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Janus and the Delphi Oracle: Entering the new world of international business research

Christine Nielsen [a,*], Mohan Thangadurai [b]

[a] *International Business and Strategy, Merrick School of Business, University of Baltimore, 1420 North Charles Street, Baltimore, Maryland 21201, United States*

[b] *Information Systems Resource Center, Merrick School of Business, University of Baltimore, 1420 North Charles Street, Baltimore, Maryland 21201, United States*

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Abstract

Globalization and other dramatic, world-changing developments have all too frequently taken academic researchers by surprise. Within this dynamic, turbulent environment, international business (IB) researchers must comprehend increasingly complex, multicultural, cross-border activities and organizing systems while providing relevant results to the field. To build and sustain relevance, the international research paradigm must expand to incorporate not only the analysis of historical trends and events but also research frameworks and methods geared to investigation of the future. With this expanded research 'tool kit', we will be better able to anticipate and address the 'Big Questions' confronting global business operations in the twenty-first century.

This paper examines the capabilities of the Delphi Method of scientific inquiry as one such tool which is responsive to the challenging demands of our discipline and describes recent innovations that enhance the Delphi's application to international management research. As this paper demonstrates, the Delphi Method is particularly well-suited to emerging research themes that call on IB researchers to interpret intricate sets of entities, activities, and relationships. Based on conclusions drawn from a summary of recent Delphi studies, recommendations are offered for maximizing the benefits of this method for international research.

Keywords: International strategic management; Global forecasting; Research paradigms; Delphi Method

* Corresponding author.
E-mail address: cnielsen@ubalt.edu (C. Nielsen).

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1. Introduction

Like Janus, the two-faced god of beginnings, endings and transitions, international management (IM) researchers and their first cousins in international business (IB) are poised on the threshold of the twenty-first century with one face gazing backward over the accomplishments of the past forty years and the other face looking forward toward a new world of global business activity that is fundamentally different and unknown. The locus of IM research over the past decades has been the international firm (Boddewyn, 1999); likewise, the IB research paradigm of the past has placed the multinational enterprise (MNE) squarely in the center of legitimate research activity as the accepted unit of analysis (Toyne, 1997).[1] Even today there are those who envision the 'Big Question' in international research as unchanged, i.e., "What determines the international success and failure of firms?" (Peng, 2004, p. 106). In contrast, a growing chorus views this constrained research paradigm as too narrow if researchers are to offer relevant results and deeper understandings of global business activity (Boddewyn, 1997, 1999; Sullivan, 1998; Toyne, 1997). Still others propose that the 'Big Questions' for international research have shifted toward inclusion of contextual factors that have been viewed historically as coincidental to the field, such as inquiries focused on cultural convergence and divergence (Leung et al., 2005), globalization (Buckley, 2002; Eden and Lenway, 2001), expanding roles of political players, and global business transformations due to information technologies (Eden and Lenway, 2001), global demographics, migration and development patterns (Zander, 2003). The *Journal of International Business Studies* (JIBS) special issue on "Multinationals: The Janus Face of Globalization" marked a turning point toward a broader research agenda, as the IB community intensified its debate about what the 'Big Questions' are or should be (Eden and Lenway, 2001). Lewin acknowledged this dramatic shift in international research focus, remarking that a key responsibility of JIBS is its leading role in "defining international business studies" and the current challenge is to extend their intellectual reach, bridging disciplines and breaking-out of "single-theme research silos" (Lewin, 2003, p. 1).

The problem these new horizons create for international researchers is twofold: first, consensus on the 'Big Questions' eludes the academic community; and second, it appears unlikely that sole reliance on traditionally accepted research methods drawn from the logico-deductive tradition will be sufficient by themselves to answer the significant 'Big Questions' now emerging. Since the 1960s, the international research community has strived to achieve academic legitimacy, using the field of economics as the cornerstone for theory building (Toyne, 1997) and relying on quantitative methods as the accepted tool kit for rigorous analysis (Bjorkegren, 1993). However, 'Solutions' to the 'Big Questions' of the twenty-first century are not likely to found by looking for the "next big empirical phenomenon" (Shenkar, 2004, p. 167). Future international research inquiries must transcend traditional boundaries. This paper offers one means of doing so.

The purpose of this paper is to examine the capabilities of the Delphi Method. This research process, although generally ignored by IB researchers, has a proven track record in global forecasting, public policy and strategic planning (Gordon, 2004a). Its utility is increased through recent enhancements, e.g. Computer-Mediated Communication (CMC), Cross-Impact Analysis and Trend Impact Analysis.

