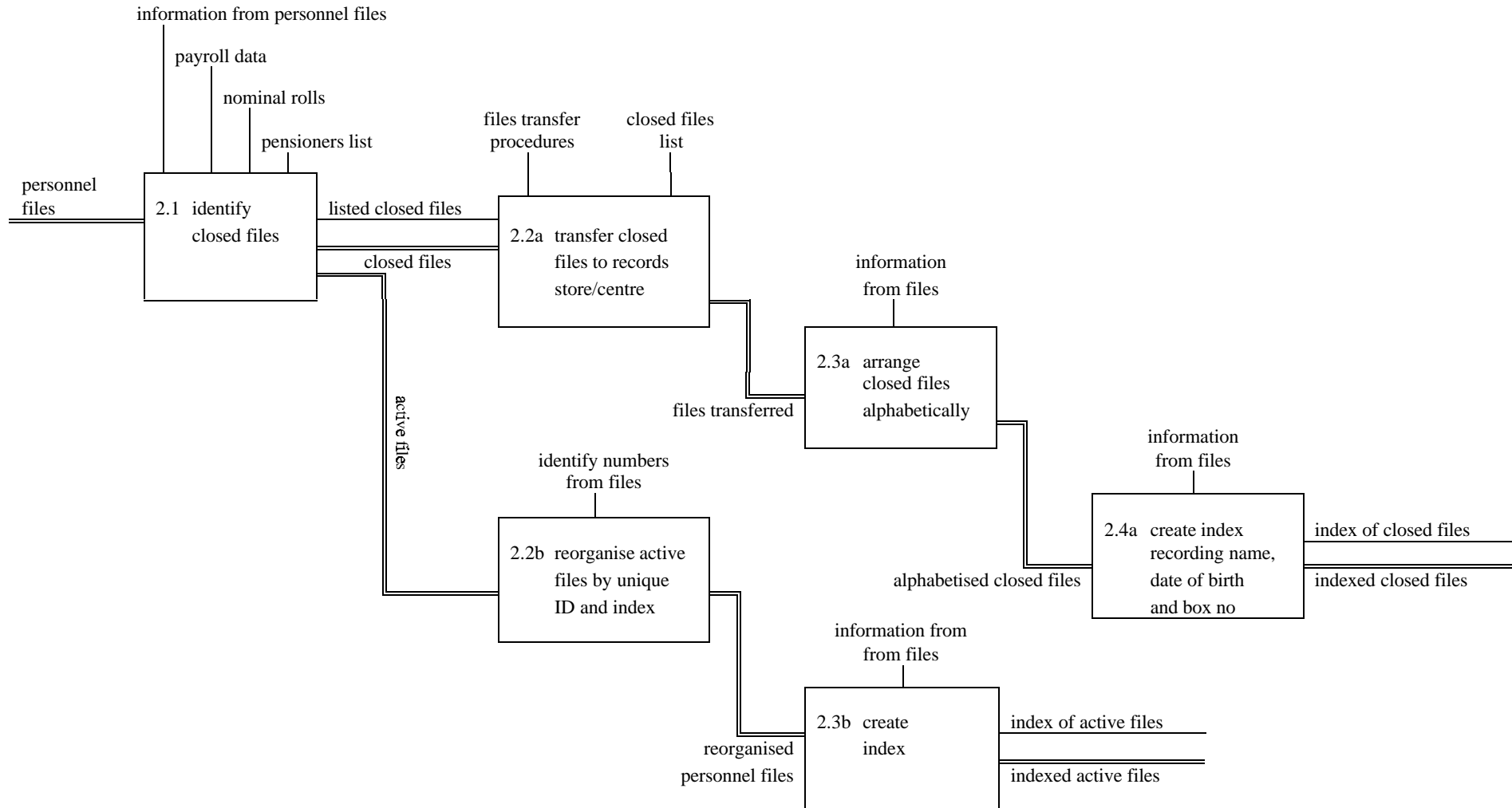
These stages are analysed in greater detail in the pages which follow



