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Developing a Strategic IS / IT Alignment Framework for Globalizing Firms

¹ Jungwoo Lee, ² Jun-Gi Park

¹ Prof., Graduate School of Information, Yonsei University, Korea

² Senior Researcher, Center for Work Science, Yonsei University, Korea (*Corresponding Author)

¹ jlee@yonsei.ac.kr, ² Warren.pak@gmail.com

ABSTRACT

Information systems and information technologies (IS/IT) is transforming the structure of major industries across typical national boundaries and borders. Global economy as a whole is morphing fast into an information and knowledge based economy, altering firms' long-held assumptions about the dynamics of competition in their respective industries in their localities. Indeed, we are entering into a new economy with new dynamics and new rules emerge with extensive and speedy expansion into globalized operations. Changes and transformation enabled by IS/IT are creating opportunities as well as challenges for business corporations to seek expansion and growth in globalized markets. In this article, we analyze the globalization strategies and explore the concept of strategic alignment of IS/IT strategies with the firms' globalization strategies. A two by two matrix consisting of coordination and cooperation is presented as an alignment framework with four different types of alignment: replicative, hierarchical, collaborative and virtual IS/IT. Practical implications of this alignment framework are discussed.

Keywords: *Globalization, global information systems, coordination, cooperation, replicative, hierarchical, collaborative, virtual, multinational, international, transnational, strategic alignment, IS/IT, information systems, information technology*

1. INTRODUCTION

The global economy has changed in many dramatic ways over the past decade reflecting changes incurred by fast advance of smart devices and smarter networks. One of the most profound changes is that large, stable and centralized business organizations that have dominated the major part of the twentieth century are giving way to new forms of organizations – virtual and networked organizations with molecular structure.

Two most critical forces causing these changes are the globalization of domestic economy and the use of advanced information systems and information technologies (IS/IT). Globalization requires agile, innovative and flexible organizational forms that can create and distribute goods and products to a worldwide market. Managing interdependent but independent business units across different nations is, therefore becoming a necessity but a daunting task for executives. Cross-border coordination and cooperation, however, are hard to achieve and maintain overtime. Firms have their own cultures and agendas. These units in different countries and regions also evolve at different directions and speed.

It is now axiomatic that business success depends on extending the reach of an organization globally. The adoption of globalized organizational structure for globalized operation is acknowledged as the preferred means of internationalizing the corporation. Designing and operating transnational organizations depends on effective deployment of advanced information technologies and systems, because globalization requires employees and business partners to be geographically and temporally dispersed, deploying information technologies for virtualization is an obvious choice for overcoming spatial and temporal limitations.

New telecommunications technologies can enable business firms to create a seamless set of global networks of

remotely located business units and confederated strategic alliances. Not only the production operations but also consumptions are now also becoming more and more virtual. Even the dispatched to the remote North Pole region can access worldwide web of information on the tip of their fingers and order product through e-commerce system by a click of a mouse. As far as information is concerned, national borders are becoming obsolete and the control of these flows has become more difficult.

This improved flow and distribution of information can improve the efficiency of the market and make the communication effective. IS/IT are inevitably changing the way individuals work, how teams coordinate their activities, how organizations are structured, and how the markets are operating. Today's business firms are facing dramatic discontinuities in formulating their survival strategy. IS/IT is also making the globalization of industries more pronounced, allowing the participation of companies from different world regions and organizational size.

2. GLOBALIZATION OF FIRMS

Globalization of a firm leads to the status of a firm “in which a firm's competitive position in one country is significantly influenced by its position in other countries [1].” Among the critical operations in globalized firms are the extensive coordination and cooperation of business activities leading to integrated exchange of resources among dispersed subunits, subsidiaries or cooperatives. A truly globalized firm, therefore, is the one that competes globally via cross-border transnational operation with close coordination and cooperation capabilities among various business units located remotely for various reasons [2].

A firm in the global economy means that it is also faced with the new digital economy. In the digitalized world connected via the Internet, the space and time limitations disappear; thus competition is not bounded by geographical locations. Sophisticated customers

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demanding personalized and reasonably priced products and services can now see their dreams come true as companies are globally integrating their operations using IS/IT into their production so that mass customization is now a matter of several line of program coding in anywhere of the world.

However, true globalization demands the integration of business operations on a global basis rather than simply obtaining isolated markets via underpriced exports of products or searching for cost-efficient sites for manufacturing. Even in those cases, globally dispersed operations need to be coordinated in a cooperative and collaborative manner. Operations in a global scale, therefore, are facing other challenges too, which intensifies the already daunting tasks of coordination and cooperation.

Also, at the same time, inherent diversity in the customer base because of regional characteristics demands local subsidiaries to become responsive to local needs.

Customers are becoming more sensitive about the choices they have as worldwide media informs them real time, and the needs become sophisticated as demands sensitized across information from different sources.

