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# INTERNATIONAL BUSINESS: Complexity, Flexibility and the Role for Forecasting

LECTURE

given by Dr. John Hagedoorn  
on the occasion of his appointment as Professor of  
International Business and part-time Professor of  
Strategic Management and Forecasting  
at the University of Limburg, Maastricht,  
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Dr. John Hagedoorn

Mijnheer de Rector Magnificus,  
Leden van de Universitaire Gemeenschap,  
Dames en Heren,  
Ladies and Gentlemen,

In preparing this lecture I went through the short note that the office of the Vice-Chancellor provides for those presenting an inaugural lecture. The note gives some sound advice about the general aim of this kind of lecture and the possible alternatives in the scope of the discourse. The message is actually quite clear: do not wear out the audience by delivering an academic lecture for specialists. The purpose is to keep things interesting for a more general academic audience. If one only uses the occasion to demonstrate one's academic capabilities to a group of peers, it is either too late or too early.

That clear message at first seems to have solved at least one problem. It was quite obvious now that I did not have to write a standard academic paper and leave almost everybody in despair and wondering what the subject was all about. One other important decision that also had to be taken was the language in which this lecture should be given. As all this is partly on the occasion of the acceptance of a chair in International Business Studies at a university in the Netherlands, the choice is not that obvious. Presenting the lecture in Dutch seems to be somewhat strange at the start of a new internationally-oriented line of studies where most of the international business courses will be taught in English. Also, a number of people in the staff of International Business Studies speak several languages fluently but Dutch is not among these languages. Presenting some of my ideas about international business in a language that people who play a crucial role in teaching and research have not mastered, also seems to be somewhat awkward. On the other hand, the choice for any other language than Dutch could be seen as a betrayal of the cultural heritage to which this university belongs. In other words, even the choice of the language to be used

for this sort of lecture mirrors some of the 'cultural' problems in international business studies and also some of the practical problems that companies face in their international strategy and corporate organization. Accepting English in its role of modern day lingua franca, it is by now clear which pragmatic choice I have made.

All that still left me with the choice for a topic for this lecture through which I could combine in one lecture the acceptance of the chair for International Business Studies and the part-time chair in Strategic Management and Forecasting. Here I think the adage 'keep it simple' could take its toll. I suppose it is fair to submit that International Business, Strategic Management, as well as Forecasting are part of the social sciences and, given the level of scientific development of these fields and social sciences in general, they are not well suited for keeping things simple. Everybody who has worked with scientists and engineers has learned that the relatively well developed understanding of laws of nature and an extensive body of rules of thumb enable the initiated ones in those fields to explain the general knowledge and major findings of sub-fields of science and engineering to a general audience. To a very large extent this capacity of science and engineering to explain major topics in plain language and through clear examples follows from the existence of rather well developed paradigms. Even if a scientific community disagrees it is quite clear what the disagreement is about and where new paradigms emerge.

Compared to our brothers and sisters in science and engineering, those of us that practice the social sciences, including economics, are still subject to an early stage of paradigmatic development. And I must admit that one can probably build a strong case arguing that International Business and Strategic Management are even in a pre-paradigmatic stage or just developing towards more systematic knowledge.

Such a bold statement is a clear self-invitation for a further explanation of the major concerns of both sub-fields of management studies

that will, at least for some years, be embodied in the person presenting this lecture. I will attempt to explain some of the major issues in international business studies and also explain the importance of forecasting for strategic management. If I am lucky I will even succeed in linking both areas and demonstrate to what extent they are related and how they can benefit from each other. As this, already at first sight, appears to be no small task I will 'limit' this exercise to two major dimensions of international corporate design that are related to behaviour under uncertainty conditions: i.e. internal and external complexity, and corporate flexibility.

