GLOBAL BEST PRACTICE OR NATIONAL PATH DEPENDENCY?

THE INTERNATIONALISATION TRAJECTORIES OF THE WORLD'S LEADING TELECOMMUNICATION EQUIPMENT MANUFACTURERS

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ABSTRACT

There is a strong divide in the current literature on international business strategy. One school of thought argues that, due to market constraints, there is only one best practice for the internationalisation of companies. This view is strongly opposed by a second major approach, which stresses structural dependency. According to this second view, the internationalisation strategy of a company is largely shaped by its origin - in other words, by its historical embeddedness in the economic, political and institutional context of its home country. This paper shows that there is no need for such a strong divide. Looking at the internationalisation trajectories of the top ten telecommunication equipment suppliers of the world, the paper demonstrates that all suppliers – irrespective of their national origin - follow an industry-wide best practice, both in the timing and the location of their internationalisation. However, all internationalisation aspects that are more process and style oriented (e.g. market entry patterns or global management styles) show a strong correlation with the specific design of the national institutional context. So far, the institutional context and thus also the specific telecommunications policy of the small countries has turned out to be particularly favourable. Whether this will also be true in the future seems rather doubtful when looking at the current sector trends.

KEY WORDS:

Multinational Corporations, Internationalisation Strategy, Internationalisation Management, Telecommunications Equipment Industry, Neo-Institutional Organisation Theory

INTRODUCTION

One of the most prominent general debates in social sciences is the controversy concerning best practice and path dependency. Widely discussed in such diverse fields as the transformation of Eastern Europe or labour market politics, perhaps the most intense debate on the topic occurs in the realm of corporate organisation and management. This should not come as a surprise, considering the major structural adjustments of the post war economy, such as market liberalisation, reduced transport costs, improved communication means and product homogenisation. This meant that more and more corporations from different countries and continents, with different historical legacies and institutional backgrounds entered the global market and became competitors. The pressure of international competition, but also the discovery, that companies with other national roots are different, spurred the discussion on how to organise and manage a company - not forgetting the overall impact of slow growth in the world economy.

During the 90s, the key reference point of this debate was the production model. Do corporations have to go for lean production or die, as maintained by Womack et al. (1990)? Or do corporations shape their own viable models in interaction with and according to their specific national environment, as argued by Boyer/Freyssenet (1999)? With enormous amounts of empirical literature produced so far, the line of demarcation in this question seems to be drawn. However, a new key issue is emerging in the debate. It deals with the question of whether corporations have to follow a specific (best practice) internationalisation strategy or whether different internationalisation trajectories are more or less functionally equivalent in global markets. This issue, somewhat reflecting an increased awareness of multinational corporations' growing importance in the world economy, is also central to the paper presented here. Starting with a brief examination and critique of the relevant theoretical positions on

what shapes the internationalisation behaviour of multinational corporations (market constraints or structural dependencies), I will then present an approach that reconciles and enlarges both positions by distinguishing between different aspects of corporate internationalisation. The next section provides background information on the telecommunication industry followed by a section presenting empirical findings on convergence and divergence in the internationalisation of the top ten telecommunications equipment suppliers in the world, encompassing the years from 1980 to 1995. Having traced back convergence and divergence to market constraints, institutional legacies and corporate idiosyncrasies, the final section discusses implications for national telecommunications policy.

Market constraints and structural dependencies

The last 40 years have witnessed a growing discussion of corporate internationalisation as a scientific topic (Wright/Hicks, 1994). Major aspects have been and still are to identify specific patterns of corporate internationalisation, to explain them and to discuss their political, social and cultural implications. Taking the perspective of the corporation (and not that of a single investment or the society as a whole), there seems to be a trend towards an integrated view, including all corporate functions (e.g. R&D, sourcing, production and marketing) as well as the international configuration and co-ordination (management) of the respective activities. However, there is a lively debate on what shapes this overall picture of corporate internationalisation.

The first approach, mainly put forward by management science and consulting firms, derives one best practice for the internationalisation of companies from its understanding of the market forces. Following this approach, which I call the „market constraints-approach„ a

company has to go for global presence, while integrating economies of scale and national responsiveness. Here, one finds three similar positions with a different scope. According to McKinsey`s stage-model (Henzler, 1992), companies typically internationalise themselves in six steps with discrete sourcing and marketing policies. At stage six, which is the optimum (best practice), a company follows a global sourcing strategy and manages a web of specialised centres of competence that allow to sell its products and services world-wide. According to McKinsey however, not in all industries are companies able to reach stage six. The latter point is also shared by Bartlett/Ghoshal (1989). They use as their starting point different industries which are characterised by specific constraints (or dominant requirements) with strong implications for corporate internationalisation. However they foresee an ongoing trend of cross-industry harmonisation. According to Bartlett/Ghoshal this process will lead to the emergence of one single best practice in corporate internationalisation – which they call the transnational solution, however without describing it very precisely. Following Ohmae (1985, 1990), the last position to be mentioned here, there are at least some clear indications of what the best practice in internationalisation looks like. According to his model of „global localisation„ corporations have to have a more or less equal presence in all three regions of the triad, due to the growing importance of fixed costs, the world-wide convergence of consumer preferences and the creation of key technologies in all regions of the triad. However Ohmae's ideas on how this triad company is managed are rather vague, too.

