Challenges to Information Systems Implementation and Organisational Change Management: Insights from the Health Sector in Ecuador

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ABSTRACT
Major challenges remain in Latin American countries experiencing Healthcare Reform. Among these challenges, the implementation of decentralised organisation and management seems to be a central problem. Besides top-down, prescribed initiatives for reorganisation such as decentralised organisational structures, the organisational challenge of implementing information systems and strengthening the management capacity of district health providers and district health authorities remains neglected, or at least undervalued. The objective of this paper is to illustrate a substantive process theory of IS implementation, situated within the context of a case study. The case study is based on a national information systems initiative to support the decentralisation and modernisation of management functions in health districts of the Ministry of Public Health in Ecuador

1.   INTRODUCTION

Rodrigues (2003) has highlighted the opportunities and challenges for the deployment of Global e-Health. In developed countries, e-Health has rapidly evolved from the delivery of online medical content toward the adaptation of generic e-Commerce solutions to the processing of health-related administrative transactions and logistical support of clinical tasks. e-Health is perceived as being particularly useful in the operational support of the new decentralised and collaborative healthcare models being implemented in many countries.

Decentralisation of healthcare systems remains a current issue for the majority of Latin American countries. Although the heterogeneous social and economic situation encountered in Latin American countries may be seen as contributing to the overall health profile, contrasting evidence suggests that *inadequate organisation and management* (i.e., vertical programmes and centralised planning) is the major underlying factor contributing to the inadequate distribution of services and mediocre performance of health services and to the healthcare crisis in general.

The integration of health services has become a major policy issue due to the increasing awareness of the costs and limitations of vertical programmes, and the parallel increasing public and governments desire for more comprehensive and coordinated range of health services, i.e. hospital, primary and preventive care. The decentralised organisation and planning model of "Local Health Systems" (labelled SILOS, SIstemas Locales de Salud, in Spanish) devised by the Pan-American Health Organisation, was promoted and gradually adopted in Latin America. The SILOS model gives great importance to the development of the managerial capacity at the local authority and community level, which is in contrast to the previous approach.

Latin American countries have started to experiment with the type of reform that industrialised countries (i.e., in Europe, and to a lesser extent in Canada and the US) have been implementing since the early 1990s. Market-oriented reforms in publicly financed healthcare systems have been implemented in European countries such as the United Kingdom and Sweden. The general trend observed in these health sector reforms is towards universal health insurance, contracts between third-party purchasers and the providers of

care, competition among providers and a strengthening of primary care. The market-oriented reforms implemented in the British and Swedish healthcare systems have been largely motivated by a desire to increase efficiency and to continue to further control the growth of healthcare expenditure. Another major motivation of these reforms has been the public consensus on the need for greater responsiveness and freedom of choice in the provision side.

The analysis of market-oriented health sector reforms for the improvement of health systems is not the scope of this study. However, the complex scenario in Latin American countries has clearly been compounded by these reform initiatives being transferred from more advanced and favoured countries. In examining potential transferable lessons, this paper advocates the need to consider the particular reality of Latin American countries.

Heretofore designed for large organisations and industrialised countries, e-Health solutions are being increasingly proposed as an answer to the many health system management problems and healthcare demands faced by health organisations in developing societies (Rodrigues, 2003; Rodrigues et al., 2003; Salazar and Miles, 2003). There are hard lessons to be learned from e-Commerce, e-Government, and e-Health achievements and failures in developed countries; a careful examination of those experiences, *vis-à-vis* the characteristics of the health sector, organisational preparedness, and technological infrastructure of developing countries is a helpful exercise in the selection of appropriate e-Health design and organisational implementation strategies.

1.1 Healthcare Development in Ecuador

Although the heterogeneous social and economic situation encountered in Latin American countries may be seen as contributing to the overall health profile, contrasting evidence suggests that *inadequate organisation and management* (i.e., vertical programmes and centralised planning) is the major underlying factor contributing to the inadequate distribution of services and mediocre performance of health services and to the healthcare crisis in general. Decentralisation of healthcare systems remains a current issue for the majority of Latin American countries, including Ecuador.

Public sector reform initiatives have been on the management agenda since at least the 1960s in Ecuador. They took off under the 1992-1996 government, which initiated a formal reform programme, focused on decentralisation in the public sector, including health. In the early 1990s, the Ministry of Public Health (MoPH) expenditure on hospital services represented about 80% of its total costs. Yet hospital productivity was low, inefficiencies were widespread throughout the health system, and service quality was often poor. Thus, reform of the public hospital network and the health sector as a whole was seen as essential.

Figure 1. A Map of Ecuador

The overall strategy for reform was provided by the 'Basic Primary Care' (BPC) programme, which was initiated in 1992. This laid out an integrated, comprehensive primary healthcare model for the country, and gave particular emphasis to the construction of a series of local health provider units and to the decentralisation of healthcare management. The BPC programme was financed at a cost of just US$100 million with the assistance of one of the world's main international development agencies (referred to here as IDA). The programme was organised as an autonomous unit, with its own operating and capital budget and with staff and structure separated from, but still dependent on, the MoPH's central administration.