To keep the following within acceptable boundaries of concrete understanding I will frequently refer to a non-representative international firm. The example is a Dutch company manufacturing special equipment that is somewhat advanced in terms of the technology incorporated in its products without being a truly high-tech company. In 1993 this company has a workforce of about 5000 people. In the Netherlands the company is seen as large, although its major international competitors are several times larger. In an international context it is considered only a medium sized company. The company has gone through a phase of rather strong growth: ten years ago it employed 'only' 3000 people. In 1983 about 2500 of its employees were found in the Netherlands, foreign employment of about 500 was concentrated in a small number of foreign sales offices. Over 90% of these foreign activities were concentrated in Europe, mainly in the EC. International growth since 1983 has followed a pattern of mixed foreign direct investment in terms of both green field investments and acquisitions. In 1993 the company employs 3000 workers in the Netherlands and 2000 abroad. Foreign activities generate 1250 jobs in manufacturing and servicing and about 750 jobs in sales. About 80% of the international manufacturing and sales activities are found in Europe. Nearly 20% of its foreign activities, mainly sales and servicing, are found in North and South America. It has been a deliberate policy of the company to keep the corporate staff at headquarters as small as possible.

*Exploring International Business Studies*

If we start off with a brief explanation of the theoretical background of modern international business studies, its broad and multi-disciplinary background is the first that comes to my mind. A number of academic disciplines that are relevant for understanding international corporate behaviour, company organization, as well as the environment of international business are listed in Table 1. An indication is given of their relevance for understanding corporate organization, the strategy process and the environmental conditions. This list is not conclusive but it does show the large number of academic fields that are relevant for these topics. It also does not represent a coherent body of theoretical understanding of strategic behaviour and corporate internationalization. However, this also seems unnecessary as the present state of international business studies is, in my opinion, more in need of a lively debate and exchange of ideas from partial theories than 'holistic' theories providing an encompassing understanding. It goes beyond the scope of the present contribution to discuss these theories and their possible effects on international business studies in-depth, but a brief elaboration of some of the major inputs into international business will suffice. Also, the list does reveal potential overlaps and possibilities for cross-fertilization of a large number of contributions.

The wealth of intellectual contributions to organization theory as developed in recent years can have a major impact on international business studies. However, it is prerequisite that the international dimension of organizational change is more fully integrated in organization studies. In particular if the implications of international competition for the diversity in corporate organization receive more attention, institutional issues can be placed in the core of international business studies. In my opinion this could lead to a major improvement of our understanding of corporate renewal in a turbulent international context that takes us away from a more static economic understanding of international business. In addition to

Table 1. Relevance of theories for understanding international business

	Organization:		Strategy	Environment
	Internal	External		
<i>Organization Theory:</i>				
. organizational learning	X			
. contingency theory	X		X	X
. population ecology		X		X
<i>Economic Theory:</i>				
. agency theory	X	X		
. transaction cost theory	X	X	X	
. monopolistic competition			X	X
. product-life cycle			X	X
. industrial organization		X		X
. international economics				X
. finance	X	X		X
. evolutionary theory	X	X		X
<i>Management studies:</i>				
. strategic management	X	X	X	X
. innovation management	X	X	X	X
. financial management	X	X	X	
. business history	X	X	X	X
. marketing		X	X	X
<i>Law</i>	X	X		X
<i>Logistics</i>	X	X		

this organization theory can contribute to a more concrete understanding of corporate behaviour going beyond 'simple' micro-economic assumptions on international strategies and their implications for the companies involved.

Although there is always a danger that a more eclectic approach leads to a 'hotchpotch' of concepts and partial theories, I think it is

necessary for international business studies to borrow from the intellectual domain of economic theory in its widest sense. Almost every contribution to economic theory that goes beyond the perception of the firm as a simple production function and that also pays attention to the dynamics of economic development seems appropriate to be studied for its possible bearing on international business studies. Whether the complexity of economic systems is situated in a microeconomic context of principle - agent theory or in the setting of strategic trade policy in international economics, to name two possible extremes of economic focus, as long as these contributions can be linked to either the organizational, strategic or environmental aspects of international business they are worthwhile to consider. To paraphrase Schumpeter's understanding of the dynamics of economic systems in a more international context: the influence of economics on international business studies should be found in its perception of the effects of new combinations, i.e. innovative products, processes, markets or corporate organizations, on the economic performance of companies.

