Implementing Global Information Systems: Success Factors and Failure Points

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1. Implementing Global Information Systems

With the current trend towards globalization, firms are managing increasingly complex networks of subsidiaries, customers and suppliers. Information systems (IS) help manage this complexity by providing supply chain information, facilitating communication between supply chain partners, and supporting managers’ decisions when coordinating these networks. As Kim and Oh [5] put it, “global coordination is one of the most important functions firms have to perform for optimal global operations to achieve operational flexibility.”

Given the importance of information systems in the management of global supply networks it is surprising that the effectiveness with which such technology is exploited varies greatly between firms [5]. Reasons may include the prevalence of different legacy software components, technical and social issues, the lack of management support and a systems champion, and low involvement of users and management in the definition and planning of the project [10]. Various approaches to overcoming these problems have been proposed, including software evaluation procedures, various software design tools (e.g., XML, CASE, etc.), and advice to communicate with software specialists, managers and users throughout the implementation project [4].

Whereas the difficulty of successfully implementing an Enterprise Resource Planning system is widely appreciated, the implementation of an IS to support multinational company networks (global IS, hereafter abbreviated as GIS) is even more challenging. A GIS must be able to easily interface with intrafirm and interfirm software by:

- Providing an IT backbone that spans all countries the firm and its supply chain partners operate in;
- Ensuring the exchange of highly structured information across the world while allowing local customization in each country;
• Managing a vast amount of information, including border procedures, duties and tariffs and exchange rates; and
• Providing a host of optimization techniques to facilitate the efficient operation of the global logistics network.

In addition, the complexity of implementing a GIS increases with differences in the countries involved, the project manager’s unfamiliarity with the global context, and the number of global factors that must be considered during the implementation [9]. Further complications arise from cultures, languages, business and legal environments, varying technology and vendor support, the national infrastructure, local market size, data export controls, and the availability of local IT staff (e.g., [8]). According to Roche [7], IT projects that are simple if carried out domestically can be “nightmares” if carried out globally.

This paper aims to identify factors that are particularly important to the success of implementing a GIS. In the next section, an overview is given of the relevant literature of possible success factors. The third section describes the results of a study conducted to investigate success factors and pitfalls when implementing GIS. The final section discusses the implications for managers of GIS implementation projects and points out further research needs.

2. A REVIEW OF SUCCESS FACTORS

While research has evolved in the 1990s that discusses frameworks for undertaking research in international IS and how to use or structure international IS, no studies directly address success factors of implementing GIS. In this paper, research concerned with the implementation of other large-scale IS is reviewed to help in the identification of possible success factors.
The results of this literature review are summarized in Table 1. A tally of factors shows that top management support is the most commonly identified success factor when implementing a complex IS, followed by capable and well understood business processes, a cross-functional team, or cross-functional cooperation and communication. Clear project goals and the management of the affected employees have also been discussed. Note that the last factor also relates to the training of managers and future users of the IS.

Given the differences between implementing a local versus global IS, the question arises whether the factors identified above are also important to the implementation success of a GIS. In addition, other important factors may exist that were not discussed in the literature. For example, the complexity of organizing supply networks would suggest a greater importance of well organized and understood processes. Moreover, due to the international scope of such a project, the financial backing, capability of the IT staff, and ease of cross-functional and cross-cultural communication might be of particular importance. In short, while the above literature review gives leads as to possible success factors, this list is likely neither completely exhaustive nor necessarily relevant.

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Table 1: Overview of Success Factors
3. SUCCESS IN GLOBAL AND LOCAL MIS IMPLEMENTATIONS

In order to begin to address the questions raised in the previous section, a study on success factors for global IT implementations was conducted. Case data were collected on sixteen major IS implementation projects carried out in eight multinational firms located in a major metropolitan area. All firms were large (with sales exceeding US$ 10 million) to ensure that firm size or financial resources would not become confounding factors. Half of the projects had been successful, the others unsuccessful; half exhibited a global scope while the others covered the introduction of local IS. This sample design, which is similar to that of a designed experiment, allows for a comparison of factors that influence the success versus failure of global versus domestic IS projects.

A pre-tested and consequently revised structured questionnaire was used to conduct the case research. Most questions allowed the project managers to self-identify the factors they found important to the success of the project and use the open-question format to explain the background, planning and implementation process, and outcomes of the projects. All projects had been completed (or aborted) by the time of the interview, thus allowing for valuable hindsight.