Meanwhile, this highly competitive global market makes production cycles shorter and shorter. As customers now have access to virtually everybody's price lists due to the Internet, competition on price alone becomes impractical and difficult to sustain.

The above noted changes in the global economy highlight the need for innovative strategies in order to create and sustain competitive advantage using IS/IT.

Globalized agility of production and service would not be attainable without the help of integrated IS/IT operation zing strategic moves in real time. These strategies are by definition knowledge-based and technology intensive as Hamel and Prahalad [3] suggested.

2.1 Globalization Strategies

The demands of managing and operating in an international environment have been increased considerably.

As firms are constantly searching for better ways of managing their business in this globalizing environment, every firm is likely to evolve into an internationalized organizational structure that facilitates future growth.

According to Bartlett and Ghoshal [2, 4], globalization is not just a simple phenomenon that can be simply explained but demands a complicated management and administration.

Separate operating business units and entities across borders and boundaries may develop different types of organizational structure for strategic purposes and cultures. This structural evolution is primarily conditioned for environments and corresponding strategies would need to be also evolved following changes in local environmental conditions. When global efficiency is strategically vital to

an organization but environmental uncertainty is low, subsidiaries across different countries can be closely coordinated and controlled by the central headquarters for coordination production and services. However, when local responsiveness is strategically critical with high environmental uncertainty, local business units need to maintain autonomous decision making.

While global operation is facing the integration of diverse strategic challenges across different countries with different environmental conditions, strategic responsiveness needs to be secured at the global level in a kind of integrated manner. Every local would not need to unfold the same strategic moves but better be working under an integrated map of strategies in order to ensure consistency and efficiencies across borders.

Responsiveness allows the firms to capitalize on environmental conditions and opportunities specific to their local markets while integration fill the gap in order to balance transnational activities in a big picture. In combining integration and responsiveness in globalization of a firm, Bartlett and Ghoshal [4, 5] have observed the emergence of four different ways of organizing business units across borders: global, international, multinational and transnational. Despite the risk of oversimplification, they have defined these four as progressively moving towards the transnational strategies. Each strategy is characterized by a particular set of corresponding competences the firm need to exhibit.

First, the global firms are the one focused on building cost-sensitive operations through centralized operations that allow them to achieve scale economies. Centralized structure such as headquarters and subsidiary relationship achieve efficiency through economies of scale.

This structure is designed to exploit the emerging global demands of the industry. This is the basic and oldest strategy for cross border integration. Also, as they are focusing on economies of scale, coordination among units are much stronger than voluntary cooperation among units.

While the global firms are focusing on economies of scales across borders, the multinational strategy focuses on building strong local presence that ensures responsiveness to local needs.

Country business units have relative autonomy in decision making. A multinational firm maintains a decentralized and federated cooperation among localized business units. Each unit may have its own resources and responsibilities are delegated. In these firms, it was found that informal communication channels are built along the line of personal relationships instead of formal structure across borders. In these firms, coordination is not the focus.

International' can be interpreted as inter-nation. It is used referring to firms that knowledge is transferred among business units across borders. International firms are focusing more on knowledge transfer while global firms are focusing on communicative coordination and multinational

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firms on cooperative transactions. As business enterprises competing on a worldwide basis, international firms maintain horizontal organizational structure with strategic alliances with businesses in local economy they operate within. Learning and knowledge transfer are the issues for international firms. Therefore, coordination among units across borders is not common but cooperative behavior sharing knowledge and practices are common. As an ideal targeting global efficiency, multinational responsiveness to local, and international sharing of knowledge and practice, the final stage of globalization is conceptualized as ‘transnational [5].’ Transnational globalization poses greater challenges in every aspect of business operations across borders. Table 1 summarizes the key features of these four types

regard, effectiveness might be the concern for coordination in globalized firms.

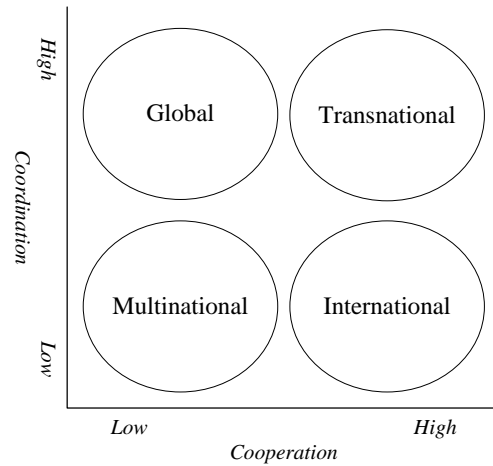


Figure 1: Four types of globalization in coordination-cooperation

When analyzed from the perspective of communication theory, two dimensions of communications are emerging concerning these four types of globalization. Theory of communication explicates that cooperation is different from coordination in that cooperation maintains endogenous incentives among selfishness of individual units while coordination refers to standards, organization or conventions across individual units [6] while communication is central to these two phenomena. Cooperation does not imply that it is efficient at all times.