Management studies, especially if they go beyond simple how-to-do recipes, are of major importance to keep at least part of the international business agenda tight to practical international experience and link this to more academic understanding. The more action-oriented management and marketing perspective and the retrospective orientation of business history can jointly facilitate this concrete understanding of corporate behaviour. A major task for the management studies input into international business studies is to mediate specific experience with general observations so as to arrive in conjunction with other contributions, at some generalized understanding of international business.

Although the implications of corporate law for company organization are generally clear the international setting of companies adds several new dimensions. International trade laws, country specific tax systems, and organizational consequences of internationally



different legal arrangements do influence international corporate behaviour.

Finally, under the heading of international logistics we can point at the relevance of the knowledge of complex organizational attributes of international production, distribution and servicing. The design of integrated logistics and production linkages in an overall value chain of corporate activities are of major importance for understanding corporate performance. Although the concrete engineering as well as the mathematical modelling of international production and distribution routings go beyond the perspective of international business studies their implications for organizational design are quite relevant. Understanding internal and external logistics not only helps to tie-in with the present debate about the boundaries to the firm, it can also have a more practical goal in its design-orientation setting some of the parameters for the organization of international production and distribution.

A substantial part of the academic disciplines briefly introduced in the above is of a fairly theoretical nature. However, apart from theory-inspired contributions, that are obviously not unrelated to empirical observation, a number of clear empirical developments have influenced some recent changes in the practical understanding of international business as well. Current international competition has gone far beyond international trade. During the last couple of decades the internationalization of inter-firm rivalry does not only take place through standard market transactions, it is also affected by foreign direct investment, mergers and acquisitions, and international joint ventures and so-called strategic alliances. In that context companies have been setting up internal and external networks that are of a vertical or horizontal nature. In all this, flexibility appears to be a key-word for understanding changes in (international) company organization, international inter-firm rivalry, as well as in corporate strategy.

For our non-representative Dutch firm one can point at the importance of organizational changes the company has gone through as it moved from a company with only a few manufacturing sites in the Netherlands to a wider network with foreign subsidiaries. Organization studies provides us with a large number of theories that elaborate on different modes of corporate organization, alternative organizational designs, as well as the understanding of key-factors for successful organizational innovations. Economic analysis enable us to put this firm in the perspective of the industry structures in which it is operating and assess the effects of its innovation strategy on performance. Also the international trade-replacing effects of foreign direct investment and the consequences of different exchange rates for the company, to name but a few examples of economic insights, are important factors that have to be taken into account. Management studies can generate more practical understanding of strategic choices that the company faces in terms of make-or-buy decisions, or how to manage innovative processes within an international context. Also international marketing strategies with a mixture of local and global approaches are too important to be left to the intuition of individual managers. The same holds for the choice of international partners with whom the company can engage in a number of cooperative agreements that span the whole range of corporate activities. In that context international corporate and trade law enter the picture to account for different legal arrangements that our company faces once it goes beyond its national borders through trade or direct investment. The study of international production chains and logistics put the economic costs and benefits and the technological possibilities of an international extension of our firm through multiple international production sites on the agenda.

Already the example of one firm indicates that internationalization is such a complex phenomenon that choices regarding the dimensions that are studied have to made. This is the fate of every multi-disciplinary orientation. Nevertheless, the more we recognize the value of studying more than one aspect of international busi-

ness, and not only preach this but also practice it, the bigger the chances are that our accumulated and shared knowledge is also of a more multi-disciplinary nature.

### *Changing Modes of Corporate Internationalization*

The literature on corporate internationalization based on international economics, industrial organization, international business studies and more normative knowledge from management literature has generated some first insights into the basic rationale of the internationalization of both production and markets. The pursuit of firm growth through maximizing or satisficing behaviour is accepted by most contributions as the main motive for growth beyond a firm's domestic boundaries. For a more concrete, yet theoretically mediated and also multidisciplinary, understanding of patterns of internationalization it will be necessary to dig deeper and go beyond a general perception of the process of internationalization in which so many companies are engaged. This seems particularly imperative as the myriad of concepts related to internationalization cannot hide that a lot of work is still necessary. This point can be made most explicit in reference to the recent attention being paid to 'globalization'. In general one can be somewhat suspicious about this concept which could easily become another synonym for internationalization. If globalization is a specific case of internationalization we at least have to ask ourselves what the consequences of globalization are for corporate strategies and the organization of firms. In order to organize the matter, a simple matrix to differentiate between several modes of general company organization with respect to production and serving markets is constructed, see Figure 1. One dimension of this matrix represents the (inter-)national character of production which goes from domestic to production in an international region such as W. Europe, North America or S.E. Asia, and finally world-wide production. For the other dimension I have chosen the market as an entry, stressing the importance of international sales and marketing as an important aspect of inter-

