The Impacts of Fit in Enterprise Systems on the Operations of International Organizations

Shari Shang
Department of Management Information Systems, National Cheng-Chi University, Taiwan
sshang@mis.nccu.edu.tw

Louis Y. S. Lo
Department of Management Information Systems, National Cheng-Chi University, Taiwan
yslo@mis.nccu.edu.tw

Abstract

Enterprise systems (ES) support international operations in both global integration and local adaptability. Due to the complexity of data and processes in head offices and in different subsidiaries, maintaining a fit between international business operations and a multi-site system configuration has become one of the most critical aspects of ES implementation. This research strives to create an in-depth understanding of the benefits and problems of fit in international enterprise systems in both head offices and local business units. By means of case study of eight international organizations this study intends to assess the alignment between international organizational operations and enterprise systems configuration. Different aspects of the impacts on both head office and local units are then analyzed. It is hoped that a broad-scope, multi-dimensional impact analysis of international ES fit could provide a useful approach for understanding the various consequences of ES fit in international business operations.

Keywords: international business operations, enterprise systems, IS fit, enterprise systems benefits

1. Introduction

Enterprise systems (ES) support international operations in both global integration and local adaptability. They not only simulate the business environments of many countries but also transform their process information into consolidated reports to head office [1]. Many organizations wishing to improve their international operations have ventured in search of the most suitable International Enterprise System package. Due to the complexity of the data and processes of head office and of different subsidiaries, maintaining a fit between international business operations and a multi-site system configuration has become one of the most important aspects of ES implementation[2-4]. However, it is hard to tackle these challenges without a full understanding of the consequences on stakeholders of the implementation of such a complex system in all business areas. Head offices need to understand the different local effects on total business operations, and local offices need to be aware of their

contribution to global efficiency and the possible tradeoffs between global control and local response.

Studies on IS fit[5-10] and global IS fit[11-13] have presented useful frameworks for classifying and assessing the fit of an information system, assuming fit will lead to performance improvement. However, neither the broad consequences nor the various stakeholders' views have been empirically tested. However, previous ES studies have revealed that strategic and managerial benefits such as global consistency, efficient resource control, or improved decision-making are planned or realized mostly by the central offices of international businesses [14-16]. But operational and organizational problems such as loss of customer responsiveness, increased customization costs, or conflicts within the local environment have also been noted[17, 18]. It seems that the lack of a complete overview of the multiple impacts of international enterprise systems can lead to misguided ES implementation.

To fill the gap between the assumption of fit benefits from ES implementation and the actual impacts of ES fit, this project attempts to create in-depth understanding of the benefits and problems arising from fit in international enterprise systems in both head offices and local units. By applying Javenpaa and Ives' (1993) framework of IT fit[12] to Bartlett and Ghoshal's (2002) international business structures[19] and Shang and Seddon's (2002) framework of ES impacts[20], this study plans a detailed case analysis of eight international businesses to assess the alignment between the international organizational operations and enterprise systems configuration. Different aspects of the impacts are then analyzed to develop deeper and more complete understanding of the impacts of international ES fit. It is hoped that this broad-scope, multi-dimensional benefit analysis of international ES fit can provide a useful approach for understanding the various consequences of different forms of fit between international practice and system configuration, and assist business managers to develop more effective strategies for maximizing benefits from their investment in international enterprise systems.

2. International Business Operations

International business operations are activities undertaken by a multi-national company outside its domestic base. Different ways of achieving balance between the pressures for international integration and local responsiveness indicate different requirements for sharing and processing information. Four distinct strategies (depicted in figure 1) for managing organizations across borders have been identified[19]: multinational, international, global and transnational.

