July 2008

IS INITIATIVES IN THE VOCATIONAL & TECHNICAL EDUCATION SECTOR OF DEVELOPING ASIAN COUNTRIES: A SYSTEMS APPROACH TO THE MANAGEMENT OF PROJECT INTERVENTION PROCESSES

Channa Gunawardena  
Lancaster University Management School, channa@megaskills.com

David Brown  
Lancaster University Management School, d.brown@lancaster.ac.uk

Follow this and additional works at: http://aisel.aisnet.org/pacis2008

Recommended Citation
http://aisel.aisnet.org/pacis2008/230
IS INITIATIVES IN THE VOCATIONAL & TECHNICAL EDUCATION SECTOR OF DEVELOPING ASIAN COUNTRIES: A SYSTEMS APPROACH TO THE MANAGEMENT OF PROJECT INTERVENTION PROCESSES

Gunawardena, Channa, Department of Management Science, Management School, University of Lancaster, Lancaster, LA1 4YX, United Kingdom, channa@megaskills.com

Brown, David H, Professor Department of Management Science, Management School, University of Lancaster, Lancaster, LA1 4YX, United Kingdom, d.brown@lancaster.ac.uk

Abstract

This paper is set against a background of national IS initiatives implemented in the Vocational and Technical Education (VTE) sectors of developing Asian countries through donor agency funded projects, which can be seen as Project Intervention Processes (PIPs). This research is based on a six year research study of IS initiatives implemented in nine VTE sector projects covering Laos, Sri Lanka and Vietnam undertaken through empirical investigations and a review of secondary data. The IS initiatives studied focused on aiding strategy formulation and management in the VTE sector as opposed to classroom based training. The research reveals that the process of managing PIPs using traditional project management theory, which is based on hard approaches, is problematic in terms of generating desirable outcomes to address perceived VTE problems. Soft Systems Methodology (SSM) is based on a learning/enquiring cycle and is often used to manage problem situations that are poorly structured. The paper presents two key findings: namely the nature, scope and problems faced by PIP based IS initiatives; and a SSM approach to managing PIP based IS initiatives.

Keywords: Asian developing countries, project management of IS initiatives, Vocational and Technical Education, VTE, Soft Systems Methodology, SSM in project management, management of donor projects.

Acknowledgements: The authors would like to acknowledge the support of the European Commission (Asia IT&C Programme) in providing financial support to some of the initiatives studied and to the Asian Development Bank. The authors also acknowledge the financial and organisational support provided by Megaskills Ltd of the UK and TEAMS (Pvt) Ltd of Sri Lanka for undertaking the research.
1 INTRODUCTION

The research objectives of this study were twofold, in the context of VTE in developing countries: firstly, identifying management issues of IS based Project Intervention Processes (PIPs); and secondly making a contribution to the IS project management literature specifically in the area of donor agency funded projects. The research studied nine projects, three each in Laos, Sri Lanka and Vietnam. Each project was initiated by a sponsor domain (donor agency) for a host domain (Government institutes) in order to address a perceived Vocational and Technical Education (VTE) sector problem and could be viewed as a PIP. Each PIP that was studied targeted a multi-organisational VTE sector spanning central government institutions, provincial government institutions and VTE schools. Each PIP had a number of IS initiatives, each of which could be seen a sub-intervention. Each of these IS initiatives had a number of ‘Activities’ with ‘Expectations’ in terms of a ‘Response’ from the VTE sector and a set of ‘Outcomes’.

The observations from the research revealed that the process of managing PIPs was problematic and PIPs were not being managed appropriately to generate desirable outcomes from the IS initiatives to improve perceived VTE problems. This research contributes to the theory of IS project management by applying SSM (Soft Systems Methodology) as an approach for the management of donor based IS projects in developing countries.