Four types of globalization are shown in figure 1, along with two dimensions of cooperation and coordination as key characteristics of each type. Global operations can be high in coordination while low in cooperation as centralized control of distributed production and servicing is the focus while multinational type of organization is low in both coordination and cooperation as different units maintains local responsiveness and resources but only shares minimal loyalty to each other such as the use of brand, etc.

Units engaged in cooperation may not see immediate positive consequences for them but their act generates positive benefits for other units. In globalized firms, units across borders may have incentives for cooperation, such as transfer of knowledge as the cooperation provides reciprocal benefits across time and location. Compared to cooperation, coordination of actions of individual units may be happening when effectiveness of the globalized operation is the concern, as coordination is that several units share a desire to achieve one of several outcomes universally regarded as good ones, but have difficulty doing so as each unit may not have a bigger picture over the boundary of each unit. Therefore, in this

International type maintains local responsiveness in terms of coordination but shares in-depth knowledge in a cooperative manner so that they can benefit from not only the loyalty to each other but also the sharing of technological and business knowhow and know-what.

Table 1: Key features of four types of globalization

Category	Asset Configuration	Overseas Operations	Knowledge
Global	Centralized and globally scaled	Operatives for parent company strategies	Develop and retain knowledge at headquarters
Multinational	Decentralized and nationally self sufficient	Sensing local needs and exploiting local opportunities	Develop and retain knowledge at each business unit
International	Decentralized but core competency may be maintained centrally	Leveraging parent company competencies	Develop knowledge centrally and diffuse to each unit
Transnational	Dispersed, interdependent, and specialized	Differentiated contributions by national units towards integrated worldwide operations	Developing knowledge jointly and sharing it worldwide.

3. ALIGNING IS/IT STRATEGIES WITH GLOBALIZATION STRATEGIES

The concept of strategic information system and its alignment with the organization has received a great deal of academic attention [7]. IS/IT, broadly defined, can be used in various ways that ensure the successful strategy execution. It is suffice to say that, at this point, IS/IT has

many critical roles to play in this globalization of firms as information flow among units across border may exhibit different requirements depending on the types mentioned.

IS/IT can provide lightning speed communication of information critical for the business operations.

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It enables many innovations in production and process technology and allows firms to achieve greater responsiveness through real time coordination and worldwide integration of business activities. Integrated IS/IT in and out of a firm offers the base through global scope and economies of scale are becoming achievable, thereby reducing costs and making globalized firms more competitive. However, IS/IT is the tool, if used properly, that may take the firm closer to local markets which make localized adaptation possible. Advances in communication technology and proliferation of smart devices allow firms to achieve speedy flow of information that can be readily used for coordination and cooperation across business units across the globe. Advances in database technology now allow many firms to accumulate tremendous amount of data and analyze these data in a matter of seconds.

In view of the fact that IS/IT is a basic enabler of these globalization strategies, it is important for the IS/IT strategies to be aligned with the globalization strategy of the firm. Consensus appears to be that the structure and nature of IS/IT in globalized firms is driven by the strategy of the corporation, rather than the other way around. In this regard, the structure of information system infrastructure can be and better be driven by different globalization strategies of the firm [7-9]. The strategy formulation process leads the globalization strategies towards IS/IT strategies along with organizational strategies towards the determination of IS/IT aligned with organizations. IS/IT infrastructure should be a reflection of the organizational arrangements and be aligned with the general framework of globalized systems, in which both organizational structure and global system integration strategy are developed under the larger umbrella policy of the globalization strategy of the firm.

The alignment of IS/IT with strategy has received a great deal of attention throughout the decades. IS/IT Alignment is a complex process with stakeholder dynamics. In addition to the challenge of achieving perfection in alignment, contextual turbulence imposes difficulties in selecting appropriate dimensions of alignment. Due to the problems of selecting alignment dimensions, several academics advocated configuration approaches [10, 11] in order to simplify combinations of dimensions. In this regard, coordination and cooperation seems to be the good dimension to assess the alignment of IS/IT strategy with globalization strategy as these two dimensions seems to be critically influencing the success of globalized operations.