This article is organized around four questions regarding the Delphi Method and its potential applications to international business management research: 1) What are the major characteristics

[1] While the IB and IM disciplines are not identical, for the purposes of this paper they will be subsumed under the IB acronym unless otherwise indicated.

that distinguish this new world of international research from the past? 2) How is the Delphi Method suited to respond to these new characteristics and why has the majority of the IB research community ignored it? 3) What are the major types of Delphis and how do recent enhancements add value? 4) How can these be applied to the 'Big Questions' facing the international research community? This article offers examples of nine international research studies that have utilized the Delphi Method. These are used to demonstrate the range of research themes to which the technique can be applied. From this vantage point, we move on to explore methodological challenges that accompany Delphi processes. The final section provides the authors' conclusions and recommendations for maximizing the benefits of this powerful methodology.

2. Research in the new world of global business activity

The phenomena we study are deeply embedded in a global social system characterized by: 1) dramatic expansion beyond the Triad (Europe, Japan and the U.S.); 2) increasing numbers of stakeholders with diverse and diverging perspectives; 3) processes of interrelatedness and interdependence that are markedly more complex; and 4) a future that can not be forecast simply by extending past international business trends. However, the predominant IB research paradigm does not pay sufficient attention to these critical factors. International research frameworks for the twenty-first century must be responsive to each of these characteristics if the field is to build and sustain a reputation of relevance.

During the past century MNEs from the Triad dominated world trade and foreign direct investment flows.[2] Likewise, the vast majority of cross-border research focused on these regions. A comparative study of leading IM and IB journals (JIBS, *Columbia Journal of World Business* and *Management International Review*) during the period 1970–1993 revealed that the U.S. and its largest trading partners in Western Europe and Japan were by far the most frequently studied (Thomas et al., 1994). These narrow geographic boundaries and the limited cultural perspectives of those conducting the research (primarily North American and Western European researchers) are coupled with little attention to less-industrialized countries in Africa, Asia, Eastern Europe, and South America (Thomas, 1996). Clearly, as international business activity becomes widely dispersed around the globe, analyses by researchers with a singular national and cultural perspective do not adequately explore research factors and parameters. The value of cross-national, cross-cultural research teams is gaining credibility (Cheng, 1996). However, the international perspective to date has been populated predominantly by North American researchers, with an emphasis on the experiences of U.S. MNEs. Boyacigiller and Adler (1991, p. 267) refer to this phenomenon as "quantitative parochialism".

While MNE investment in developing regions has quadrupled over the past decade, there has not been a coincident increased emphasis on international research in these locations, and the research questions that have been posed tend to focus on the impact of the MNE's actions on these regions, disregarding the impacts that developing countries are having on MNEs (Ramamurti, 2004). Also, international research tends to focus on the one billion consumers at the top of the world's economic pyramid while ignoring the world's billions living in poverty (Ricart et al., 2004, p. 193). Researchers have been blind to the tremendous economic opportunity that this vast market holds. Only now are IB scholars coming to terms with what many of the world's MNEs have already implemented: international strategies to reach these untapped markets (Prahalad, 2005).

[2] For example, of the world's 100 largest companies in 1998, 93 were headquartered in one of the Triad nations (United Nations Conference on Trade and Development, 2000, p. 76).

In the previous century, MNEs and national governments were the rule-makers in a global chess game, but technological and social forces have brought other players to the front: non-governmental organizations (NGOs), labor, environmental and religious groups (Eden and Lenway, 2001). Rather than moving towards convergence in perspectives regarding global business activity, the new players frequently express strongly divergent views and their motivations and capacities to impact global business activity in positive and negative ways should not be overlooked. The emergence of these players reinforces the fact that the MNEs and other emerging forms of international business activity can not be studied in isolation from the macroeconomic, political and cultural environments in which they operate. All too frequently explanatory frameworks fail to incorporate these critical factors because they are viewed as lying outside the accepted domain of IB research. This bias comes at great cost; the field's strengths lie with its ability to integrate knowledge across disciplines in order to attain deeper understanding of international business behaviors (Shenkar, 2004).

Sullivan's (1998) review of 27 years of JIBS, based on analysis of the schematic representations by the authors, revealed an epistemology for both IB and IM yielding a downward trend in research frameworks with regard to comprehensiveness, connectedness and complexity.[3] Although the early years were marked by a balanced representation of analog, propositional and composite forms, the final decades of the 1990s were dominated by analog models (75%), in which research issues were framed in terms of discrete states, static attributes and unilateral sequential events, while propositional models geared to finding meaning in relational interactions among interdependent variables shrunk from view (Sullivan, 1998, p. 847). This vision of reality within "narrowly defined domains of inquiry" (Toyne, 1997, p. 75), led to questions, methodologies and findings that changed very little over time, with the result that much of the field's published research was "déjà vu" (Daniels, 1991, p. 182). So at the close of the twentieth century, as the system that international researchers sought to understand was becoming increasingly complex, the discipline's accepted research paradigm had tilted away from the most relevant frameworks (Sullivan, 1998, p. 852).

Fortunately, the international research domain has not become anchored within this positivist epistemology, equating truth to empirical observation and quantitative measurement, reductionism and theory verification. For the twenty-first century, research that offers primarily historical insights is unlikely to be sufficient for forecasting what the 'Big Questions' are, or for understanding the new world of global business activity which underpins them.