The presentation and interpretation of this research is structured into four major parts. Firstly the current state of the area of concern, VTE in Asian developing countries, is reviewed in terms of the literature and key problems highlighted. These provide the contextual setting for the implementation of IS initiatives through donor projects. The second part of the paper positions the research theoretically. In addition to the central concern of donor project management the research framework explicitly considers the use of SSM in managing project based IS initiatives as it provides a device to facilitate the management of complex project based IS initiatives. Part three details the research approach and the empirical design. Finally, part four presents the research outcomes and the interpretation of these together with some implications for ongoing research.

2. VTE IN DEVELOPING COUNTRIES

The VTE literature is extensive but much is centred on areas dealing with education theory, the economics of VTE and ICT adoption in the classroom. Regarding VTE in Asian developing countries, traditional literature sources are limited and key sources are donor agencies such as the Asian Development Bank (ADB) and World Bank (WB). The aim of the VTE literature reviewed and summarised in this section was to better understand the nature and scope of VTE in developing Asian countries. This was expected to inform the context of the specific literature dealing with the management of IS initiatives in relevant settings.

2.1 VTE Nature and Emerging Issues

In the context of Asian developing economies, the VTE sector plays a key role in meeting the human resource requirements for national economic development (ILO, 2002). The broad aim of VTE is to equip work-forces, in particular school leavers, for job opportunities across a range of labour markets brought about by industry needs (Middleton et al 1993). In recent years many Asian developing countries have undergone a skills gap in their labour markets (ADB, 1999b). In many instances the need for skilled workers has not been met and industry has lagged behind as a consequence. There is tremendous pressure on the VTE sectors to increase the number of people who receive employable skills. Asian Development Bank (ADB) studies conducted in Laos (ADB, 1996), Sri Lanka (ADB, 1999a) and Vietnam (ADB, 1998) conclude that the VTE sectors have the following major perceived problems: they (i) are supply driven and not market driven; (ii) are without Labour and Education Management Information Systems (LMIS and EMIS respectively); (iii) have little or no program or institutional accreditation, or skill standards and testing certification (SSTC) mechanism; (iv) are faced with poorly trained instructors and educational managers; and (v) have out-dated VTE infrastructure, learning materials and instructors’ guides which are not related to the needs of employer expectations.
2.2 IS Initiatives in VTE

Faced with perceived problem situations outlined above, many Asian developing countries have embarked on national initiatives to modernise their VTE sectors to meet industry needs. These initiatives have been designed and funded by donor agencies (sponsor domain) such as the ADB, European Commission (EC) and the World Bank and been implemented through projects. These projects have been implemented by a multi-organisational ‘host’ domain involving education and training Ministries, VTE agencies, industrial sector Ministries, provincial bodies and VTE schools. The projects range in timescale from between six months to six years and are major imperatives due to their financial scale, with projects sometimes over 100 million US dollars in size. IS initiatives have been important components of these projects. Typically these initiatives include Labour Market Information Systems (LMIS), Education Management Information Systems (EMIS), Financial Management Information Systems (FMIS) and Benefit Monitoring and Evaluation (BME) systems.

In terms of IS initiatives in the VTE there is a body of literature dealing with specific IS initiatives such as LMIS (dealt with by authors such as Sparreboom, 2001; ILO, 2002; Hopkins, 1999) and Learning Management Systems (dealt with by authors such as the Commonwealth of Learning, 2002). However this literature focuses on the objectives and specifications of such IS initiatives as opposed to managing these IS initiatives within project based interventions which is the focus of this research paper. The lack of relevant literature has meant that there is only a small body of knowledge to inform the practice of initiating and implementing IS initiatives through projects in developing countries. The ADB which is the biggest donor agency in the VTE sectors of South and South East Asia has recognised the limited success of implementing IS initiatives through its projects (ADB, 1999b; ADB, 2005). This research paper contributes to the literature gap by investigating the design and implementation of IS initiatives implemented through projects in the VTE sectors of selected Asian developing economies.