<i>High</i> <i>Coordination</i> <i>Low</i>	<i>[Global]</i> Replicative IS/IT - Centralized design - Localities submerged - Integrated databases - Constant update	<i>[Transnational]</i> Virtual IS/IT - Orchestrated design - Localities reflected - Globally scaled - Connected databases
	<i>[Multinational]</i> Hierarchical IS/IT - Locally designed - Local databases - Infrequent connections - Information gathering	<i>[International]</i> Collaborative IS/IT - Centralized design - Localities reflected - Globally scaled - Local databases
	<i>Low</i>	<i>High</i>
	<i>Cooperation</i>	

Figure 2: IS/IT alignment framework with globalization strategies

Among four type of globalization strategy, the global strategy is focused on building efficient business operations via centralized control of subsidiaries across the globe, gearing towards scale economies. In this regard, coordination among business units should be the strong suit for IS/IT. For this classical headquarters-to-subsiary control focused model, the design of IS/IT across business units are also closely coordinated in the sense aligned with traditional view of command and control structure. It can be called ‘replicative’ strategy. As design and development of system need to be controlled at the center and localities will be submerged into the global system, systems in local units are identical or, at least, isomorphic to each other.

Databases, at least at the conceptual level, would be integrated and connected while constant system maintenance will be conducted and monitored at the central locus of control which will be responsible coordination across units and regions, for optimized efficiency of production and services.

Firms using the multinational strategy reinforce strong local presence of local business units ensuring responsiveness to diverse local needs across countries.

Local unit make their own decisions concerning their business operations. As explained above, informal communication channels are more common in this strategy as each unit manage their own resources. For this type of globalization strategy, IS/IT can be ‘hierarchical’ in the sense that the system at the center works as information repository of business units across countries. Local business units may develop their own system with localized databases reflecting local needs. However, from time to time, the local information needs to be transferred to the headquarters for syntheses for strategic analysis.

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International strategy refers to the inter-nation cooperatives that may not be coordinated. Knowledge is transferred among business units across borders, but focusing more on knowledge transfer while global strategy focuses on communicative coordination and multinational on cooperative transactions. International strategy calls for horizontal strategic alliances with learning and knowledge transfer. IS/IT in these firms need to be designed as 'collaborative.' Highly distributed systems that designed by the central control with localities reflected but globally scaled. Focus of this strategy also rests on collaborative applications supporting cooperative communications.

Transnational strategy of globalization is considered an ideal for globalization in efficiency and effectiveness. While maintaining multinational responsiveness to local need, sharing of knowledge and practice occurs at the international level and, if necessary, reconfigurations of business operations are coordinated across different units in different countries. In this type of firms, IS/IT needs to be carefully designed and developed at the global scale. Design of IS/IT need to be orchestrated while local requirements are carefully reflected. Databases can be localized but also at the same time virtually integrated or connected to each other so that information can be exchanged in real time across borders and across units. This type of IS/IT strategy can be called 'virtual.'

4. DISCUSSION

In this study, in-depth analyses were conducted concerning types of globalization strategies. Different characteristics of four different types of globalization strategies (global, multinational, international, and transnational) were explicated and summarized following two dimensions of business operations – coordination and cooperation. Using these two dimensions, a framework for IS/IT strategies to be aligned with globalization strategies is developed. Identified IS/IT strategies are hierarchical, corresponding IS/IT strategies are conceptually identified and presented. Proposed alignment strategies are replicative IS/IT for global, hierarchical IS/IT for multinational, for collaborative IS/IT for international, and virtual IS/IT for transnational strategies.

A key contribution from our analysis lies in theorizing IS/IT alignment strategies fitting for globalization of business operations across different countries. AS IS/IT are the backbone of any organization doing business regardless of their size, location and domain, it is imperative that IS/IT are leveraged to their fullest so a firm can compete via globalization. Partnership between the IS/IT and business would enable IS/IT to be used effectively as a sustainable competitive weapon.

As IS/IT stands at the forefront of our worldly competitive future, it will become evident as firms tend towards virtualization, and synchronization of online with offline functions and activities. While physical existence of a firm will always be there, firms should plan for the world where competition occurs in a variety of front, whether online or offline, from country to country. Globalized firms, as they have experienced domestic competition, would have

adequate resources and not much difficulties in competing for price and products. However, if the firm's IS/IT potentials are not leveraged fully to the maximum, these firms would not be able to compete and survive in this globalized world of demanding agility and flexibility.

The framework proposed here would be a tool for strategic analysis when a firm is facing the globalization and think about the shape and design of IS/IT that they have to target to develop. Depending upon their decisions on how to globalize in terms of organizational operations, appropriately aligned IS/IT strategies can be selected and adjusted, increasing the agility and flexibility of their business matching their globalization strategies.

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AUTHOR PROFILES

Jungwoo Lee is currently a Professor of Information Systems and the Director of the Center for Work Science at the Yonsei University, Republic of Korea. He received his

PhD in Computer Information Systems from the Georgia State University in 1998. His research interests are focused primarily around social and organizational changes incurred by information and communication technologies.

Dr Jun-Gi Park is a Senior Researcher in the Center for Work Science at the Yonsei University. He earned PhD in Information Systems at the Yonsei University. His research interests include small creative team, project management, behavioral aspects of IT services, and start-up strategy.