3. The Delphi Method: responsive to a new world of research requirements

One technique well-suited to the global research horizons described in the previous section is the Delphi Method, developed at the Rand Corporation in the 1960s. The Delphi has gained a solid reputation in the social sciences over the past forty years, primarily as a means of forecasting future events, exposing problem dimensions and exploring relevant strategic actions. The Delphi process is a structured, group-based information-sharing method that generally proceeds through three phases: 1) identification of theses, problems or issues; 2) sharing of perspectives based on experience and knowledge; and 3) synthesis which may include a summary of the degrees of consensus and divergence among group members. Experts from the field or fields relevant to the study are encouraged to generate ideas and think creatively as they

[3] During the 27 years covered by this study, IM in JIBS increased from 20.9% in the period 1970–1979 to 48% during the period 1990–1997.

move through these phases in a collaborative process to expand their horizons, and deepen their understanding of issues. As described below, the Delphi Method is particularly responsive to the four challenging requirements of the international research environment: 1) expanding geographic boundaries of global business research; 2) engaging stakeholders with diverse and diverging perspectives; 3) exploring complex interrelationships and interdependencies within the global system; and 4) forecasting the future 'Big Questions' for global business activity.

The Delphi technique enables researchers to expand their field of view beyond the Triad to delve into emerging markets and developing countries that have been largely ignored by current studies. Information exchange among the participating experts can be either synchronous or asynchronous and take place through mail, fax, e-mail, or other computer-mediated processes. This allows expert participants and research team members to be drawn from multiple cultures and multiple countries without the heavy financial burden associated with travel costs. It is important to note that as the background knowledge of the experts informs the research findings they become instrumental in the research product, moving the Delphi Method toward a constructivist research paradigm.

The Delphi Method is based on a dialectical inquiry that encourages the sharing and exploring of divergent points of view. The emphasis is not to secure a single, universal truth, but on the range of quality ideas it generates, not only those around which consensus may form, since this may be less important to current investigators; "now a useful product of the Delphi Method is crystallization of reasons for dis-sensus" (Gordon, 2004a, p. 12).

The Delphi Method is well-suited to comprehensive investigation of complex environments characterized by uncertainty (Ziglio, 1996). The Delphi Method can be utilized to engage experts from across disciplines, across public and private sectors, and across borders to address the most profound 'Big Questions' in the world today.

3.1. Why the Delphi Method has received little attention from IB researchers

For prophecy is a madness, and the prophetess at Delphi and the priestesses at Dodona when out of their senses have conferred great benefits…(Plato, 2004).

Unlike research questions best answered by quantitative methods which are essentially about counts and measures of things, the Delphi Method encourages in-depth communication about the nature of things to provide answers to research questions aimed at the what, how, where, and when (Berg, 2004, p. 2). The 'Big Questions' facing the international research community are closely aligned to these issues. Despite its relevance as a method for investigating these issues, the Delphi Method has received scant attention from IB researchers.

Following a pioneering Delphi study by Nehrt, Truitt and Wright (1970) to determine "desirable directions for future IB research," the Method generally disappeared from the scene. This, despite the fact that a twenty-five year review of the field concluded that many of the developments predicted in the original Delphi study had taken place (Wright and Ricks, 1994).

Resistance may be based on a hesitancy to accept the fact that investigations focused on the future are fundamentally different from analyses of the past, especially in the social sciences. In these cases, factual evidence and statistics drawn from the past must be tempered by other layers of background knowledge and "underlying regularities" which can be brought to the fore through the use of expert judgment; statistical information matters less than knowledge

about "the behaviors of people or the character of institutions, …national attitudes and climates of opinions, institutional rules and regulations, group aspirations …" (Helmer and Rescher, 1959, p. 38).

4. Major Delphi types and enhancements that add value to international research

There are three major types of Delphis (van Zolingen and Klaassen, 2003): 1) Classical Delphi; 2) Policy Delphi; and 3) Decision Delphi. Following descriptions of these types and recent enhancements that can be applied to all three, we summarize nine examples of IB studies carried out since the early 1990s to illustrate ways in which the Delphi process can be utilized to explore relevant issues.

While the three Delphi types have overlapping characteristics, the primary difference is an emphasis on research objectives. The Classical Delphi's central focus is on forecasting significant developments in the future. Early work at RAND in the 1960s was of this type; many of the early forecasts of scientific and technological breakthroughs to the year 2000 and beyond were mostly correct (Gordon, 2004a). The Policy Delphi might be more accurately referred to as a "Strategic Planning and Public Policy" Delphi since its primary purpose is to generate alternative strategies and/or policy alternatives to achieve desirable goals and mitigate against undesirable consequences (Gordon, 2004a). This type is well-suited to inquiries within the social sciences and is widely used to study social and political issues. The Decision Delphi engages all categories of relevant decision-makers in conceptualizing and describing problems associated with certain social developments. The objective is to improve the quality of decisions used to resolve social problems (van Zolingen and Klaassen, 2003).