3. THEORETICAL FRAMEWORKS

3.1 Donor Project Management

The majority of innovations such as IS are implemented in developing Asian countries through Project based Intervention Processes (PIPs). Consequently the theory surrounding projects and project management is of significance to this research. Much project management theory is based on a ‘hard systems’ orientation, where problems are well structured. The projects involving IS initiatives in the VTE sectors of Asian developing countries are predominantly ‘soft’ driven poorly structured problem situations with a messy social context. An appropriate definition of a ‘soft’ project as applied to the context of international donor projects is provided by Friend (1998, pp 2) who defines a project as:

“An engagement of limited duration, negotiated amongst people representing varied programme strands in agent [consultant], host and sponsor domains.”

According to Crawford and Bryce (2003) key distinguishing features between donor projects and construction/manufacturing projects which are the major focus in the project management body of knowledge (PMBOK) of the Project Management Institute (2000) include:

- Project goals deal with social transformation/human development as opposed to “hard” implementations. Even aid projects with hard components are often a means to achieve some form of developmental end. This makes aid project performance measurement notionally complex
- Donor projects are inherently political as they create social, economic and environmental impacts. Thus they have a wide range of stakeholders which required high levels of accountability which requires complex reporting
- The operating environment of aid projects is often contextualized by issues which make traditional project management tools and approaches less appropriate. These issues include wide geographic distances between project actors (recipient country, contractors and funding agency), cultural differences between project actors, competing agendas between project stakeholders, technologically challenged operating conditions and unpredictable socio-political environments.

There is increasing concern in the literature about the relevance of project management theory and
how it relates to the practice of managing complex, social, projects (Morris, 1994; Koskela and Howell, 2002). This can be attributed to the fact that the intellectual foundations of project management are largely based on hard systems thinking and systems engineering (Morris, 2002). According to Winter and Checkland (2003) much of current project management theory (such as the PMI’s PMBOK) focuses on the ‘process’ dimension of project activity, which is carried out through a predefined sequence of stages typically defined by a project lifecycle. This in turn would involve application of hard project management techniques. This implies that project management would focus on managing ‘technical’ processes such as ‘engineering’, ‘development’, ‘construction’ etc. The use of hard systems approaches are even more pronounced in IS projects in both developed and developing countries, which heavily draw upon such approaches as: the waterfall method, PRINCE, SSADM, critical path analysis and work breakdown structures (Checkland and Holwell, 1998).

The relevance of traditional project management theory to managing donor projects is even more inadequate (Morris, 1994; Friend, 1998). Donor projects are characterised by a heavy bias towards ‘soft’ situations involving poorly defined problems ADB (1999b and 2005) and World Bank (2002). They are often even more complex than soft projects implemented in developed countries as they have added stakeholder pressures brought about by international donors and expectations from a multitude of local stakeholders.

3.2 Soft Systems Methodology (SSM)

Many authors feel that soft systems approaches are better suited for project management specially when dealing with social or people based project situations (Morris, 1994; Winter et al, 2003; Checkland et al, 2005). According to Winter and Checkland (2003) the ‘soft systems’ view of managing projects focuses on the social process of ‘managing’ in complex situations and trying to cope with an ever-changing flux of messy situations and complex issues. According to Winter and Checkland (2003) in these messy project situations, the aims and objectives are generally the main problem as opposed how to achieve them. Here SSM has gained credibility amongst project management theorists (Morris, 2002) due to its emphasis on ‘learning’ about the problem situation and accommodating stakeholder interests rather than trying to solve a particular problem. SSM is particularly well suited to managing messy projects as its emphasis is on “problem situations” rather than “well defined problems”. SSM considers that the real world consists of complexity and confusion and hence the aim is to organize an exploration of it as a learning system using different worldviews, and models as devices for learning rather than prediction. This contrasts with the hard systems perspective whereby the world can be seeing as systems that can be engineered (see Checkland 1990, A 11).

The scope of SSM has evolved to being an inquiring or learning cycle as summarized by Checkland (1990) in figure 1. This learning cycle involves five principles (see figure 1) which is based on a perceived problem situation or ‘content’.