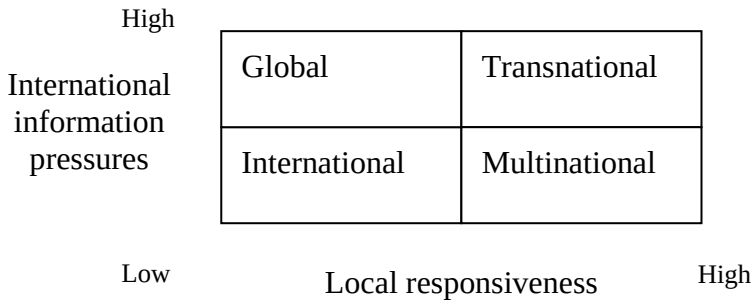

Figure 1: International Business Operation

The global orientation firm has a strong focus on seeking global efficiency through consistent operations and centralized world resource management while the multinational orientation firm is characterized by strong national bases, which results in conceding substantial autonomy in decision making to foreign subsidiaries.

International orientation describes firms whose strategic focus is on worldwide diffusion, which gives local units a large degree of discretion in adopting and modifying headquarter's products, but these local units are also dependent on the parent for new products and technological know-how. The decision-making structure of an international company is less decentralized than that of a multinational company, but more than that of a global company.

Transnational orientation typically involves firms concerned with attaining global efficiency and flexibility, and promoting communication and organizational learning among business units. The country units serve both independent local needs and interdependent global needs.

3. Information Systems of International Business Operations

The organizational characteristics of centralization, dispersal, and coordination are differently reflected in various kinds of international IT operations[21-23] and management [24]. Patterns of global information system implementation have been found to be aligned with international business operation strategies.

In a centrally coordinated business structure, IT is also globally centralized. Local autonomy appears to be a moderating variable, as can be seen from the differences in the IS characteristics of global and parent-child firms[21]. Firms with a global business orientation focus on customer services and cost advantages and centralize their assets and management on a global basis.

Firms with multinational orientation tend to build up independent IT operations in their subsidiaries. Application portfolios bear little resemblance to one another and contain few common systems.

Transnational firms aim to achieve global flexibility, efficiency, and the transfer of learning across business units. This is made possible by the worldwide integration of information and core business processes. Innovation and individual excellence are promoted and reengineered for worldwide application. More joint headquarter-subsidiary activities are noted than in the other kind of operations.

The strategic focus of international orientation is the adoption of parent company policies and practices in a mixed centralized/decentralized structure, based on core competencies. These firms may have several global systems, but those systems are likely to be locally tailored and running under the control of the subsidiary. The IT relationship between the subsidiaries and headquarters is characterized by interpersonal contacts, cooperation, and shared planning. It may also extend to seeking volume discounts or site licenses from vendors.

4. Enterprise System Implementation in International Operations

Enterprise systems, from vendors such as SAP, PeopleSoft, and Oracle, integrate enterprise information, including financial, human resources, logistics and marketing information, throughout and across organizations, creating single data repositories that feed information into applications supporting several or all business functions of multiple sites. With systems linked, one data entry can then be accessed by anyone anywhere across borders and worldwide resources can be centrally managed[25].

Since ES vendors design software to function in different countries they also have staff in these countries who are knowledgeable and accessible. The functionality of enterprise systems is evolving with regular upgrades and constantly advanced technologies. Implementing enterprise systems in complex and geographically dispersed organizations involves difficult, possibly unique, technical and managerial choices and challenges [2]. A multi-site ES implementation has at least four different levels: business strategy, software configuration, technical platform, and management execution. Successful multi-site ERP implementation involves a consistent arrangement between business components and system configurations on all these levels

5. Research Framework

As depicted in figure 1, this study tries to assess the fit between international operations and enterprise system configuration with related impacts on both head office and local units to be examined.