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nationalization. The categorization of (inter-)national markets is identical to production. The production dimension does not only refer to manufacturing or production in the strict sense, it also covers the firm's innovative capabilities, such as its R&D and design facilities.

It is obvious that the 3x3 matrix could be enlarged with a more subtle differentiation of all possible forms and degrees of internationalization of companies in respect to a more precise distribution of assets and marketing efforts in different regions. However, I think this would complicate matters only artificially without adding too much to our understanding. Furthermore, it is not my ultimate aim to manufacture a 'fine-tuned' taxonomy but much more to present a somewhat coarse categorization which enables me to briefly indicate the general set of alternatives in internationalization strategies of companies.

The first category of firms one can distinguish is the group of companies that produce in one country and serve mainly their domestic markets. In a sense this is the only group of companies which, in principle, lacks any international flavour themselves, although they can of course be affected by international competition

		MARKETS		
		national	international region	world-wide
PRODUCTION	national	domestic	semi-international	international
	international region	semi-international	international	multinational
	world-wide	X X X X X	multinational	global

**Figure 1.** A differentiation of (inter-)nationally operating firms

in their domestic markets. All the other groups of companies have a certain aspect of intrinsic internationalization, be it through their production or through their international sales. I have also left one cell blank because I expect that very few companies will produce world-wide and yet find only a domestic outlet. So from that perspective all other categories are to a certain extent international companies although the degree of internationalization might vary considerably. This set of different modes places global companies as the true opposites of domestic companies, in the sense that the former operate on a worldwide scale with respect to both their markets and their production. In all this it should be stressed that a static classification as such is not a goal in itself. The objective is much more to point at the dynamics of internationalization, i.e. the changes that will occur over time when companies become more internationally oriented and some companies turn from semi-international, international or multinational firms into global companies. One of the major objectives of international business studies is to understand the conditions and processes of internationalization in terms of the different phases that companies go through as they are internationalizing their sales and fixed assets.

For our non-representative firm this means that we can follow its movements across the 'chess board for marines' in Figure 1. The company started as a domestic company but in 1983 we can already locate it as a semi-international firm. At present it is an international company with a relatively high share of exports and production in Europe. As economies of scale set a barrier to additional international activities as well, further growth or an internationalization of existing domestic activities will be necessary before it reaches the stage of a multinational company. This classification of firms also suggests the growing complexity of intra-firm organization that a company is confronted with as it develops towards a higher level of internationalization. Different levels of corporate internationalization and accompanying models of corporate organization have to be analyzed in terms of their structural fit with the complexity of international competition. For instance, as our firm is

growing internationally it will be confronted with an increasing need to balance its international configuration of centralized and decentralized company assets and capabilities. In a world of technological and economic change so-called dynamic efficiency improvement seems to be a prerequisite for successful international competition of companies from nearly all categories mentioned above. This implies a balanced application of economies of scale and scope, operational and strategic flexibility and improved organizational learning for the company as a whole. One of the consequences of all this for corporate organization is that the interdependency between international subsidiaries and between these subsidiaries and the corporate centre demands complex coordination and control mechanisms within the company.