Checkland further adds that SSM can be seeing in terms of ‘four activities’ where the activities are (Checkland & Scholes, 1990: Figure 1.3):
- Finding out about the perceived real world problem situation
- Selection of models of relevant purposeful activity systems each based on declared worldviews
- Comparison of the models with the perceived problem situation
- Taking action to improve the situation

Having reviewed a wide range of literature on SSM the enquiry/learning cycle behind SSM was applied to interpreting the research findings in terms of understanding the ‘problem situation’ surrounding PIP based IS initiatives, and the ‘five principles’ and ‘four activities’ for inquiring into such a situation. The specific SSM concepts and devices applied to the research and the manner in which they were applied are described further under the Research Approach.
4. RESEARCH APPROACH

This research is concerned with investigating management issues of IS initiatives in the VTE sectors of developing Asian countries – an extremely complex social process that unfolds within each country’s context. In researching this area of concern, it is acknowledged that formal/rational and subjective/social aspects are important as this would reveal a rich perspective of the situation. Therefore, due to the need to abstract richness and focus on social aspects, this research is underpinned through a phenomenological philosophy supported through the use of qualitative research methods. The engagement of such an approach is discussed in more detail below.

Checkland’s (1985) FMA model of research was adapted and used as the research approach to inform and guide the authors’ interventions in order to learn about an area of concern (A), using a methodology (M) and Framework of ideas (F). This is presented in figure 2. Each author ‘intervention’ was essentially a case study of a project intervention process, with a view to understanding and making recommendations for improvement. In using the FMA model, it is essential, as Checkland and Holwell (1998) point out, to declare in advance of the action, the elements F, M and A. In this research, these elements were:

- the area of concern A which was ‘IS initiatives in the VTE sector of developing Asian countries’ with a particular focus on Project Intervention Processes as a vehicle for IS implementation
- the methodology M which was based on: the learning cycle of SSM as illustrated in figure 1 and live and retrospective case studies of projects in Laos, Sri Lanka and Vietnam
- the framework of ideas F which was the application of concepts embodied in SSM to project management theory, especially the concept of structuring the enquiry process as a learning system, the use of purposeful activity models as devices to structure discussion on PIPs relevant to IS initiatives and about propose feasible ‘changes’ to overcome such issues.

![Figure 2. Research Approach](image-url)
4.1 Empirical Methods

Case studies were the main empirical tool and were designed using the approach of Yin (2003). Nine case studies were identified based on nine real world projects with IS initiatives three each in Vietnam, Laos and Sri Lanka. The selection of these projects was driven by accessibility to project actors and project literature, which was not an easy task, due to the sensitive nature of responses from donor agencies, host governments and consultants. Access to these actors was facilitated through a consultancy company involved in implementing aid projects in Asia. The authors positioned themselves as independent researchers studying the projects in question.

A longitudinal process was used involving a combination of live and retrospective studies of projects with each country having one retrospective case study and two live case studies. The live case studies were on projects that were ongoing at the time of the research. The live case studies were developed through project documentation, interviews with all the project actors and the contextual observations of the researcher observing the project team. The interview samples for each live project consisted of one or two interviewees from the sponsor, between 25 to 35 interviewees from the host and five to fifteen interviewees from the agent domain. The retrospective case studies were on projects completed at the time of undertaking this research and was undertaken through semi-structured interviews with key project actors and access to secondary data in the form of the project documentation.

4.2 Approach to Case Study Analyses and Findings

The approach and logic to the case study analyses consisted of three main steps. The first step dealt with the ‘finding out’ phase of SSM to understand the real world problem situation. This was done by applying four SSM based analyses to interpret the problem situation as described below:

- A ‘rich picture’ based analysis of the ‘situation’ surrounding each project intervention studied.
- Developing a role profile by undertaking an SSM based Analysis One of each PIP giving rise to candidate primary task systems for each project
- An analysis of the social background of the situation in each project studied in the form of an Analysis Two.
- A political analysis to understand the disposition of power in each project situation studied in the form of an Analysis Three.