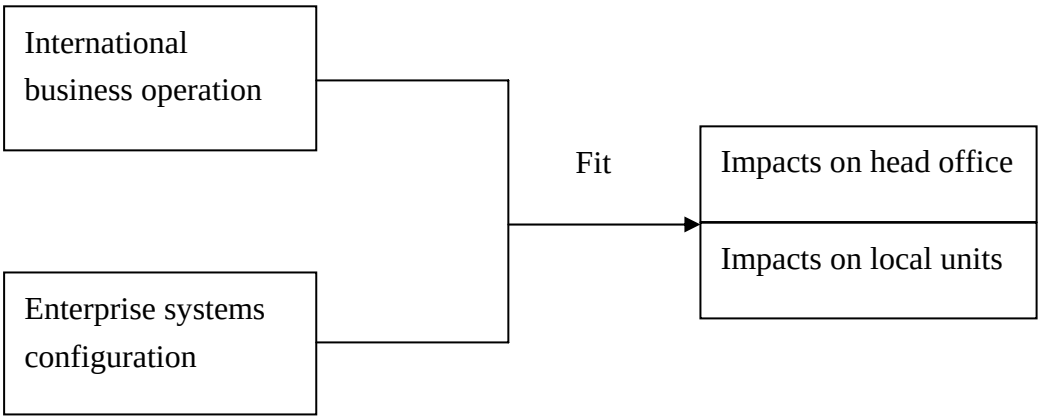

Figure 1: The impact of fit between international business operations and ES configuration

The concept of 'fit' expresses the idea that the object of design must match its context in order to be effective [26]. Fit has been defined as the degree to which the needs, demands, goals, objectives, and/or structure of one component are consistent with the needs, demands, goals, objectives, and structure of another component[27]. Because of its completeness and relevance to the study Javenpaa and Ives's (1993) framework of examining fit between international business operations and IS configuration will be applied and modified according to the special characteristics of enterprise systems to assess the fit between international business operations and ES configuration, and Shang and Seddon's (2002) enterprise systems benefit framework will be applied in order to assess the consequent benefits and problems comprehensively.

5.1 International Business Operations

The international business operation variables are designed to capture the four structure models of Bartlett and Ghoshal (2002)[19]. This will be reflected in the business structure and the locus of organizational decision-making.

Business structure. This is looked at to understand which of the alternative structures most closely resembles a firm's corporate approach to operating in a foreign or global market.

Locus of organizational decision making. This section assesses the relative influence of the subsidiary versus headquarters on six activities: (1) introducing a new product, (2) changing an existing product, (3) changing a production process, (4) restructuring the subsidiary

organization, (5) recruiting subsidiary senior management, and (6) developing career plans for senior management in subsidiaries.

5.2 Enterprise systems configuration

Firms reporting that they build IT configurations according to their international business structure can be characterized along five dimensions[12]: the locus of ES decision making, the number of common systems, the mode of operation, the development approach, and the reporting structure. Since enterprise systems provide the flexibility of supporting dynamic control and decentralization capabilities in an international operation, a similar approach can also be applied to analyzing the consistency between international operations and ES configuration. The detailed items of these dimensions are modified according to the processing nature of the enterprise systems.

ES systems operations.
Interviewees will be asked to identify the firm's ES operations approach in international operations.

Locus of ES decision making. This section assesses the autonomy of foreign subsidiaries regarding the following ES implementation decisions: (1) ES selection, (2) operating systems, (3) hardware, (4) database, (5) staffing of senior ES positions, (6) configuration standards, tools & methodologies, (7) implementation of partner selection, (8) project goals and scope, (9) implementation strategy (big bang, phased..), (10) delivery dates, (11) selection of empowered decision makers, and (12) fulltime employment of the best staff.

Common systems. This is designed to understand the range of scope of global standard data and processes.

Management of ES operations. This is designed to understand the degree of control each local unit has over their enterprise systems.

Development approach. This is to analyze the control and involvement of global and local resources in the ES configuration.

ES reporting relationship. This item assesses the reporting design/format? of senior subsidiary IT managers to the headquarter's IT head.

The hypothesized relationships between the dimensions of ES configurations and international business operations are listed in Table 2.