Computer-Mediated Communication (CMC) is a recent enhancement that facilitates broad participation by relevant experts worldwide. Telecommunications technology can support asynchronous (Group Decision Support Systems) or synchronous communications (Computer Conferencing).[4] A Group Decision Support System (GDSS) is implemented through a network of personal computers, with appropriate groupware. Groupware integrates computer technology with communications systems to support the generation of ideas, brainstorming, and decision-making based on evaluation of alternative ideas and recommendations. GDSS is capable of collating, summarizing, grouping, and statistically analyzing the ideas generated and submitted by the participants. It also allows participants to vote electronically (and anonymously) on these ideas. The GDSS can then provide a statistical analysis of individual votes, and the group's rank ordering (prioritization) of the issues and ideas. (It is important to note that while the opinions and ideas are all collected electronically, they can be discussed verbally at subsequent stages in the process, especially when the ideas are being clarified, collated, and grouped.) The effectiveness of a GDSS depends to a very large extent on the facilitator role (Thornton and Lockhart, 1994).

Delphi processes can be combined with quantitative methods to enhance forecasting power. One weakness of the traditional Delphi is that interrelationships among trends and events are not adequately considered (Linstone and Turoff, 1975). Cross-Impact Analysis overcomes this disadvantage by considering the probabilities of events, given their cross-impacts. A major example of this mixed method is highlighted in the United Nation's *State of the Future* research which utilizes Cross-Impact Analysis in the design of interactive scenarios, allowing the participating Delphi experts to make changes to scenarios' content and then observe the

[4] GroupSystems, GDSS pioneer, is a leading provider of this software.

consequences (Gordon, 2004b). Another mixed method combines Trend Impact Analysis (TIA) with the Delphi process. Unlike most quantitative methods that assume that past trends will continue into the future, TIA injects intervening events, along with their probabilities of occurrence and their impacts to forecast shifts away from anticipated trends. Events may include technological, political, social, economic and value-oriented changes (Gordon, 2004c). In the *State of the Future* research summarized below, TIA was integrated with worldwide Delphi panels' forecasts to create the State of the Future Index (SOFI), a quantitative time series indicating the dynamic future and whether conditions are likely to improve or worsen (Gordon, 2004d).

5. Summary of international Delphi studies and applications to research priorities

Since the early 1990s, a small number of international research studies have been conducted utilizing the Delphi Method to glean expert opinions concerning issues of global welfare, globalization, priority themes for international executive education, political and country risk assessment, technology transfer, and global electronic publishing. One of the earliest studies in this period was aimed at defining IB's priority research topics.

The experts as defined in these studies generally tend to: 1) occupy senior executive or middle management positions; 2) have functional responsibilities in areas which employ high status; 3) hold long-tenure within their organizations; 5) have a broad network of professional relationships; 6) are usually male; and 7) have considerable international experience. This definition of experts is very similar to that of IB experts as defined by Welch et al. (2002). The primary difference is that the range of international experts in most of the studies reported here is expanded beyond those employed by international companies, to include other experts whose positions and experience provide them with different perspectives on the IB environment. Such experts include government policy makers, technology transfer experts, academics, and others whose positions lead to different fields-of-view.

Nine Delphi studies summarized below indicate the broad variety of international research topics to which the method can be successfully applied. General themes reported here revolve around priority global and international management issues, country risk assessment, international technology transfer, and impacts of the global information revolution. Table 1 provides further details.

5.1. 'State of the Future' Delphi research

By far the most extensive use of Delphi research concerning global challenges is a series of *State of the Future* annual reports completed under the auspices of the American Council for the United Nations University (Glenn and Gordon, 2006). Now in their tenth year, the purpose of these reports is to identify and deal with major issues related to world peace, prosperity and the well-being of the planet. Since 1996 close to 2000 leading experts from governments, MNEs, NGOs, universities and international organizations have served as Delphi participants to identify the 15 greatest global challenges and to generate strategic alternatives to meet them. These challenges range from sustainable development and the need to achieve balance between population growth, energy supplies and resources, health and security issues, organized crime, women's rights, the convergence of nanotechnology, biotechnology, information technology and cognitive science, to ethical market economies for the reduction of the gap between the rich and the poor. The Project combines Delphi studies with over a dozen other research