The second step to the case study approach dealt with the application of SSM to develop purposeful activity models. Candidate Root Definitions (RDs) were developed based on the world views of key project actors arising from the Analysis One. The most relevant RD was then selected by the author and the structure of the Root Definition was tested using the CATWOE review (Checkland and Scholes, 1990). A Conceptual Primary Task Model of this RD was then developed. By continuing the application of SSM, the Conceptual Model was compared with the rich picture from each case to debate the issues that could be learnt from the IS initiatives in each PIP and propose feasible changes.

The third step in the case study analysis dealt with a comparison of findings across cases both within each country and across countries. This led to a set of findings which are presented in the following section. Relevant Human Activity Systems in SSM terms were developed of the conceptualised notion of a PIP process. These included Root Definitions (RDs) and Conceptual Models (CMs). A debate was then generated by comparing the models of the conceptualised PIP process with the actual project process that took place.

5. RESEARCH FINDINGS

Two key themes have emerged from this research. Firstly is a SSM based conceptual interpretation of a project with IS initiatives. This provides insights into the nature, scope and problems faced by project based IS initiatives. The second theme deals with a Conceptual process for managing Project Intervention Processes (PIPs). The paper presents a SSM based process for managing PIPs in terms of a generalised conceptual activity model based. The findings relating to these themes are described further below.
5.1 Theme 1: Interpretation of Project with IS initiatives in VTE in SSM terms

An important outcome of the case studies done across the nine projects reviewed is the visualisation of the project initiation and implementation processes in terms of SSM. The VTE sectors corresponding to project situations were situations regarded by many VTE actors as problematical. The host domains and sponsor domains designed projects to bring about ‘improvement’. These parties who initiated the projects also had considerations through ‘whose eyes the improvement is to be judged’. In these terms the project situations studied met the conditions of an ‘intervention process’ specified under SSM. Therefore the projects that were studied were ‘project intervention processes’ (PIPs) to bring about ‘improvement’ to the corresponding VTE ‘problem content’. This interpretation of projects studied could be visualized in SSM terms in figure 3. The ‘swords’ are indications of potential conflict between stakeholders and the ‘$’ signs are indications of perceived financial benefits.

Figure 3. Interpretation of an IS Project Situation in VTE in SSM Terms

It was found that the project intervention processes carried out by the host domain, sponsor domain and agent (consultant) domain are themselves problem situations in terms of SSM (Checkland, 1991). The interventions were situations in every day life which were regarded by those actors involved in the interventions from the host, sponsor and agent domains as problematic and requiring improvement. Hence even though the intervention processes were introduced in order to improve some perceived VTE problems, they themselves were problematical, leading to a new problem ‘content’.

The case studies provided learning about the nature of the actual project intervention processes studied. The learning revealed that each PIP had four major conceptual tasks: 1) ‘initiating’ of a project including design, 2) ‘managing’ initiatives of the project (including IS initiatives), 3) facilitating project activities through ‘administrative support’, and 4) ‘terminating action’ culminating in the end of the project. In the real world the task of initiating a project is separated from the rest of the intervention process through contractual procedures. However it was observed from the cases that the task of ‘initiating’ which defines the project interventions and role players is often problematical. Hence in trying to examine ways and means of improving project interventions in general and IS
initiatives in particular the project initiation needs to be taken as part of the overall PIP management process. It was observed that managing initiatives involves: 1) action to be taken by the Agent Domain; 2) follow-up action and decisions to be taken by the host domain; and 3) ensuring expected outcomes are met. On the other hand administering support is based on: 1) action to support project interventions; and 2) action to meet procedural requirements of sponsor and host domains. Terminating action consists of: 1) action for sustainability and follow up; and 2) Action to wrap-up project activity and transactions. The projects as intervention processes with these major tasks could be visualised as in figure 4.