The second major approach strongly opposes the idea that market constraints are imposing a specific best practice on corporate internationalisation and instead stresses the notion of structural dependency. According to this view, that is deeply rooted in institutional economics, companies are neither free to choose one best solution in their internationalisation strategy nor do their specific internationalisation strategies reflect best practice requirements (or parts thereof). On the contrary, this approach argues that the internationalisation strategy

of a company is largely shaped by its origin - in other words, by its historical embeddedness in a certain economic, political and institutional (home) context. Due to this view companies follow „generic„ internationalisation strategies, either derived from shortcomings of their home market (Porter, 1990) or from previously developed concepts of control (Ruigrok/van Tulder, 1995). While Porter's idea, that internationalisation only compensate shortcomings of the home market is self-explicatory (but not necessarily true), Ruigrok/van Tulder´s argument requires some further explanation. According to Ruigrok/van Tulder core companies (usually large companies, that are able to exercise power in the value chain) try to manage the rigidities and imponderabilities of their specific national business system, by developing a coherent system of control. This concept of control evolves over a long period of time in a very complex process of interaction with the main agents of the national business system (governments, distributors, suppliers, financiers, trade unions). Once this concept of control is found and has proven its viability, core firms have to use the same concept when going abroad, due to sunk cost. However, since the different concepts of control are not neutral to corporate internationalisation, a specific concept of control also defines a specific internationalisation trajectory, with „Globalisation„ and „Glocalisation„ being the two ideal types of internationalisation paths[1].

Critique of the two approaches

A detailed look at the methodology and the empirical basis of the two main approaches, however, identifies systematic shortcomings. Neither the market constraints approach nor the structural dependency approach nor both approaches combined are able to explain the real life variance of corporate internationalisation. Three arguments will prove my point:

The first argument refers to the market constraints approach. One main deficit here is the fact, that the best practice (derived from the relevant market constraints) is often not very precisely defined. Bartlett/Ghoshal (1989, p. 61), for instance, present their „transnational solution„ as an integrated network, in which the flow of components, resources, people and information can best be managed by a broad diffusion of company-wide values. Furthermore, almost all best practice models (no matter how precise they are) generalise from few cases and usually lack a sound empirical proof of their superiority. In addition, in most cases best practices have no clear historical point of reference, as to when they are compulsory to survive in a certain market (the timeframe usually mentioned here is: „..in the future..„). All these issues make it very difficult (if not impossible) to decide whether there is only a single best practice or if there exist other functionally equivalent internationalisation strategies.

The second argument refers to the structural dependency approach, which generally refuses the existence of best practice solutions for corporate internationalisation. In contrast to that position, Knickerbocker's (1973) classical study on internationalisation strategies in oligopolistic markets, for instance, shows that multinational corporations tend to imitate the internationalisation behaviour (more exactly the geographical market orientation) of their competitors. This means that at least in certain aspects of their internationalisation, companies seem to follow a best practice model, even though this best practice is a relative one. However, absolute best practices (or better: best practice aspects) also seem to exist, considering that a specific innovative cluster or the location of raw materials enforces the presence at a certain place.

The final argument refers critically to both, the market constraints and the structural dependency approach. Both represent a somewhat deterministic view and ignore those issues which are firm specific. In other words, the fact that firms are actors, with at least a certain

degree of autonomy, is by and large neglected. However, there are clear indications in the literature, that companies rooted in the same national institutional environment (or business system) and in the same industry (or even in the same industry segment) might follow very different internationalisation strategies, as Jürgens (1992) has demonstrated for the German automobile industry or Dörrenbächer/Wortmann (1991, 1993) for the R&D internationalisation of German pharmaceutical companies, or the European strategies of U.S. tissue paper companies.