The BPC programme had successfully developed a primary care infrastructure in urban marginal and rural areas comprising 22 health centres, 166 sub-centres, 23 county hospitals and 4,000 medical staff. Two programme components, initiated in the mid-1990s, are of importance here. The first is the National Emergency-Care Hospital Network (NECHN) project. Despite the primary healthcare aims of BPC, this project invested US$10 million in the modernisation of three of the main referral hospitals. This project comprised the rehabilitation of hospital buildings and equipment, implementation of computer-based management information systems (MIS), and development of hospital services management. The second programme component was the Institutional Development Project (IDP), which

was set up in 1995, intended to enable the decentralisation of planning and management in the primary healthcare system.

The BPC had still failed to decentralise fully the planning and management of the local health provider units. Ecuador's public health system traditionally operated on a highly centralised model, in which plans were established by the central administration. Management activities at the district level were limited to basic implementation and control actions guided by central diktat. A new organisational structure was created with an intended new set of information flows, centred around a series of District Health Authorities (DHAs). The intention was that the DHAs would form the financial and health performance focal points of the new health system. The districts would take principal responsibility for gathering health, finance and other administrative information from the primary health sub-centres. This would be used by administrators and health workers at district level for monitoring, evaluation and planning purposes, and would also be passed up to regional and national levels.

1.2 Healthcare Planning, Budgeting and Resource Allocation in Ecuador

The primary source of funds for the MoPH is the National Government budget for the public sector. The Ministry of Finance (MoF) allocates, on a one-year basis, the capital and operational budget to all public institutions, including the MoPH. Within the MoPH, the planning and budgeting process is highly formalised and funds are centrally allocated in an attempt to coordinate and control expenditure. Resources also are allocated to each province according to broad population criteria as well as the political agenda of central administrations. Funds are distributed among the twenty two regions of the country without any explicit equity or effectiveness criteria. In addition, the centralised control exercised by past central administrations, have favoured the increase of hospital expenditure, particularly in large cities. In short, the planning and budgeting process is largely one of top-down allocation, which is substantially constrained by expenditures in previous years, and has historically been set by the political agenda and specialist doctor interests of MoPH central administrations.

At the provider level, the annual budgeting process for both health centres and hospitals consists basically of two stages. The first stage is to perform an adjustment to the historic budget of the previous year, by multiplying aggregated resource components (i.e., personnel, material, and capital investment) by weighting factors. These weighting factors consider both the variance in macro-economic conditions (i.e., annual country inflation, estimated increase on public personnel wages). The second stage is to reconcile it with the actual availability of funds in the MoF. In technical or medical terms, planning processes for both health centres and hospitals have been non-existent. The delivery of services is constrained by physical infrastructure and prescribed staffing from national and regional levels. Planning criteria such as population coverage and cost-effectiveness of services are seldom used. Moreover, incentives to improve the efficiency of services are non-existent, and even perverse in some instances. Thus, recurrent and capital costs are generally paid by the national government so that service providers do not have to face the opportunity cost nor risks of capital. In short, the production of services is constrained by the existing physical capacity, and by centralised patterns of financial and human resource allocation to local levels rather than by evaluating population needs and demand, programming necessary activities and estimating resources.

Beside a national reporting system for epidemiology and service production statistics, the MoPH has established a financial and standard accounting reporting system. The standard accounting report system has been subordinate to the requirements of financial statement preparation for external parties such as the MoF. Financial and standard accounting reports

provide management information in distorted form. Underlying cost generators are not easily recognised or revealed by financial accounts. In particular, they incorporate indirect costs which are allocated arbitrarily without being traced to their original activities and resources. Production decisions are consequently subordinated to the limited available financial and accounting information. Also, accounting practices have remained isolated and divorced from other organisational functions, particularly to the ones related to the production and delivery of services. Traditional accounting practices and information flows have rendered health centres, and hospitals, inflexible. Inequitable allocation and inefficient management of resources have increased the need to account in alternative ways that may recognise the activities which cause costs rather than using traditional methods. This indicated, therefore, the potential benefits of adopting activity-based costing and budgeting practices, supported by accounting-based MIS.