Table 1
Summary of Delphi studies in international business research

	Top global challenges	Top priorities for IB management		Country (political) risk assessment		International technology management		
Study	United Nations "State of the Future" (1996–present)	Identification of IB dimensions likely to change in future and strategic responses (1997 and 2005)	Top Executive Requirements for IB success (1998)	Business environment risk intelligence for 100 countries (1966–present)	Market entry opportunities for web and web-enhanced MBA programs (2002)	Critical factors in technology transfer to the Caribbean (1991)	Leadership characteristics in technology transfer (1993)	Impact of global electronic communications and publishing (1998)
Delphi type	Policy Delphi	Policy Delphi	Decision Delphi	Classic Delphi	Classic Delphi	Decision Delphi	Decision Delphi	Dec. Delphi
Enhanced?	Extensive	None	GDSS in Year 2	None	GDSS-aided	None	None	None
Nomination Process	External	External	External	Unknown	Prior Exec. Com membership	External/Internal	External	Internal
Participants	A series of global Delphi Panels with close to 2000 experts drawn from governments, MNEs, NGOs, academia and international organizations	34 in 1997; 25 in 2005 from Asia, Europe, N.A.; representing business, public policy and academic communities	25 from U.S. international businesses, both SMEs and MNCs, high-tech to low-tech companies; and 11 business professors	2 global panels of approximately 100 each: Political risk with diplomatic and political science experts; operational risk with executive business background	12 comprised of 7 international business executives and 5 students with country risk assessment research background	29 experts from the Caribbean, Latin America, U.S. and Canada representing government agencies, technical laboratories, and universities	13 leaders in technology transfer and management drawn from Africa, Asia, Middle East, and North America (Canada, Mexico, and the U.S.)	30 members of the IEEE, from Australia, Canada, Latin America, Middle East, Europe, and U.S. representing technical experts, academics, and government agencies
Organization level	Senior	Senior level	Mid to Senior level	Senior	Senior execs; undergraduate students	Mid to Senior level	Senior level	Mid to Senior level
Types of results	Definition of the 15 greatest global challenges of our times and strategic alternatives to meet these challenges	Globalization issues identified in 4 categories: regional issues; industry/sector transformations; institutional frameworks; impacts on IB strategies	Top 10 themes for international business success identified; led to the development of executive seminars for the IB business community	Risk assessments with 1 and 5 year forecasts through 4 ratings: political risk, operations risk, remittance and repatriation risk, and composite scores	Top 4 country market opportunities for web-based, and web plus face-to-face MBA programs identified	Critical factors in technology transfer and priorities for marine/coastal zone applications identified; and most appropriate aircraft/satellite technologies	Characteristics of successful technology program directors and project managers to achieve technology transfer and local applications	Characteristics of the IEEE as technology initiator; obstacles to technology adoption, and recommended actions for the IEEE

methods and technologies to enrich results. Seven of the Project's last nine reports have been selected by *Future Survey* as among the year's best books on the future (Glenn and Gordon, 2006).

5.2. Impacts of globalization on IB strategies

Czinkota and Ronkainen (1997, 2005) utilized the expert opinions of business executives, government representatives, and academics from Asia, Europe, and North America to forecast issues arising from globalization in four categories: 1) regional issues; 2) industry/sector transformations; 3) institutional frameworks; and 4) impacts of globalization on IB strategies.

The 1997 study was of particular significance in that it described obstacles to globalization arising from inequities in income distribution, as well as a dramatic increase in foreign outsourcing, both issues that had been inadequately covered by IB research in prior years. The 2005 study emphasized other issues of growing importance including security issues and religious conflicts.

5.3. Top executive requirements for international success

Corporate executives, with significant responsibilities for their firms' international activities, identified management competencies required for IB success (Nielsen, 1998). They represented a variety of industries, ranging from high-tech to low-tech, from small firms engaged primarily in exports, to large MNCs. These business leaders included company presidents, vice presidents, one group vice-president for Asia-Pacific, and directors of international sales. In a parallel track, business professors represented the academic community in this study. Results of the two groups were recorded separately in order to distinguish any significant differences in their conclusions, and the top four competencies were identified. In the second year of the study, the Executive Board convened to participate in a GDSS-aided Delphi process. The same four priorities that had been identified in year one were confirmed as the top four priorities in year two: 1) understanding international strategies that work; 2) managing successful cross-cultural interactions; 3) managing strategic alliances; and 4) entering emerging markets.

5.4. Business Environment Risk Intelligence (B.E.R.I.) for 100 countries

F.T. Haner, founder of B.E.R.I., has conducted Delphi research since the mid-1960s to provide country risk assessments to multinational corporations and banks. Currently, B.E.R.I. covers 50 countries (B.E.R.I., 2005). The B.E.R.I. index represents one of the oldest country risk time series in the field (Bouchet et al., 2003). The B.E.R.I. process revolves around three major risks: 1) operating risk — the risks of performing day to day activities in a foreign country; 2) sociopolitical risk — encompasses the political system and stability, and the social climate; and 3) financial risk — mainly dealing with foreign exchange availability (Haner and Ewing, 1985). Two global groups of approximately 100 experts each participate in the Delphi assessment process: political risk is assessed by experts in political science and diplomacy; operational risk is assessed by senior executives with global business experience. The financial risk category does not rely on a Delphi process; instead it combines regression analyses and trends in ratings with senior staff judgment, since, according to B.E.R.I., wholly quantitative forecasts are not reliable (B.E.R.I., 2001). Results are proprietary.