The data was analyzed by contrasting the responses about successful projects to those about unsuccessful projects and international to domestic projects (pattern matching). Moreover, the frequency of the presence or absence of factors was contrasted as a rough indicator of their importance. Lastly, the qualitative results were coded and validated through a non-parametric correlation analysis of the quantified factors.
3.1 Indicators for Success and Failure

Our findings validated many, but not all, of the factors identified in the literature as making a difference in the success of an IS project. That is, some factors exhibited so little correlation with success and failure that their causal relationship with success could not be validated. On the whole the firms largely knew what they would be getting into and what would be required to start and implement the projects, and as a result, those factors did not make a difference. In particular, most failed IS projects did, at least apparently, have the backing of top management. The firms also knew that the projects would require ample financial resources and gravely impact the firms’ operations. No substantial difference existed between successful and unsuccessful projects either in terms of vendor selection methods or the management level at which final approval for the project was given.

Several other factors were relevant in determining the success of a project (see Table 2). Most importantly, the majority of unsuccessful projects were not perceived to be urgent. Moreover, in more than half the unsuccessful projects, top management did not really understand the intricacies of the project and initially withheld their approval for the project when it was proposed to them. These factors indicate that, even though top management claimed to support these projects (how would they not!), the support did not exist actually or sufficiently. In other words, in most cases top management did not make these projects a top priority. This finding is also supported by the fact that most failed projects were considered to be not disruptive or urgent to the company during implementation, thus further leading management to believe that no particular attention was needed for the project.
Successful Unsuccessful

Project urgent
100% 25% 75%

Involvement of many employees necessary
100% 38% 63%

Understanding & approval by top management
100% 43% 57%

Expected to be disruptive to the company
88% 38% 50%

Involvement of other org. units necessary
100% 63% 38%

Table 2: Contrasting Successful with Unsuccessful IS Projects

The symptoms of lacking top management support were manifold. In one project management bickered about the financial resources to be devoted to the project. The project was approved and started only after several rounds of negotiations. The lack of leadership also caused the implementation phase to become longer and longer, until the project was finally reassigned to a different division within the company. In another project that was also poorly understood and supported by top management, the implementation was halted entirely in mid-course due to poor interim results.

Other differences that impacted the success of IT projects included the involvement of a broad number of employees and functional areas from within the company and the partners involved. These two factors relate to the need to model processes across functions and involve the systems’ users in the design of the IS. Managers of four of the eight unsuccessful projects admitted that, in hindsight, they had neglected these factors by not using cross-functional teams; not engaging in cross-functional communication; and not bringing end-users on board early during the project. Consequently, these implementations were “painful”, with only moderate results and low user acceptance. Most did not complete on time or within the planned budget.

In contrast, many managers of successful projects stressed the importance of proper and detailed planning, thus enabling the investigation of the underlying processes and the allocation of appropriate personnel and financial resources. Despite this, the managers of successful
projects experienced many of the same hurdles as managers of unsuccessful projects, such as a lack of interest in processes, tight constraints on time and resources, technical glitches and difficulties in end-user training. What set them apart from the failed projects was that these managers had *expected* that the projects would be disruptive to the firm’s operations and that difficulties would arise. Due to detailed up-front planning, they were able to flexibly respond to the situations and complete the projects successfully. Most successful projects also remained within their planned time frame and budget. Insofar, these results largely confirm the success factors most frequently discussed in the literature.