1.3 The Institutional Development Project

The introduction of the Institutional Development Project (IDP) was driven by the need to enable further organisational change towards decentralised planning and management in the health districts. MoPH had previously attempted to implement information systems (IS), but these efforts had typically been targeted at the central level. A previous institutional development initiative, which ended in early 1995, had been criticised by MoPH senior managers, particularly those from the BPC programme, for putting too much emphasis on written manuals and formal procedures rather than embarking on training and development activities. The goals of the IDP explicitly mandated institution-wide management change to enable further decentralisation of health districts. The project also sought to strengthen primary care and highlighted the implementation of computer-based IS to support the adoption of the required decentralised management practices. The project involved the implementation of MIS aimed at supporting both local programming and costing of services, and regional planning and resource allocation procedures for primary care centres and their referral hospitals. The implementation of IS had a complex set of requirements. It was intended to meet the needs and expectations of the various stakeholders and prospective users of the MIS. The management information system was intended to support both local providers and central administration. This implied a huge implementation task for the implementation team, requiring them to work at various organisational levels, within central government, and within health centres and referral hospitals.
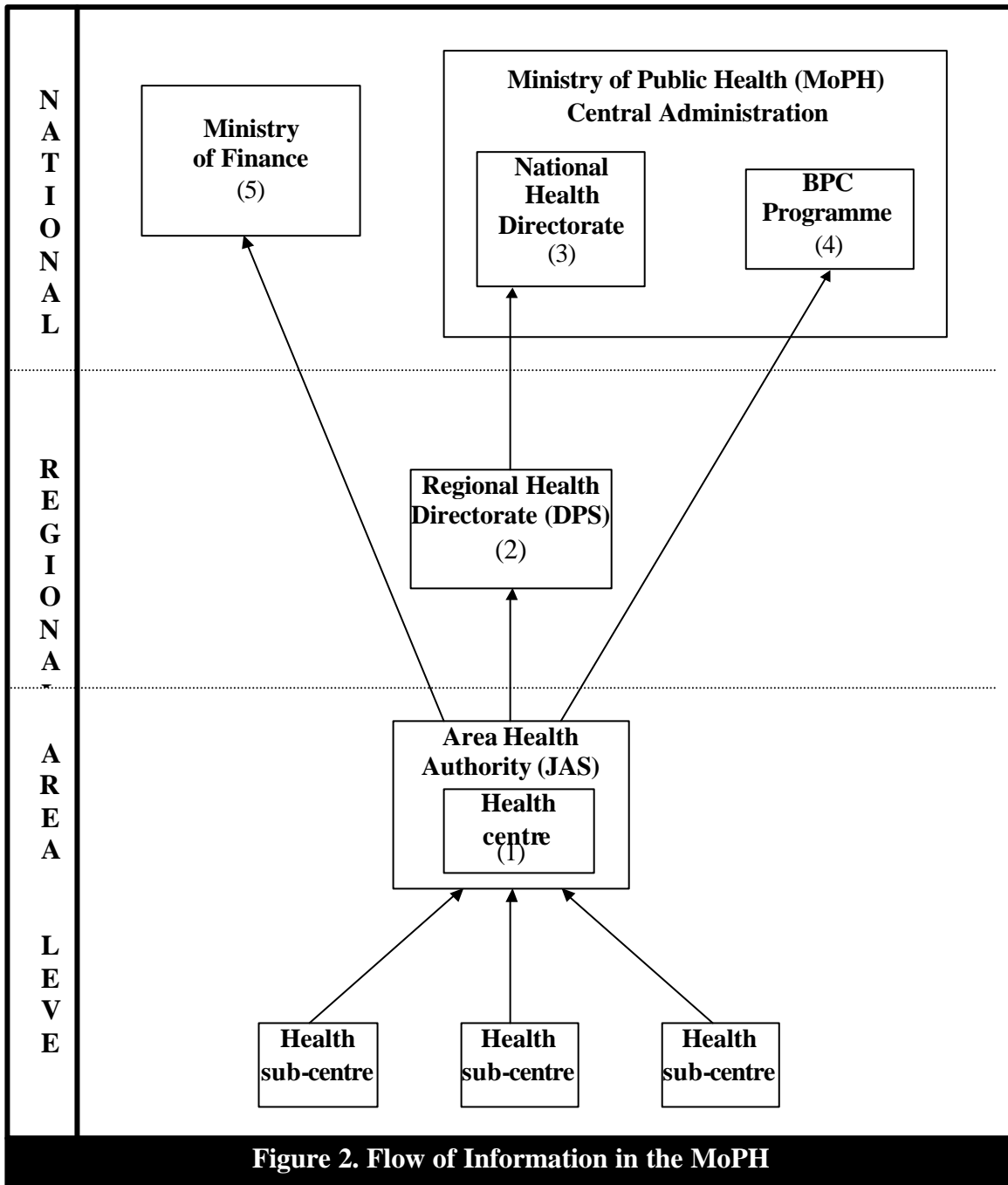
Figure 2. Flow of Information in the MoPH

2.   RESEARCH METHOD

This section illustrates the application of qualitative methods in implementation *process* research. It applies the qualitative methods and techniques developed by Strauss (1987) to analyse empirical data and build substantive theories. More specifically, Strauss's *coding schema* is combined with the idea of a *black box* in order to assist in the systematic analysis of the case study. The paper focuses on the way these qualitative methods and techniques are applied as well as on the outcomes of the analysis.

The author actively researched this IS implementation project within the period from July 1995 'till September 1996. The research incorporated a participative and interventionist 'clinical' approach (Schein, 1987; 1992). This approach acknowledges that one cannot understand an organisation without trying to change it. This approach also acknowledges that one can decipher an organisation only by becoming a member of it and learning over a long period of time how it operates and how its members perceive it. This study applied a combination of methods to gather, analyse and report findings. The main methods for data collection were therefore participant observation, analysis of project reports, meetings and semi-structured interviews with the members of the IS team, senior managers, and district managers in health centres.