5.5. Market entry opportunities for web and web-enhanced MBA programs

A research project to identify the top market entry opportunities for web-based MBA programs was carried out in two phases (Nielsen, 2002). The research objective was to identify top markets for both 100% web-based programs, and those incorporating face-to-face contact. In phase one, a team of business students carried out an in-depth research project based on thirteen emerging markets of top priority to the state of Maryland, and the University of Baltimore. Rankings of market entry opportunities were based on the development of a country assessment instrument, structured around 28 surrogate measures of socioeconomic (weighted 40%), political (40%), and operational factors (20%) with special emphasis on elements of information infrastructure and capacity for Internet service.

In phase two of this research, international executives, with many years of business experience in the regions under consideration, participated in a GDSS-aided to test the findings provided by the student team. According to the executives, socioeconomic factors were rated the highest (45%), followed by operational factors (30%), and political factors (25%). The IB executive results substantiated and confirmed the students' work.

5.6. Critical factors in technology transfer to the Caribbean

This study examined international high-technology transfer to developing countries. The purpose of the Caribbean Basin research project was to: 1) define critical factors in the transfer of environmental monitoring technologies to the region, known collectively as remote sensing technology; 2) highlight marine/coastal zone development issues requiring priority attention; and 3) identify the remote sensing sensors most appropriate for the identified tasks (Gayle and Nielsen-Specter, 1991). Expert participants were drawn from government agencies, scientific research organizations, universities, private sector companies, and donor organizations, representing the full range of relevant actors from policy-makers, to technical experts, and international donors. The researchers concluded that successful technology transfer to the region would depend not only on the diffusion of relevant scientific knowledge, but also on the creation of a regional policy environment within which useful technologies could be applied. The policy consequence was that if this technology transfer process were to succeed, data suppliers would have to be linked in substantive ways to regional and national remote sensing centers, and these centers linked to technology adopters and users.

5.7. Leadership characteristics in technology transfer

This study focused attention on the characteristics of technology transfer leaders who, despite overwhelming odds, have achieved successful results in high tech transfers and applications in developing country environments. Senior managers, recognized for their expertise in technology transfer, from Africa, Asia, Latin America, and North America participated in this study. They were drawn from government agencies, scientific research organizations, and universities.

Results indicated that a strong scientific and technical background was most important, followed by knowledge of technology applications and user requirements, and understanding of the contextual environment in developing countries. Perseverance and patience, along with team management skills, also appeared in the top five most important characteristics. Including a

request for case examples to highlight the experts' direct experiences yielded high quality material that enriched research findings. Participants shared their stories about technology transfer projects in India, East and Southern Africa, Mexico, and the Darfur region of Sudan (Nielsen, 1993).

5.8. Impact of global electronic communications and publishing

The Institute of Electrical and Electronics Engineers (IEEE), the largest technical society in the world, with an international membership of more than 300,000, commissioned this Delphi study to assess social, organizational, and economic impacts of the shift toward electronic media for its membership and external stakeholders, including the global electronics industry. Impacts on communications, information sharing, and publication of technical research were investigated. IEEE members drawn from leadership and staff, technical activities, regional activities, and the general membership, and external parties in the private sector served as Delphi experts. Participants represented IEEE regions worldwide.

The researchers concluded that a systems model would offer a comprehensive perspective, enabling IEEE's members and external stakeholders to better understand and benefit from the IEEE as a source of technical information and standards. Recommendations revolved around four key areas: 1) the role of the technology originator; 2) overcoming individual barriers to adoption; 3) overcoming organizational and technical barriers; and 4) ensuring positive outcomes (Herkert and Nielsen, 1998).

6. Summary benefits of the Delphi Method in IB research

The nine Delphi studies described above provide examples of the three major Delphi types: 1) Classical; 2) Decision; and 3) Policy-Delphi. The two country risk assessment studies are examples of the Classic Delphi, emphasizing the forecasting of long-term future conditions. The four Decision Delphis highlighted here demonstrate how the method can be used by executives and managers to identify specific organizational problems and priorities, and make relevant decisions. The remaining three, including the Czinkota and Ronkainen (1997, 2005) studies, and the United Nations *State of the Future* reports (Glenn and Gordon, 2006), are illustrative of the Policy Delphi and exemplify the value of the Delphi Method in drawing out the 'Big Questions' in the global environment and designing strategic alternatives to address them.

The Czinkota and Ronkainen (1997, 2005) studies demonstrate that Delphi research facilitates creative thinking and encourages the generation of new concepts, ideas, and alternative strategies. Five years before the Janus face of globalization was recognized by the mainstream international business research community (Eden and Lenway, 2001), executives in this Delphi study were voicing their concerns about potential negative impacts, and the need for adjustments in MNE strategies.