In the business literature flexibility of companies is mentioned as a major topic for successful global competition. In economic theory the concept of flexibility is analyzed in the context of static and dynamic efficiency improvement. With static efficiency improvement, where existing inputs of production factors are optimally combined, there is a clear trade-off between productivity and flexibility because an increase of output variation leads to increasing marginal costs. For dynamic efficiency improvement with changing production functions, or new combinations in the Schumpeterian terminology, there is more room for an overall efficiency gain for the company. In that context it is appropriate to pay some attention to a broader notion of flexibility that not only has the ability to deal with demand fluctuations but with other forms of turbulence in the environment of firms as well. The consequences of such a broader understanding of corporate efficiency is that we can distinguish at least two forms of flexibility:

- operational flexibility that affects medium and short term investments in plants and equipment,
- strategic flexibility that has a long term perspective on the positioning of a company with regard to products, location, markets and competitors; in short it is aimed at the long-term

improvement of a wide range of advantages that firms can pursue.

As far as the organizational structure of international companies is concerned both operational and strategic flexibility create new demands for the coordination and control capabilities within companies, with new responsibilities for the parent company and its subsidiaries.

In recent years internal and external networks, created both domestically and internationally, are increasingly mentioned as a major mechanism for companies to enlarge their flexibility. In theoretical terms this development coincides with the understanding of the firm as a nexus of contracts and inter-organizational networks. The bottom line of this new understanding of corporate organization is that large, internationally organized companies are no longer perceived as unitary hierarchical organizations but as 'inter-organizational groupings' where hierarchical authority co-exists with some degree of local autonomy. For our non-representative firm and also for semi-international, international, multinational and global companies the increasing degree of complexity is found in the configuration of the corporate headquarters in a network of multiple centres and different internal and external coalitions.

Modern production and control technology, based on extensive application of information technology, enables companies to operate and sustain these flexible internal and external networks. Advanced automated manufacturing facilitates relative short runs of production which in their turn enable firms to anticipate market changes. All this can increase the operational flexibility of large companies as long as a complex management system of multi-plant organization provides sufficient control. Such modern systems of company organization can also increase economies of scope for large integrated companies if communication between units and the centre is improved. In other words, modern technology enables companies to operate more flexible in terms of servicing international markets and linking a network of international production. For

strategic flexibility the basic idea is that corporate headquarters manage somewhat scattered strategic processes according to the overall corporate goals, and yet provide sufficient resources and freedom to major subsidiaries. It is obvious that there is tension between the necessary interdependency at an international scale, the responsibilities of the centre and the 'local' units, and the control over the company's strategic moves. Here, modern information technology systems can in theory reduce complexity and facilitate decision making. However, it is important to stress that technology in itself can only be part of the organizational solution. Formal coordination, e.g. through top-down hierarchies for which such control systems are most adequate, has to be paralleled by a more subtle coordination mechanism establishing intra-organizational communication as the need for coordination increases.

For our case study this implies that its headquarters has to coordinate the international activities in terms of sales and manufacturing, set the strategic agenda and improve internal communication. As a substantial part of the equipment business is on a local-for-local basis, foreign subsidiaries have a large degree of autonomy that still has to fit within an overall strategy. As mentioned above modern information technology enables firms to monitor international production, inventories, sales, price setting, etc., on a real time basis. In that sense technical control is not a major issue that is at stake. Within formal hierarchical structures the processing of this information will enable the company's top management to follow the world-wide operations. However, the implementation of the corporate strategy within subsidiaries demands more than vertical control. It is here that subtle mechanisms of internal coordination are necessary to implement corporate strategy in the company as a whole.



## *Strategic Management and Forecasting*

I already mentioned the need for subtle methods of internal corporate coordination to parallel formal hierarchical control systems within complex organizations such as international companies. This improved internal communication at different levels within the company is expected to lead to a corporate 'culture' that goes beyond artificial image-building, sharing values about the general objectives and positioning of the company. Building a corporate culture can benefit from a process of identifying strategic issues that a company faces. It is obvious that more specific strategic issues cannot be disclosed to a wider public within a company. However, participation in the process of developing general ideas about the strategic positioning of the company by as many people in the organization as possible seems helpful in developing organizational coherence. Forecasting for strategic management can contribute to this process as it is most appropriate in situations of required organizational and strategic flexibility, quickly changing environments and uncertainty about many economic and technological developments. Taken together these phenomena demand a much better understanding of possible future developments and the status quo. Stable markets, stationary international economic and political conditions, and few technological changes do not require a great deal of strategic thinking. Short-term tactical manoeuvring can handle small changes within organizations and their environment. In terms of Ansoff's well known levels of turbulence, all developments that surpass the level of fast incremental changes, on the other hand, will have a strong impact on corporate strategies. It is in this environment of higher levels of turbulence that forecasting and strategic management of international companies come together.