The author's log-book was used to document observations, working meetings and interviews. Each contact was registered using a pre-defined format to facilitate the identification of actors and events. Guiding questions in each interview were: '*what people, activities and events were involved*', and '*what were the main issues from the actors' perspective*'. Periodic reflections and synthesis of the gathered data were also registered. This focused on emergent research questions and elements in the initial framework, new hypotheses and speculations about the field situations. Specially designed semi-structured interviews were administered in July and September 1996. These interviews were addressed to senior managers and district managers in the pilot health centres.

Glaser and Strauss's (1967) constant comparative method was applied during analysis. The method allowed the generation of many categories and hypotheses. These categories were differentiated using Strauss's coding schema into: *actions, causal and intervening conditions, interactions, tactics/strategies, consequences* (Strauss, 1987). Causal conditions are the events that shaped the development of the phenomenon. Action/interaction refers to the human actions that influenced on and the responses that emerged during the implementation process. Finally, the outcomes, both intended and unintended, of these actions and responses are referred to as consequences.

Once the initial formulation of the project was completed, the author focused on: the information system development and management training approach held by the IS team (i.e., how end-user and wider organisation needs are met); the management of the project (i.e., how senior management and end-user support is gained and maintained); and on the ultimate adoption of the information system (i.e., what is the level and the pattern of usage of the system at the district level).

The author discovered initial categories and provided them with headings: e.g., *project formulation characterised by a paternalistic approach*. These categories constituted the initial core categories, to which all the other codes were related. Besides the coding schema suggested by Strauss (1987), this research applied specific guidelines to think about causality. The writing of memos incorporated reflections about what constitutes causality, and how this might be applied in qualitative research. Guiding questions were what determines the strength and consistency of an association, and what would lead to the conclusion that an observed association represented a causal link.

The author further selected and examined various collected data in which the core categories appeared. The researcher continued to code these data using the coding schema in

order to identify subsidiary categories, and wrote additional theoretical memos, incorporating the initial ideas, as a result of this coding. The researcher employed 'theoretical sampling' (systematically collecting data related to emerging categories) to guide the collection of further data in the substantive analytical categorisation. This yielded new subsidiary categories,: e.g., *'adoption of a paternalistic development approach by the IS team'*, *'emphasis on management development needs of national level'*, and *'emphasis on technical aspects of systems development'*. The analysis linked the core and emergent subsidiary categories. The systematic axial and selective coding process extended the similarities and differences brought into the analysis, whilst continuing to give density and coherence to the analysis. The researcher found himself not only doing open coding, but beginning to do axial and selective coding almost from the outset. He began relating subsidiary categories to the core categories under study, looking at how all codes bear on the core phenomena, and made the connections as specific as possible. Theoretical densification and integration began through this coding, memoing and diagramming process. This process also enlarged the scope compared to the previous analysis.

A time-based display helped in the ordering of data by time and sequence (Miles and Huberman 1984). This captured the historical chronological flow of events and permitted a good look at what was associated to what and when (Figure 2). The use of two-dimensional interaction matrices also helped in the initial ordering of actors, activities and interactions. Various diagrams were used at specific points of the analysis, particularly in order to assist theoretical integration (Figures 3, 4 and 6). Integrative diagrams were tested against both the coherence of discovered categories as well as their contribution to explain broader implementation objectives. Some initial diagrams were disregarded because they did not fulfil this criteria.

The researcher also produced memos and story lines as a result of this coding. This research linked the core and subsidiary categories, discovered at the interactional level, with the additional emerging subsidiary categories pertaining to contextual levels. At every step of the analysis, comparative thinking was employed to suggest new theoretical samples (sources, events, actors, processes) and to enrich the specific codes and memos. Theoretical sampling continued, over a period of several months, within the substantive areas but also in widely differing ones in order to broaden the scope and achieve density in the analysis. At this stage of the analysis, the researcher was able to discriminate the elements that influenced both the productivity and the overall effectiveness of the project. By mid-1996, initial outcomes and the overall effectiveness of the project started to be observable. This yielded to the settlement of additional categories: i.e., *'structuring of the IS team and planning of the project'* and *'non-demanding planning and reporting environment'*. The researcher embarked on the analysis of the specific organisational and institutional elements that influenced the adoption of the applications being deployed in the health districts by the IS team. More specifically, the author made connections with the management arrangements and sets of activities performed by managers in health districts in respect to planning and budgeting of their services. An interactional analysis based on the semi-structured interviews enabled the determination of the interaction pattern between managers in the health districts (Figure 6). The following section provides a detailed substantive account of the above.

1. Initiation of the project 2. Planning of major set of activities by top executives 3. Pre-selection of existing software applications 4. Recruitment ˜	1. Visits to pilot sites: hospitals and health centres. 2. Revision and modification of software applications 3. Administration of surveys by decentralisation consultant in health districts 4. Evidence of lack of support from BPC senior managers	1. IDP coordinator is promoted to the Health Care Reform Unit 2. Implementation team shifts emphasis towards health districts 3. Increase of support from BPC senior managers, i.e., new offices, acquisition of additional computer equipment for IDP 4. IDP team starts to	1. Most software applications are installed in several pilot sites 2. Software-based training in IDP offices; i.e., emphasis on existing functionality 3. Testing of applications with participation of district managers,	1. Evidence of marginal use of information system for planning and management in health districts: • non-routinisation of applications • emphasis on epidemiology, morbidity statistics, • one-time costing estimate exercises • lack of integration of various types of data and printed reports 2. Start of a new Executive

July	September	March	July	September
Year One		Year Two		

Figure 3. Actual Events and Activity Time-Table

3.   SUBSTANTIVE ANALYSIS: DISCOVERING AND LINKING CATEGORIES
The major processes of the Institutional Development Project (IDP) depicted in figure four are: (1) Project Formulation, (2) Information System Development and Management Training, and (3) Information System Adoption in Health Districts.