The U.N. *State of the Future* reports (Glenn and Gordon, 2006) represent a level of sophistication in Delphi Methodology beyond any other study described here. Impressive results are based on high-quality futures research design, forecasting expertise and long-term commitment to this Project by international, national and corporate leaders, representing a geographically dispersed, culturally diverse constituency.

Classic Delphi studies yield direct benefits to practitioners. One outstanding example is the B.E.R.I. country risk assessment Delphi series, which has supplied MNEs and international

banks with risk rankings for forty years (Bouchet et al., 2003). These international customers would not have supported this research over a prolonged period unless they continued to receive valuable, practical information. This track record underscores the quality of findings that can accrue from Delphi research. The second country risk assessment used the GDSS enhancement to provide an educational institution with a rational approach to foreign market entry prior to making financial investments in offshore MBA programs (Nielsen, 2002). A third investigation clearly designed to meet the relevancy test, was the study commissioned by the IEEE, the largest technical organization in the world, to enhance its strategic plan for the adoption of electronic media on a global scale (Herkert and Nielsen, 1998). In addition, the IEEE study describes how the ideas and issues that emerge from Delphi rounds can serve as building blocks for the creation of theoretical models.

Nielsen's (2002) study of executive requirements for IB success led to an executive seminar series designed and developed in partnership with the Delphi participants. This study demonstrates the sense of commitment and shared ownership that can grow out of participation in a Delphi study. When the priority themes for international executive education were revealed, participants formed the core of the design team for an executive seminar series to educate international managers in these key areas. Another interesting aspect of that study is the application of the GDSS computer-aided analysis in the project's second phase. In a three-hour period international executives participated in two rounds of a Delphi, and reached conclusions about top priorities for executive seminars to be offered in year two, a process that had taken weeks to accomplish in year one, when a traditional Delphi survey process was carried out through mail and fax communications.

The two technology transfer studies demonstrate the Delphi's ability to integrate perspectives across national and professional boundaries. This is particularly important for international research topics that are interdisciplinary in nature. In the Caribbean study, technology donors and recipients actively engaged in the transfer and application of technology to environmental management offered unique insights based on their positions within the transfer system. In the technology transfer leadership project, leaders from around the world shared their views on the essential characteristics required for success. In this study, individuals with in-depth local knowledge contributed case examples that expanded our horizons of technology transfer to less explored regions.

In general, these nine studies demonstrate the extent to which Delphi studies can forecast future events and deepen our understanding of complex issues and problems. In all cases, the diverse backgrounds of the experts involved, from MNEs and SMEs, across a wide range of industries, from government agencies and ministries, to NGOs, technical organizations and universities, encouraged interdisciplinary thinking and cross-functional perspectives. In only two cases were the experts co-located for all or part of the study; the others were able to take advantage of the multicultural, multinational viewpoints emerging from information-sharing among participants in widely dispersed countries and regions of the world.

7. Commentary on Delphi Methodology

7.1. Reliability and validity

Delphi research results, especially those based on a relatively small number of expert opinions, are challenged in terms of their reliability and validity. This is to be expected, given IB's existing bias toward quantitative analyses, and the concomitant confidence in results based on large

numbers of survey respondents. However, according to Helmer and Rescher (1959, p. 51), expert judgment is not incompatible with scientific objectivity. Reality is quite the contrary: the social sciences are dependent on the systematic integration of expert judgment when the research activity is focused on the future to forecast global trends and events, to inform strategic planning, and formulate public policies.

Czinkota and Ronkainen (1997) addressed concerns regarding the validity of Delphi research by analyzing the results of two global marketing studies, and comparing them with what had actually occurred five years after each study. In the first study (Czinkota, 1986), fourteen of seventeen key forecasts were proved correct as of 1991, representing an 82% accuracy rate, and the author estimated that these results could have been improved if the experts had been drawn from more than one country. In the second study (Czinkota and Ronkainen, 1992), thirty two of the forty key predictions were correctly forecast by 1997, representing an 80% accuracy rate. However, in this case all the failed predictions were ones of degree, not direction, i.e., change had not occurred as rapidly as expected. When Czinkota and Ronkainen (2005) compared Delphi forecasts from their 1997 study on globalization, international business and trade impacts with occurrence six years later, they reported a 65% accuracy level for their panel's predictions.

7.2. Comparing the Delphi Method to expert interviews

Research based on elite informants, including both elite interviewing and elite participation through the Delphi process, share a common objective: to benefit from the combined experience, wisdom, and creativity of such individuals. A comparison of the two techniques indicates similar methodological concerns as well. Welch et al. (2002) defined four major issues that may undermine the validity and reliability of results: 1) access; 2) power; 3) openness; and 4) feedback.

The quality of research results can be compromised even before the study begins if the process used to select the experts is flawed. This type of bias in sampling is exacerbated when the nominators of participating experts are internal sponsors within the organizations under study, and thus may "stack the deck" to favor their perspectives in the results (Welch et al., 2002). Delphi research faces the same problem. In the Delphi studies summarized above, the problem was overcome by the use of external nominators in four of the seven studies, but the use of external nominators was more closely related to the broader, cross-organization, IB environment focus of the studies. Having prestigious external nominators helps to speed up the process of gaining access and agreement from the participants as executives recognize more readily that they are being invited to join an elite group.