A wide range of forecasting methods are useful thanks to:

- their ability to facilitate the identification of strategic concerns,
- their uncertainty-bounding capabilities,

- their systematic 'scientific' character as analytical tools, and
- their role in serving as an internal communication device.

These properties of many forecasting techniques turn them into effective instruments to assess the range of alternative futures for a company and its environment. Although not all users will probably agree forecasting methods are in particular suited for complexity-reduction exercises, outlining the most important factors and relationships that affect a company's future positioning. The internal debate about alternative strategies and their implications, following such forecasting exercises, can support collective thinking about the future of the company.

It is important to note that several methods of forecasting can be applied by companies for their assessment of changes in different primary and support activities as well as in adjusting their overall strategic management. The most popular method is the so-called judgmental method based on mostly qualitative individual or group interpretation of the impact of environmental or internal developments on a company. In the literature on forecasting methods for management, however, most attention is paid to a wide variety of quantitative methods and models. In particular for the assessment of long term developments there are also a number of so-called technological methods that study the impact of broader technological and social developments on the competitive positioning of companies.

Table 2 presents these three broad categories of forecasting methods for a number of areas of business application. It is clear that quantitative methods of forecasting are most common for business applications that are directly related to the planning of production, inventories, material requirements and the scheduling of labour inputs. Forecasting in that context is usually of a somewhat short term character and related to well known econometric and operation research based methods. In general we see that so-called stochastic models are most helpful for well structured problems that

Table 2. Classification of forecasting methods and areas of application

Technological		Judgmental				Quantitative			Areas of Business Application
Expert-based	Extra-polative	Aggregate	Group	Individual	New products forecasting	Monitoring approaches	Explanatory	Time series	
			X	X				X	Production Planning
			X	X		X		X	Production Scheduling
			X	X		X		X	Inventories
			X	X		X		X	Material Requirements
			X	X		X		X	Personnel Scheduling
								X	Personnel Planning
		X	X	X	X	X	X	X	Short Term Sales
X		X	X	X	X		X	X	Medium Term Sales
	X	X	X	X	X				Long Term Sales
		X	X	X	X		X		Pricing
		X	X	X	X		X		Advertising and Promotion
X		X	X	X	X				New Products
X	X	X	X	X	X				R&D Projects
X	X		X	X	X				Competitive Analysis
	X		X	X	X				Strategy

Based on S.G. Mankadikris and S.C. Wheelwright, Forecasting Methods for Management, New York, Wiley, 1989, pp. 14, 15

companies face in the above mentioned parts of the value chain. Although not restricted to operational objectives, the value of such forecasts for strategic decision making is rather limited in case of instability in both markets and general economic and political environments. For sales, pricing policies, advertising and promotion these quantitative methods also seem most effective for the short and medium term assessment. Referring to my brief discussion of flexibility, this line of forecasting appears most adequate in supporting the assessment of possible increases in operational flexibility. Qualitative judgmental methods are applied for the whole spectrum of business applications ranging from production organization, to sales related activities and the assessment of the innovative activities and strategic positioning. Given the long-term perspective of technological forecasting methods it will not come as a surprise that these reflect some of the long-terms aspects of sales and in particular the assessment of new products, the choice of R&D projects, competitive analysis and broader strategic choices that companies have to make. This mode of forecasting is most appropriate for the evaluation of possible strategic flexibility increases.