3.1 Project Formulation
Top executives at the MoPH's Central Administration were responsible for recruiting consultants and software developers to form the IS team. The recruitment of the members of the team evolved according to existing software applications, which have been pre-selected by top executives. Also, the terms of reference stated that the responsibilities of each member consisted of evaluating and modifying each of the existing software applications. Top executives performed the planning of the major set of activities for the project. This planning took the form of printed schedules or planning charts that the IS team were asked to implement. As a consequence of these actions, the *working arrangement evolved around the existing software applications*. Also, top executives asked the members of the IS team to consider large metropolitan hospitals as pilot sites. The team had to allocate time and effort to visit three large hospitals pertaining to the "National Emergency-Care Hospital Network" (NECHN) programme. As a consequence of this, the IS team had to split its time visiting hospitals as well as health centres from the early stages of the project.

3.2 IS Development and Management Training
The IS team adopted a paternalistic approach instead of a more participative approach, hindering the participation of district managers in the analysis of their information requirements. Also, the IS team adopted a technology-led approach for the development of the information system and management training. This paternalistic and technology-led approach affected the overall effectiveness of the IS team, which ultimately contributed to the *marginal level of information system adoption in health districts.* In addition, the implementation of the project was characterised by the *dominance of top executives* at the central administration over the IS team. An unintended consequence of *emphasising the technical aspects of software development* was that the overall information system development process evolved around the pre-defined functionality or logic of the existing software applications (see Figure 5 in the Appendix).

However, the existing software applications have been previously developed to support the national level in the evaluation of vertical programmes. The overall consequence of this was that the functionality of the information system was not necessarily tuned to the actual requirements of health districts. The management development workshops for district managers also were restricted to specific training on the use of the debugged applications. These ultimately affected the content and approach of the training workshops, which had been initially considered to have a wider scope. In addition, the functionality of the existing software applications constrained the role of district managers at local level as feeders of aggregated data to the national level. In short, the impact of the dominance of top executives and the impact of the pre-defined software application architecture were indeed evident in the actions of the IS team, hence influencing the approach for information system development and management training.
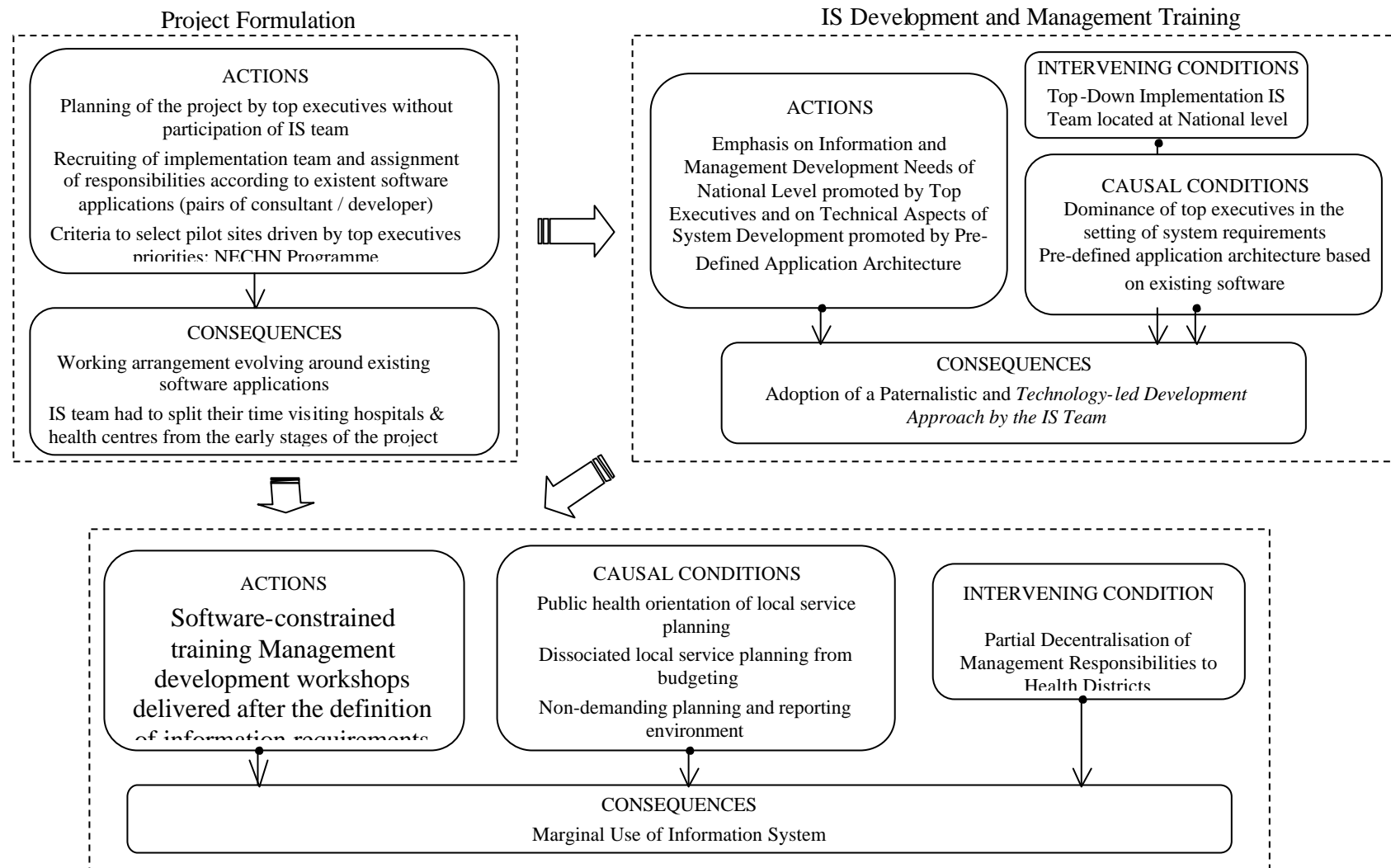
Project Formulation   IS Development and Management Training