![Figure 4: Projects as Intervention Processes trying to improve some Perceived VTE Problem Area](image)

**5.2 Theme 2: The process for Managing PIPs with IS initiatives**

In trying to reflect on ways of improving project intervention processes with IS initiatives in the VTE sector SSM based thinking was used to understand the problem situation in terms of the generic rich-picture of the intervention process presented in figure 7. For this purpose the insight gained from the application of SSM concepts in terms of Role Analysis (Analysis One), Social Analysis (Analysis Two) and Political Analysis (Analysis Three) of cases was also taken into account. For this purpose a number of Root Definitions were developed taking Project Intervention Processes from different perspectives and view points such as a system: 1) enabling to enhance relevance of VTE programme to skills needed; 2) instigating Government action to improve VTE efficiency and effectiveness; 3) providing relevant opportunities for a Government, a donor, consultants and other stakeholders. Finally a ‘root definition’ capturing more than one such view was crafted as given below:
A Government host domain, sponsor domain and agent domain collaborative system to instigate Government action to improve efficiency, effectiveness and efficacy of the VTE sector by initiating and managing an intervention process with IS initiatives.

For the purpose of generating a debate which could improve the situation of PIPs a purposeful holon or human activity system capturing the notion implied by the root definition was developed. This notional system captures some important essence for proper functioning of PIPs which is currently missing or implicit and responsible for its problematical nature. A Conceptual Model as shown in figure 8 was developed for this debate.

![Generalised Conceptual Model (CM) of Managing a PIP with IS Initiatives](image)

*Figure 5.* Generalised Conceptual Model (CM) of Managing a PIP with IS Initiatives

This general conceptual model of PIPs with IS initiatives was compared with the actual situation that
existed in the 9 PIPs studied in the cases. The comparison revealed that the activities exist only in some rudimentary form without the vigour required. It was also found that there is no close collaboration, cooperation and coordination among host, sponsor and agent domains when undertaking these activities for managing PIPs. These could be seen as major reasons for PIPs to be problematical as at present.

In the PIPs studied the initiating phase is highly dominated by the donor agency who designs the PIP in a prescriptive manner. ‘Managing’ a PIP is not taken adequately as a joint collaboration between the host and agent domains. The agent (consultant) undertakes their components according to their TORs (terms of reference) whilst expecting the Government host domain to contribute their part in terms of effecting change within the VTE sector. The sponsor reviews progress typically in a ‘detached’ style through quarterly or bi-annual missions. Currently collaboration and participation is missing at all levels. The absence of these key management activities in this vigorous form could be seen as the reason for the problematical nature of these PIPs with IS initiatives.

Managing a PIP is thus the process of ‘ensuring such collaborative effort amongst these tripartite domains (sponsor, host government and agent consultant) to improve the perceived problem situation of a VTE sector utilising the best suited initiatives within available resources’. This implies that the initiatives to be included in a PIP should be determined carefully having learnt the nature and scope of the problem situation with active participation and collaboration of all stakeholders.

6. CONCLUSION

Since PIPs are aiming to address some problem content of VTE sectors, the systems based study of PIPs not only facilitated understanding their problematical nature in terms of their design and management.

The application of a universal hypothesis for administrative science has been endorsed by major development agencies such as the ADB, World Bank and IMF by applying traditional project management theory in the management of IS projects in developing countries. However, as Lubatkin et al demonstrate the application of this universal hypothesis can have very limited roles in the management activity of developing countries. The research undertaken demonstrated the complexity of VTE sectors in developing countries with their complex organisational context and ‘extra-soft’ problem content involving difficult to structure problem situations. The research revealed that it is an extremely difficult task to manage project or PIP based IS initiatives by applying the traditional hard approaches of project management used in developed countries. A softer approach to managing IS projects is proposed by the authors using the enquiring/learning cycle of SSM. A conceptual model of the process of managing PIPs was developed.

7. REFERENCES

Commonwealth of Learning (2002). Perspectives on Distance Education: Skills Development through Distance Education. Vancouver: Commonwealth of Learning.