Towards an Information Technology Management Framework for Developing Countries: Investigating the Keiretsu Model

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Information technology management methods evolved and designed in western, first world countries are not appropriate for third world countries. Furthermore, they are now becoming inadequate because the current thinking on management theory - upon which Information Technology Management is defined - is changing significantly. The salient points of this shift in the paradigm of strategic management are outlined and an indication is given of how this will impact the management of information technology, with specific regard to the requirements of developing countries. An outline of an adapted model is attempted, using a simple four-component framework. The area of information technology planning will need to change. The character of the day-to-day management, however, is most significantly affected, mainly by an increased use of external agents in what will probably be new and innovative forms of alliance. The concept of an information technology keiretsu is investigated as a useful model for how such alliances could be structured and how they could act as a catalyst for accelerated learning and thus lead to more effective transfer of skills and technology for Information Technology Management. Issues of designing and implementing such a keiretsu as well as the role of its members are discussed. Suggestions for government support are outlined. A direction for further research is set out, concluding that using action research in a pilot keiretsu in a developing country would be the most promising approach.

The Importance of the Right Management Model

Although there is common agreement that information technology is a powerful agent of development for lesser industrialised nations, there is also widespread evidence that it has been of mixed success in developing countries. Furthermore, for management to be effective, the structures and processes it applies must be appropriate to the nature and characteristics of what it is managing. Information Technology itself has been changing at a rapid pace during the last two decades. Even more significant is the change in its role within the business process. It is argued that the model for the management of information technology in use now is inadequate for the demands placed on it, in particular with reference to developing countries. There are three reasons for this:

- The management model was developed by western, industrialised countries, based on assumptions which are now not valid for developing countries;
- The model is based on assumptions about the nature of information technology which are now incomplete;
- There is a fundamental paradigm shift within strategic business thinking upon which information technology management rests.

This exploratory paper first gives an overview of some issues of information technology in developing countries. In the main part of the paper, it is set out where and how the model for information technology needs to be adapted for developing countries. The structure of an information technology keiretsu is investigated and proposed as a useful construct for developing countries. Lastly, areas for further research are sketched out.

Issues in Information Management for Developing Countries

That differences in the cultural environment are an important issue in the management of information technology
in developing countries has been well established.

Robey & Rodriguez-Diaz (1989) found that cultural differences such as the different ways in which information systems are interpreted and are given meaning proved a significant impediment to the management of an accounting system in one of two Latin American countries. The difficulties could be overcome by inclusion of the stakeholders in the project team at a second implementation project, changing and adapting the management framework. Heitzman (1990), in a study on the acceptance and the influence of information technology in the third world, particularity in South East Asia, also sees the regionalisation/localisation of development and implementation efforts as a way to ameliorate the otherwise steep difficulties experienced in managing information technology across cultural and developmental divides.

In studying the implementation of an international system in different countries King & Sethi (1993) found that in order to succeed with the projects, the management styles and structures for each implementation project had to be carefully tailored to the specific developmental requirements in each environment.

These findings were confirmed in a wide ranging analysis of issues in information technology in less developed countries (Sarawat & Gorgone, 1991). They also found a political element to the management issue, where lack of involvement sometimes was interpreted as using information technology as another means of the assertion of first world dominance. Skills deficiency, lack of indigenous technology content and concern over employment issues (e.g. clerical displacement) were cited as other issues.

Whereas these and other studies found in the literature concentrate mainly on the effect of different levels of development on the day-to-day management and also on the management of systems implementation, there is also a second element of straight difference in culture, in the way in which value systems, business philosophies (especially ethics) and general living habits diverge, often substantially, between different implementations of an international system. Goodman & Green, (1992) demonstrate this with their analysis of the information technology environment in the Middle East.

Janczewski (1992) carried out an analysis of the factors influencing information technology in West Africa. His findings have corroborated the notion of developmental differentiation as a key influence on the effectiveness of information technology. Researching several case studies in Central and East Africa Odedra-Straub (1993) found that his studies corroborate these findings and emphasise the importance of the interplay between cultural and developmental factors.

From this background, it can therefore be concluded that a useful model for Information Technology Management for developing countries should be adapted to the individual level of their developmental requirements and should take the cultural identities of their people(s) into account.

### Table 1. Comparison of the Traditional Information Management model with the Requirements of Developing Countries

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<thead>
<tr>
<th>Traditional Data Processing Management Model</th>
<th>Developing Countries Real Requirements</th>
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<tr>
<td>Processes and structures are geared towards the large corporation/enterprise</td>
<td>Mainly smaller enterprises</td>
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<tr>
<td>Predominance of custom development of application systems in-house</td>
<td>Lower degree of sophistication means off-the shelf systems will suffice for most applications at present</td>
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<tr>
<td>Availability of large numbers of skilled staff</td>
<td>Shortage of skilled staff, both systems staff and users</td>
</tr>
<tr>
<td>Systems which are mainly of the ‘Support’ type</td>
<td>Most systems of high priority for developing countries can have ‘Strategic’ elements</td>
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</table>

The frameworks for the management of information technology stem from the early 1970s (Cash et al. 1988). As they are based on the body of experience built up during the 1960s, they are rooted in the era of data processing, which is different from that of information technology. Although updated to recognise some changes, the traditional Information Technology Management model is still based on outdated assumptions, which makes it particularly inappropriate for developing countries. This is shown in Table 1.

### Changes in Strategic Management Paradigms - Their Relevance for Information Technology

Although Wysocki & Young (1990) claim that Information Technology Management is not so much a framework but a body of ‘tribal knowledge’, it is clearly modelled on the broader tradition of general business (Cash et al. 1988).

Changes in the way in which general business views strategic management are therefore of influence for information management. Traditional strategic management thinking is shaped by a three step-cycle (Hayes, 1985). First, the enterprise determines what ‘end’ it wants to achieve, then it
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