For the purpose of improving internal communication of companies a mixture of these methods seems most appropriate. For instance, the use of multiple scenario's can assist a company in identifying the most important strategic issues and translate these to the level of corporate strategy as well as to the operational level. The more short-term oriented methods can be applied to provide rather detailed and exact information about operations and sales. In relatively simple technical exercises alterations of some of the parameters can already provide insight in the short-term consequences of changes in corporate behaviour. Judgmental and long-term forecasting methods that reflect critical strategic decisionmaking also have to take the short-term perspective into account to increase their degree of realism and to proceed from the present to an analysis of the possible future. In a reciprocal process of strategic and operational planning the discussion not only becomes more realistic, it also enables the company to reach beyond

the intellectual elite of corporate planners and to include operational management and others in the internal scanning of the future. This certainly is an important topic as it is generally acknowledged that there is a strong need for communication between users of forecasting exercises and the forecasters themselves. This does not come without cost as there is a trade-off between the improved intra-firm relationships that can be established in such a procedure and the costs due to the time that middle-management and others spend participating in such an exercise. Through such a procedure forecasting projects can improve organizational learning if they stimulate a process of discussion where the uncertainty and complexity of a companies' future are given through a number of scenario's or models. The impact of forecasting exercises in terms of the involvement of large parts of the company, however, is to a large extent a function of a company's environmental turbulence, the number of its strategic options, and the openness of its internal communication channels.

It will be obvious that for companies such as the equipment manufacturer that we briefly followed during this lecture the successful application of forecasting to strategic management is easier said than done. As we recall the company has a small corporate staff and we can not expect it to employ dozens of 'whiz-kids' that can spend most of their time applying a large number of forecasting techniques. Therefore, it seems fair to assume that a small staff at corporate headquarters can, perhaps with some external help from a specialized consultancy firm, take the lead in a forecasting exercise. The aim of this exercise is to explore the effect of changes in relevant international equipment markets due to technological development, such as the increase of microelectronic applications, on the long term positioning of the company. Apart from senior management at corporate headquarters and division management, the director of R&D and the management of the most important international subsidiaries are engaged from the beginning of the exercise. In particular the inclusion of foreign subsidiary manage-

ment of firms acquired through take-overs is relevant for the further organizational integration of these firms.

Both qualitative long-term expectations and more quantitative short and medium-term assessment about cost reduction, sales performance, R&D efforts and competitor analysis are included in the exercise in which three basic scenario's for our company are developed. These scenario's can picture the following exemplary alternatives:

- further internationalization of the company's major activities aiming for the high-quality end of the market as a market niche player,
- growth through diversification into other capital goods markets without entering the high-tech market and with a regional concentration on Europe,
- business-as-usual scenario describing cost effectiveness as the most important issue in the strategy.

Without entering into the details of these different scenario's it is obvious that quantitative econometric exercises can be applied for the assessment of short and medium-term changes in production, labour input and sales. For long-term developments some judgmental and technological forecasting methods can be employed. In particular group-oriented judgmental exercises are useful to stimulate the process of strategic thinking within the company. Although implementing the strategic choices that have been made still promises a long way to go, the process of strategic decisionmaking itself already has a clear advantage for the company in terms of increased internal communication.

The bottom-line for the appreciation and use of concrete forecasting techniques by a variety of companies is that this is to a large extent dependent on the learning capabilities of the organization, the wealth or shortage of data, the familiarity of the company with

forecasting methods, and the environmental turbulence surrounding the company.

### *The Road Ahead*

As I am almost at the end of the lecture I can briefly indicate some of the consequences of all this for International Business Studies at the University of Limburg. I think that, both in terms of teaching and research, we will have to stress the implications of a multi-disciplinary approach for the understanding of international corporate behaviour. Apparently there are no easy answers to all the questions that arise when we study international business. Whether we deal with organizational topics, economic benefits or costs, or future assessment of the wider impact of economic, social and technological development we are still at the beginning of an academic agenda.

For our research effort this not only means that a lot is to be done, it also implies that in the European context we can reap the benefits of being early entrants. For our students it means that we can not provide them with a standard or single explanation of why, how and where. We will demand that they follow us on our expedition to discover at least some of the secrets of international business. Whatever some will say about content of this field, in respect to our search process and the open mind that one needs in a relatively new field of studies we remain loyal to the highest academic principles. Returning to the remarks about the early-paradigmatic status of today's topics, made in the beginning of this lecture, I hope that many in the Faculty of Economics and Business Administration will join us in further developing our knowledge about this field, that I hope soon will become the core of much of the research and teaching at this university.

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