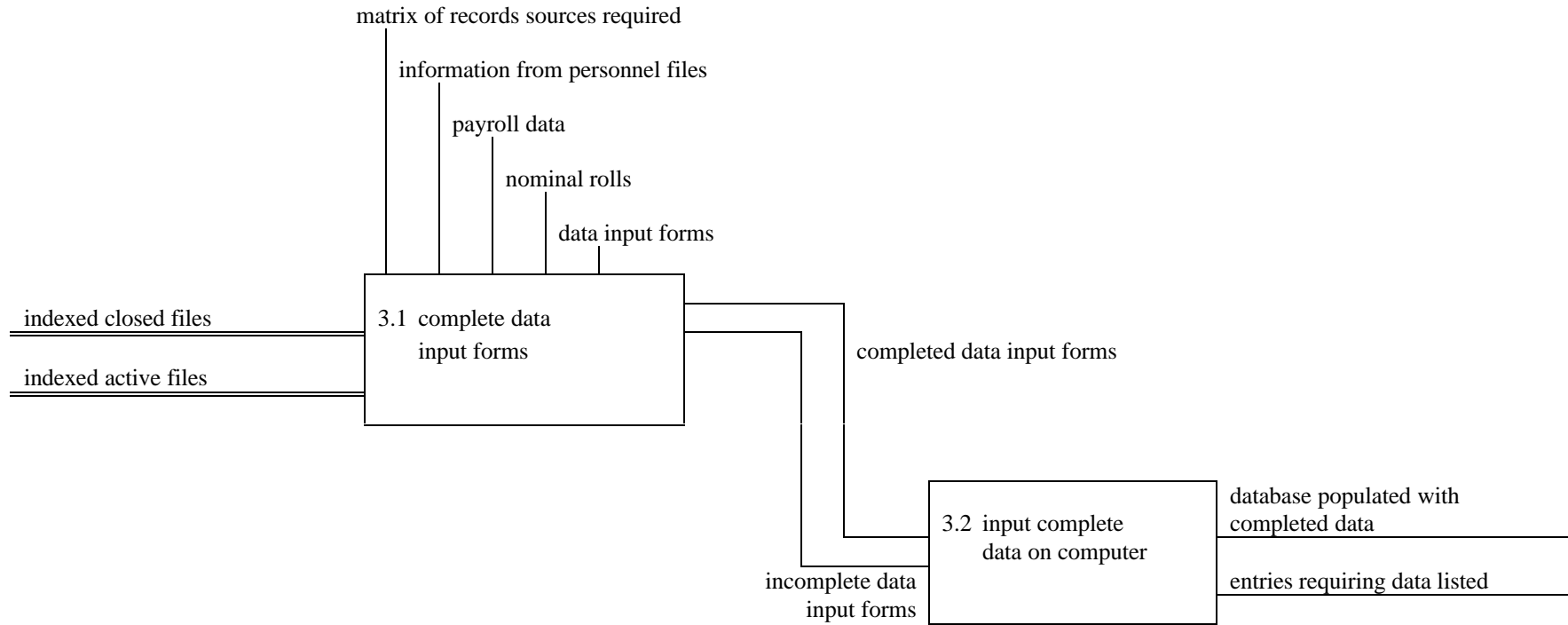
11.1 Mapping fields to data sources - Stage 1



11.2 Cleaning up records in registries - Stage 2

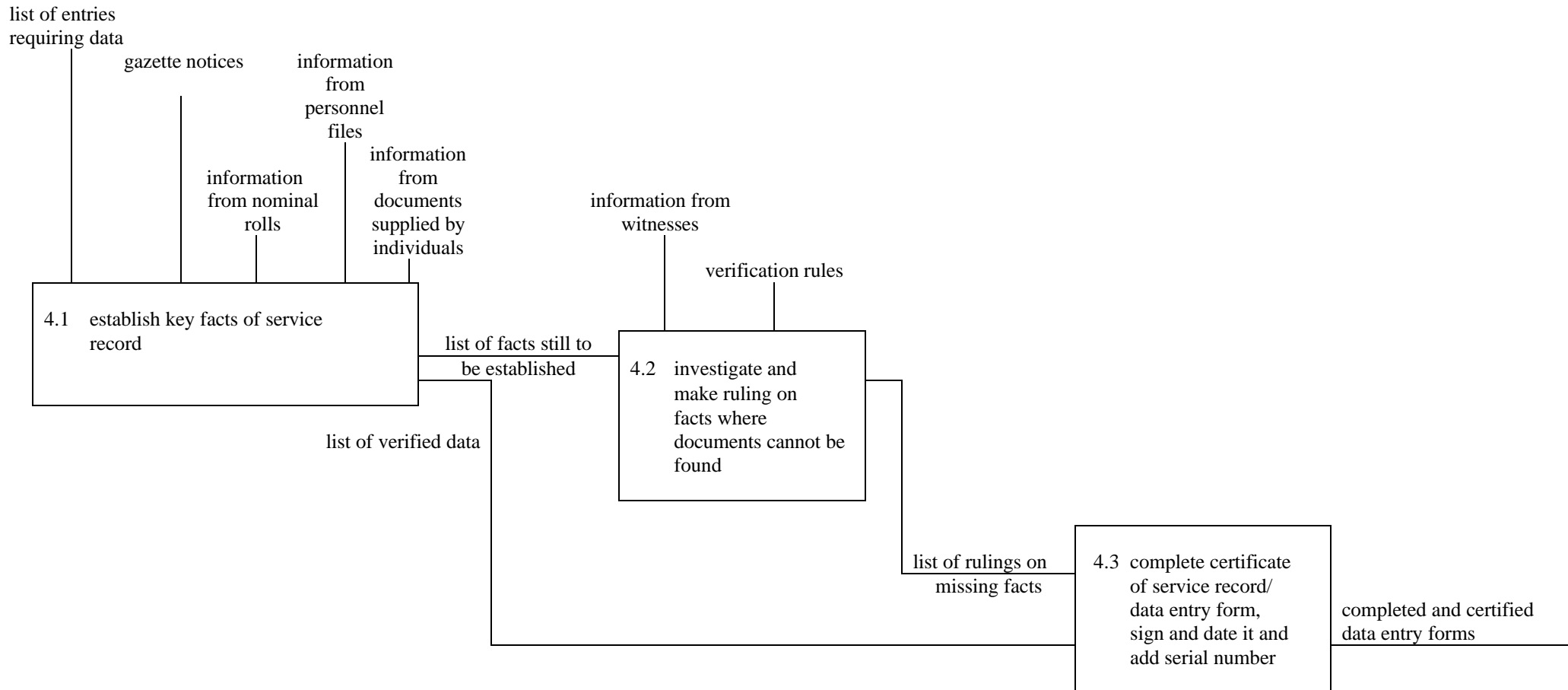


11.3 Populating computerised personnel system with data -Stage 3



11.4 Verifying data and fill in gaps - Stage 4

Ideally the data gathering exercise for database should be linked to other data gathering exercises, eg job evaluations.



11.5 Completing the input of data in database - Stage 5