ACTIONS

Planning of the project by top executives without participation of IS team

Recruiting of implementation team and assignment of responsibilities according to existent software applications (pairs of consultant / developer)

Criteria to select pilot sites driven by top executives priorities: NECHN Programme

ACTIONS

Emphasis on Information and Management Development Needs of National Level promoted by Top Executives and on Technical Aspects of System Development promoted by Pre-Defined Application Architecture

INTERVENING CONDITIONS

Top-Down Implementation IS Team located at National level

CAUSAL CONDITIONS

Dominance of top executives in the setting of system requirements

Pre-defined application architecture based on existing software

CONSEQUENCES

Working arrangement evolving around existing software applications

IS team had to split their time visiting hospitals & health centres from the early stages of the project

CONSEQUENCES

Adoption of a Paternalistic and *Technology-led Development Approach by the IS Team*

ACTIONS

Software-constrained training Management development workshops delivered after the definition of information requirements

CAUSAL CONDITIONS

Public health orientation of local service planning

Dissociated local service planning from budgeting

Non-demanding planning and reporting environment

INTERVENING CONDITION

Partial Decentralisation of Management Responsibilities to Health Districts

CONSEQUENCES

Marginal Use of Information System

Figure 4: Web of Actions, Causal Conditions and Consequences

3.3 IS Adoption in Health Districts

First, it was evident that district managers had a wider, holistic public health orientation, rather than a specialised medical or resource orientation. District managers valued information about epidemiological patterns in their district. Second, it was evident the activities related to local service planning and budgeting were not integrated. Statistical information is sometimes included but it is often neither associated with specific service production targets or improvements on productivity nor with financial requirements (see Figure 6 in the Appendix). Third, it was also evident that the district managers did not have any direct external incentive to adopt new planning methods. Specifically, the planning and reporting framework in the Ministry hindered the need for MIS intended for resource-based costing and budgeting at district level. Beside a national reporting system for epidemiology and service production statistics, the MoPH has established a financial and standard accounting reporting system. The standard accounting report system has been subordinate to the requirements of financial statement preparation for external parties such as the MoF. Traditional accounting practices and information flows have rendered health centres, and hospitals, inflexible. Inequitable allocation and inefficient management of resources have increased the need to account in alternative ways that may recognise the activities which cause costs rather than using traditional methods. This indicated, therefore, the potential benefits of adopting activity-based costing and budgeting practices, supported by accounting-based MIS. The allocation of resources to the health districts was based on previous historical patterns, and local planning and budgeting were not associated with service production. This did not motivate district managers to adopt alternative planning practices regarding the introduction of cost and financial information, affecting the utilisation of the information system, particularly the costing-related applications.

4.   IMPLICATIONS FOR ORGANISATIONAL CHANGE MANAGEMENT AND IS IMPLEMENTATION

The still on-going changes in the Ecuadorian Ministry of Public Health have great implications for planning, resource allocation and management processes (PAHO, 2002; MoPH, 2000). The market-type reform, through a new universal insurance system, that the MoPH is considering for experimentation intrinsically acknowledges the potential benefit of adopting a system of 'managed competition' in Ecuador. That is, the prospective changes recognise that resources could be better used through the mediation of market-type mechanisms such as the ones implemented in the United Kingdom and in other European countries. In principle, the contractual relationship will impose on providers the need for detailed specification of healthcare products. Product attributes such as quality and cost (and price if different from cost) will need to be defined and agreed between intervening parties. This will, in principle, increase the need for information on products, their costs and prices, as well as better coordination between healthcare providers. In overall terms, the increasing emphasis on market mechanisms requires better sources of financial, cost, and activity information. 'Contracting' may be a major mechanism for exploring alternative ways for organising services. Specifically, contracting will, in principle, impose the need to decentralise the entire provider organisation into separate individual units where each unit would run as a separate market-oriented entity (i.e., clinical directorates). The implementation of such changes and supporting MIS remains an organisational challenge.