Elite participants may use their perceived power to control the content and direction of the research project, and to dominate discussions and inputs. However, these differences are less influential in the Delphi process because the researcher occupies a facilitator role, thus changing the dynamics to a discussion among the elite peers themselves, where professional, seniority, and gender issues are less likely to influence information-gathering and sharing dynamics. However, the Delphi still must contend with cultural/language differences.

The Delphi process incorporates two other techniques that assist in overcoming power asymmetries. First, due to the anonymity of participants' responses, each perspective is examined by all participants based on the strength of the idea, supporting comments, and analysis. Second, the Delphi's structured communication system reduces the likelihood that any one participant will dominate the interchange, thus allowing a more rational analysis of complex problems than is possible through non-mediated interactions (Van de Ven and Delbecq, 1971). Research questions, sequencing, and time allotted for each phase remains under the control of the researcher as

facilitator. Computer-mediated communication enhancements can reduce power asymmetries as well (Bronner, 2003).

Welch et al. (2002) highlight elites' concerns about anonymity of their responses, and rightly points out that this issue can lead to reserved responses and less than honest comments regarding sensitive issues. The Delphi provides significant relief in this regard. Particularly as the size of the expert panel increases to 30 or more, it becomes more difficult to ascribe specific responses to any one participant.

Both methods are designed to benefit from clarifications and further insights without tempting participants to modify or manipulate results after the fact. The Delphi process deals with this issue naturally as part of the summary feedback provided to participants between rounds anonymously.

8. Conclusions and recommendations

Having crossed the threshold into the twenty-first century, IB researchers are challenged to explore and expand research frontiers, to forecast critical issues in the global environment, and to think creatively about problems and the processes required to understand them. In responding to these challenges, additional emphasis should be placed on the Delphi Method, an underutilized tool that offers much promise, particularly for inquiries aimed at global business forecasting and strategic planning, generating theories, and delving more deeply into significant causes, conditions, and catalysts of international activity. This article concludes with five recommendations for furthering acceptance of the Delphi Method for international research.

8.1. Recommendation: develop institutional support for an annual Delphi study on the 'State of the Future' for global business

The purpose of the longitudinal research project would be to establish long-term commitment to improve techniques for global business forecasting and strategic management. Such a project would require technical and administrative leadership, a global network of collaborating institutions, and a global team of committed international researchers. The *Journal of International Management* (JIM) in collaboration with the Institute of Global Management and its Center for International Business Education and Research at Temple University could become the headquarters for this initiative. Results could be presented at the Institute's annual International Business Research Forum, with a special issue of JIM providing a summary of the best papers.

8.2. Recommendation: collaborate with the World Future Society to identify futures research courses and programs that could be adapted for inclusion in doctoral programs for business

Very few universities' research programs incorporate futures research methodologies. The World Future Society is in the process of identifying such programs. Given recent enhancements to the Delphi Method, the possibility of expanding traditional business research methods courses to incorporate this and other forecasting techniques should be explored.

8.3. Recommendation: create a State of the Future Index (SOFI) for each of the top 10 global industries

This innovative concept was developed by the United Nations Millennium Project. The index as proposed is unlike most others in that it is focused on the future. It is a longitudinal index,

aimed at studying changes over time. Several national SOFIs are being designed currently. The Millennium Project has proposed that SOFIs could be developed for the oil industry and others. However, to date this potential remains unexplored. An industry SOFI would show direction and intensity of predicted change and identify responsible factors. The Delphi Method is ideally suited as a tool to develop thematic SOFI-based outlooks. The judgments of industry experts would provide the foundation for the index design and the evaluation of future developments.

8.4. Recommendation: create several regional or industry sector panels in parallel for forecasting of IB issues as recommended by Czinkota and Ronkainen (1997)

These panels would yield: 1) an in-depth concentration on regional or sector issues; and 2) cross-comparisons of the panel results in support of validity and reliability concerns surrounding the Delphi Method. Such research has yet to be carried out. This represents an opportunity for IB researchers to design comparative Delphi studies that would contribute to the literature on this significant qualitative methodology.

8.5. Recommendation: expand the power of the traditional Delphi through GDSS technology and the G-Delphi process

In 1997, Czinkota and Ronkainen bemoaned the fact that, despite expectations that their Delphi study could be completed efficiently through faxes, the technology of the day did not measure up, and the study took seven months to complete. They concluded that "the world is not yet ready for a high technology approach…" (Czinkota and Ronkainen, 1997. p. 843) but held out hope that the future would bring electronic technology to the fore in order to shorten the time required for Delphi studies, while enabling IB experts from geographically dispersed regions to participate. That technology is here now.

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