Table 2: The relationships between the dimensions of ES configurations and international business operations (adopted from Javenpaa and Ives 1993)

ES dimensions	Multinational	Global	International	Transnational
Locus of ES decision-making (decentralized)	++	--	++	+/-
Common systems (number of)	--	++	++	++
Mode of operations (decentralized)	++	--	++	+/-
ES reporting (decentralized)	++	--	++	-
Development approach (decentralized)	++	--	++	+/-

++: very high; +: high; --: very low; -: low; -/+: joint/combination of centralized/decentralized

5.3 The impacts of Enterprise Systems on Head Office and Local Units

In order to assess the impacts of international ES fit in diverse dimensions Shang and Seddon's (2002) ES benefit framework is applied for its comprehensiveness[20]. This framework (Table 1) was proposed by reviewing and consolidating the literature on IS benefits, tested and enriched by reviewing 233 Web-published ES cases, and verified by directly contacting 34 cases. The result was a modified ES benefit framework with a detailed list of 89 benefit items obtainable from ES use (a detailed list of ES benefit items is given on the first author's website)

Table 1: ES Benefit dimensions (based on Shang and Seddon 2002)

Dimension	Definitions (all consequences of ES use)
Operational benefits	Operational benefits are usually reflected in cost reduction, cycle time reduction, productivity improvement, quality improvement, and improved customer service.
Managerial benefits	Improved management decision-making, e.g., improved allocation and control of an organization's resources, monitoring of operations, and support for strategic decisions.
Strategic benefits	Support for strategic action such as business growth, alliance, innovation, product differentiation, and external linkages.
IT Infrastructure benefits	Reduced IT costs, increased capability for quick and economic implementation of new applications, and enablement of greater organizational flexibility.
Organizational benefits	Consequences of ES use that make an organization more focused and cohesive, better at learning, and better at executing its chosen strategies.

6. Research Methodology

International business operations are an area with multiple participants where different perceptions need to be verified and synthesized, which necessitates dynamic exploration into each different situation. Since survey results cannot present an objective and complete view of ES impacts, meticulous data collection in the presence of the researcher during the data collection process is considered essential: to clarify concepts and to ensure that the understanding of the concepts involved is consistent and precise across the subjects.

This project plans to conduct detailed data collection with eight major international business operations, with two of each type of international structure. Data will be collected from two types of enterprise system users of both headquarters and a core local unit: from major process managers and the ES project managers. Business managers are to provide information of business operations and business benefits and problems while ES managers will be asked to provide information on the ES configuration and ES impact on the IT infrastructure. The data collection will be executed under the control of researchers. Although the research framework provides an articulated questionnaire for data collection, open questions are to be asked with detailed case examples in order to build support for selected statements and to verify the linkage between the fit variables and consequent changes in performance. The fit of international ES will be assessed and supported with analyzed case examples. The related impacts will then be reviewed and described with supporting case data as well. Tables and graphs will be used to consolidate findings and form patterns of the impacts of ES fit on both headquarters and local units.

7. Conclusion

This research project is proposed to seek insightful understanding of the management of international enterprise systems. Its aim is to investigate various aspects of the impacts of enterprise system fit on international business operations.

We expect that different types of international ES fit and misfit have different influences on the different areas of running a business in both the head office and local units. For example, in a globally-controlled firm, operational performance in the head office maybe achieved because of tight control over local resources, while managerial performance in local units could be reduced due to a delay in response to local requests when local competition increases. On the other hand, a strategic drive for global competition could be enhanced through the collaboration of inter-organizational operations, with extra efforts in managing the increased negotiation power from local units in transnational-oriented firms. Meanwhile global information could enhance knowledge sharing among local units, with supplemental support for international and multinational types of firms to transform themselves into transnational-

oriented organizations. An ES fit could bring benefits as well problems in different business areas in the operation of international business.

The value of the study should be to assist business managers in diagnosing fit between international business operations and ES configuration with an insightful understanding of possible tradeoffs between the performance of head office and local needs. It is hoped that the results can build up deep knowledge of the management of international enterprise systems and provide useful guidance to managers of international enterprise systems.

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