The design of new organisational structures and management roles should aim at overcoming the limitations of the dissociated budgeting and local programming processes in health districts, indicated in section three. However, the study of such formal organisational structures and management roles goes beyond the scope of the present conceptual analysis. Also, the objective of this study was not to assess the ongoing healthcare reform and

decentralisation process, but to understand how information technology implementation could enable it. For discussions about the critical market and institutional issues about implementing healthcare reforms in both developed and developing countries, see Mur-Veeman et al. (2003), Healey and McKee (2002), Iriart at al. (2001), Atkinson et al. (2000), Bertranou (1999), Bossert (1998), and Londono and Frenk (1997).

IS project working arrangements cannot replace the wider organisational structure and management roles that are required for decentralised planning. The definition of *integrative* working arrangements during implementation (which is an essential part of structuring of any project), and the associated planning of activities, may, however, contribute to promote specific patterns of interaction within the recipient organisation. Integrative project arrangements, such as cross-functional teams, and hybrid management roles, should seek to overcome the limitations of the rigid organisational structures and single-functional administrative roles that may be found at the local level. These cross-functional arrangements may contribute to achieving the integration of the dissociated budgeting and local programming processes, and promote the use of the system and sharing of information across management functions (Salazar, 2003a; 2003b).

5.   CONCLUSIONS

The substantive analysis has suggested that the process of IS implementation hindered decentralisation in health districts in Ecuador, reinforcing established patterns of organisation and planning. The resulting conceptualisation of IS implementation as the inter-play of diverse professional and technical groups, which may hold conflicting or competing agendas and ideologies, has important implications for the management of IS projects. One basic recommendation is that implementation teams should strongly consider the motivations and interests of intervening key stakeholders (i.e., healthcare programme founders), and particularly end-users at the local level. The application of this recommendation can minimise the emergence of destructive conflicts, which can affect the orientation and progress of IS projects. This is of particular relevance in institutions where professional managers strongly identify themselves with a specific service orientation (i.e., hospital versus primary care).

Large healthcare organisations, such as the MoPH, generally have multiple organisational layers. This makes planned organisational change problematic. Implementers need to take into consideration the associated management development processes that need to be promoted at both local and central levels so as to minimise resistance. Specifically, the adoption of a 'participative' and 'management-skills-led' approach is fundamental for successful IS implementation, and to strengthen the wider decentralisation process. Implementers need to embrace a participative attitude and hold an orientation towards the development of people rather than technology. Technology-led approaches, in contrast, emphasise the product or resulting technology, rather than the management development process.

'Paternalistic' approaches are likely to hinder participation of the end-users and prevent implementers from understanding the local reality. Implementers need to anticipate the likelihood of authoritative management styles which are normally held by top executives in the Ministries of Health in Latin America. This is especially critical when IS projects are controlled from the central level. This indicates that implementers need to look for specific tactics that can help foster healthy and sound relationships with top executives. The management of such relationships demands the articulation of social and political dimensions, and the application of strong inter-personal skills. Thus, implementation teams should posses or aim at developing basic skills, such as: conflict resolution and negotiation, team-working and leadership associated skills. IS projects such as the IDP should be regarded

as an opportunity to promote radical organisational change and local level empowerment, in contrast to maintaining inherited order and status-quo.