### 3.2 Global versus Local IS Projects

The factors that led to the success or failure of IS projects did not apply equally to local and global projects. Top management supported (at least superficially), gave approval for, and expected a potential impact on the organization for global projects as much as for local ones. Differences existed, however, in the perceived need to involve a larger number of people and business functions. Almost all managers had recognized that the implementation of a global IS would be more complex and resource-intensive than the implementation of a local IS. This is most clearly supported by the fact that all managers even of failed global projects had, in advance, seen the need to involve a large number of people or many different functional units in the project. In contrast, none of the failed local projects had involved different functional units, and most had not involved many people. Hence, while complexity and resource-intensiveness was a differentiating factor for the success of local IS projects, it was not a factor that, even if properly recognized, led to the success of global projects. This finding is underscored by the fact that in only one failed global project had the scope been a major challenge.
Even if an a priori recognition of the need for cross-functional communication in global projects was prevalent, it often did not occur as planned once implementation was under way. Global IS must often exchange structured and standardized data while allowing for regional customization. These opposites are driven by firm-wide accounting and control on the one hand, and local taxation and accounting laws, customs or languages on the other. Those requirements can only be met if collaboration across functional and regional units exists. Thus, while the need for user and cross-functional involvement had been clear at the outset, two of the four failed global projects (but none of the successful ones) made the lack of “departmental communication” and “having everyone on board” at least partly responsible for the lack of success. This result signifies the difficulty and complexity of implementing global IS, even if management knows in theory what needs to be done. Again, only detailed and thorough planning can help circumvent this pitfall.

The complexity of global projects was also exemplified by the frequency with which the implementation was expected to disrupt the firms’ operations. For global implementations, most of the successful projects had anticipated substantial disruptions, while most of the unsuccessful ones had not, leaving the latter open to severe difficulties and unprepared to counteract the resulting disruptions.

The cases also revealed that more top managers had understood the technical intricacies and organizational impact of failed local IS projects than failed global projects. This is an important point that leads back to the complexity of a project. Complex projects require more time, better preparation and management, and more resources to be completed. The importance of top management’s understanding becomes more essential to the success of the project as it leads to better support and change management throughout the implementation. In contrast, local
projects could sometimes be carried out comparatively quickly by a small implementation team, making a sustained support through top management less critical.

Interestingly, in one case the success of implementing the GIS had been substantially driven by middle management. Despite the occasional interference or ignorance from top management, middle managers intricately understood and drove forward not only the implementation of the project but also the education of their superiors. Due to the scope of the project, this process was so frustrating and exhausting that many of these middle managers left the company after the IS had gone productive. This signifies the importance of middle management in complex IS projects, a point strongly supported by anecdotal evidence. Top management should support and open doors for middle managers, who are concerned with the day-to-day management of such a project, understand the processes and interface with the project’s technical personnel. This support is clearly more necessary for GIS than for smaller projects.

4. IMPLICATIONS FOR IS PROJECT MANAGERS

When carrying out this research project it was not assumed which factors would be important for the success of implementing global and local information systems. Instead, project managers were asked to explain what they found important and what issues they had to deal with. Thus, not all factors identified in the literature as being important to the successful implementation of a complex IS were mentioned and validated in the context of this research.

The findings, though, revealed a very strong, simple message for managers of global IS projects. Since these projects are so complex in their requirements, it is crucial to very
thoroughly prepare their implementation. Planning and implementing the IS must be done with a sense of urgency, but not at the cost of proper planning. In a global IS project, enough difficulties, competing for management attention, will arise even with good planning in place. If planning is lacking, these difficulties will become insurmountable. The project team should also consider simplifying existing processes. Process reengineering is often simpler than attempting to customize already complex information systems to even more complex processes.

Second, it is important to get a buy-in from top management. Again, a sense of urgency helps convince management to devote its attention to the project. It is important for top management to understand the project and potential hurdles as this guarantees the proper allocation of personnel and financial resources. As well, when difficulties arise (as they will in global projects) top management will then be more likely to help the project team in dealing with them.

Lastly, the introduction of a global IS – since complex, geographically diverse and with opposing central and local requirements – demands the involvement of many people from across different functional and regional units. (Note that the firm’s supply chain may also involve partners, vendors and consultants.) Entrusting such a project merely to the headquarter’s IS department is not sufficient. Instead, employees from all the different regions, departments and partners involved must have input in the design and implementation process. As opposed to local IS implementations, however, recognizing the need for greater resources and cross-departmental involvement is not sufficient to ensure the success of GIS implementations. Again, detailed planning of the processes and GIS, flexibility during the implementation, and competent leadership are ingredients much more crucial for the implementation of global than of local IS.
Following these simple and intuitive rules will dramatically increase the chance of successfully implementing a global (or local) information system. While some of the above points are not new, this research highlights the factors that are important to the introduction to a GIS and shows where the findings differ from the recommendations provided in the existing literature. As a follow up, it would be interesting to validate these case-based results through a large-scale survey of GIS implementation projects.

5. **BIBLIOGRAPHY**