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APPENDIX
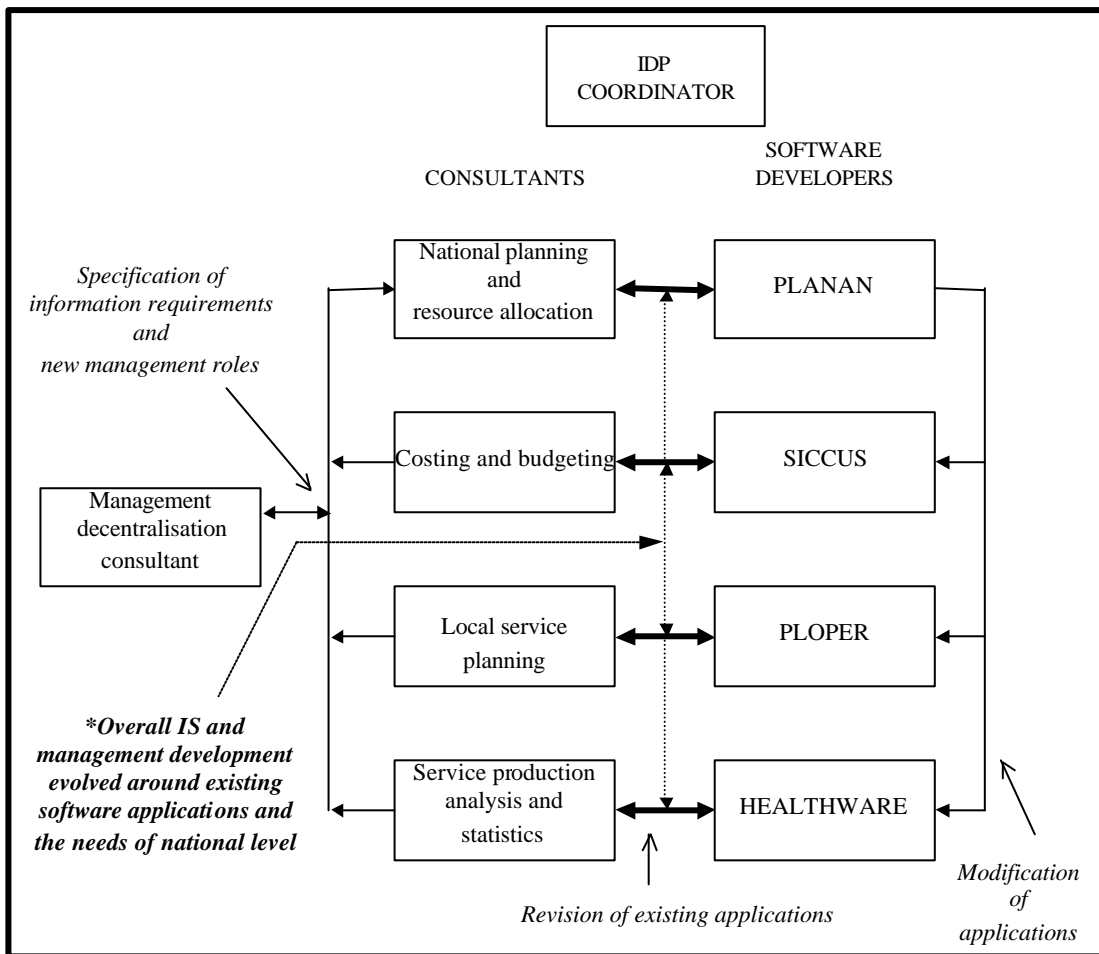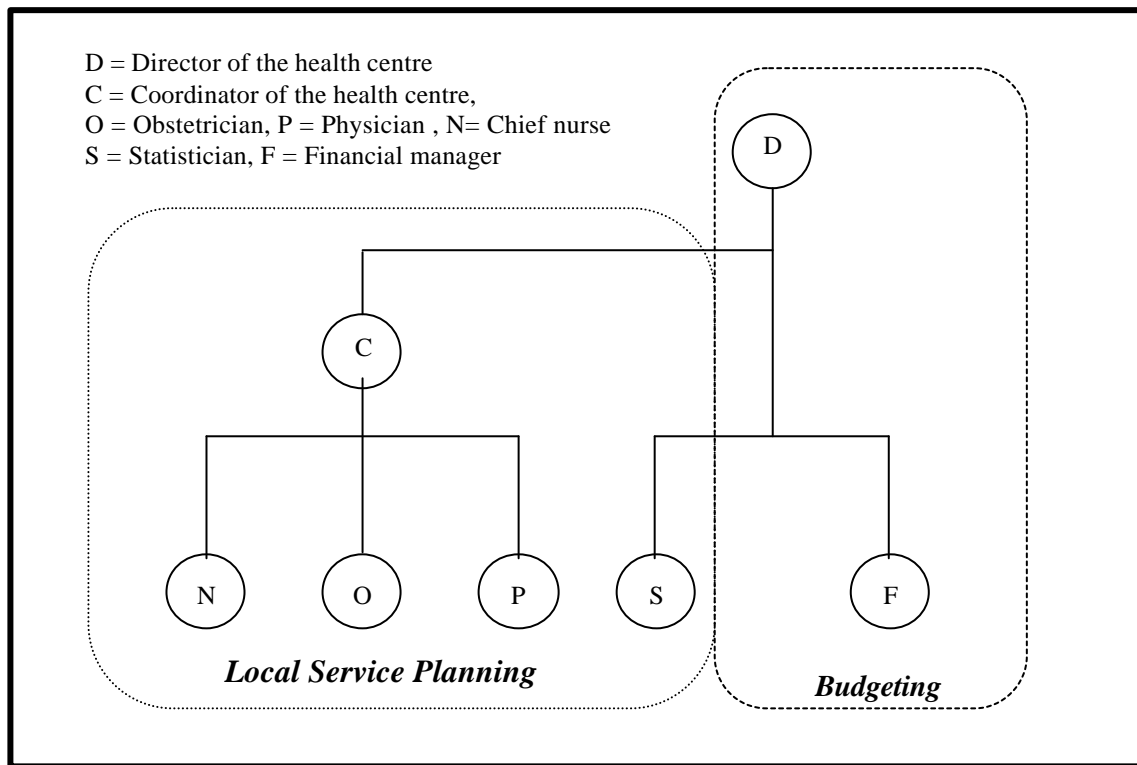
Figure 5 Working Arrangement and Software Components

D = Director of the health centre
C = Coordinator of the health centre,
O = Obstetrician, P = Physician , N= Chief nurse
S = Statistician, F = Financial manager

D

C

Local Service Planning

N   O   P   S   F

Budgeting

Figure 6 Local Service Planning and Budgeting Activities
Performed by Managers in Health Districts