Towards a market-, institution-, actor-approach on corporate internationalisation

A concept that will adequately deal with the above mentioned critiques has to use a wider analytical framework. Referring to structuration theory (Giddens, 1984) as well as to the actor centred institutionalism (Mayntz/Scharpf, 1995) I here develop an approach that tries to explain corporate internationalisation in terms of market constraints, institutional impact and the idiosyncratic actions of corporations. This approach, which I call „market-, institution-, actor-approach‟ follows two basic assumptions. The first assumption is that even if corporate behaviour seems to be considerably shaped by its economic and institutional environment, there definitely remains room for idiosyncratic corporate actions. The second assumption aims at the way in which empirical findings, that occur at different levels, are explained. Here the approach uses a specific concept of analytical hierarchy as developed by Mayntz/Scharpf (1995). Its main idea is that findings which can be explained by market constraints or institutional impact, do not have to be explained by individual corporate actions (since market constraints and institutional conditions already include a certain rationale for corporate behaviour).[2]

Central to the my approach are the following definitions.

- *Best practice requirements* are only existent if, in a precisely defined period of time either all companies show the same internationalisation behaviour (or immediately bring their behaviour into line with the behaviour of their competitors), or unwillingly suffer market exit as a result of non-conformist behaviour.[3]

- *National path dependencies* can be proved in a two step procedure: Step one is looking for shortcomings in the „national diamond‚ as defined by Porter (1990)[4] and testing whether these shortcomings might be compensated by a specific internationalisation strategy. Following the analytical framework of the corporate governance literature (Hall, 1986; Hollingsworth et al., 1994; Whitley, 1996; Crouch/Streeck, 1997) step two is looking at the impact specific national institutional arrangements have on corporate internationalisation.

- *Corporate idiosyncrasies* are all those aspects that cannot be traced back either to best practice requirements or to national path dependencies. Theoretically, the notion of corporate idiosyncrasies is rooted in company history as well as in „soft institutionalist approaches‚ such as the work of Chandler (1962, 1977) and, more recently, the work of the GERPISA group (Freyssenet et al., 1998).[5] Firms and their managers are seen here as at least partly autonomous actors, who are able to take idiosyncratic decisions, which shape the trajectory in which the company is developing. Important factors to be considered here are firm characteristics such as age of the corporation, degree of diversification etc.. The impact of personal preferences of managers is more or less excluded in this study.

Unlike both approaches mentioned above, where multinational corporations are usually studied as a whole, the „market-, institution-, actor-approach‚ follows a narrower sectoral scope. This is due to the fact that studies which use the whole corporation as unit of analysis only deliver useful findings for corporations that produce one single product or products that are very similar in terms of their production and marketing. This is usually not

the case, taking into consideration that many, not to say most multinational corporations have a multidivisional or even conglomerate structure. To give a simple but striking example: To compare Motorola and Intel as a whole is of no great use, since Intel only produces chips, Motorola, however, produces both chips and telecommunications equipment - products that do not have much in common, neither concerning their production processes nor their customers. Furthermore, choosing the whole company as unit of analysis also means to choose a level of aggregation that very likely hides important sectoral differences. Again the example of Motorola: While the rationale for internationalisation in Motorola's telecommunications division is mainly to gain access to high volume markets, main causes for internationalisation in chip production are the availability of a suited workforce as well as subsidies (Flamm, 1986).

All in all the combination of a wider analytical framework and a narrower sectoral scope poses some methodological problems. Up to now empirical work on the internationalisation of corporations was either quantitative (with studies based on foreign direct investment statistics at the one end and multiple company comparisons at the other) or qualitative, often dealing with an individual investment (e.g. the take-over of Rover by BMW) or an aspect thereof (e.g. the integration of human resources at BMW and Rover). Both traditions have their limits. As discussed above, studies that use higher aggregation levels might lack important insights, since some tendencies might neutralise each other. The qualitative approach, on the other hand (usually a case study) delivers detailed insights, in most cases, however, analytical and/or statistical generalisation is difficult or impossible (Yin, 1989).

Nevertheless, in oligopolistic industries it is possible to combine the depth of a case study with a high level of generalisation by looking at a critical mass of leading suppliers. In

the telecommunications equipment industry, the industry studied here, the top ten suppliers (more exactly: their telecommunications equipment divisions) account for 60% of the world market (Pouillot/Dartois, 1991). However, it has to be mentioned that this method of sample choice is limited, since the generalisation of results is more or less restricted to the industry of concern. Beyond that industry, generalisations might only be valid for some oligopolistic industries, namely, those that show sufficient structural similarities. In the case of telecommunication equipment such industries include e.g. rail equipment or power generating equipment and to a lesser extend segments of the automobile or the chemical industry.

Sector transformation and the growing importance of corporate internationalisation in the telecommunications industry

Communication is essential to any social relation and thus for the construction of societies. From the beginning of humankind there were strong incentives to develop means to geographically extend and subsequently improve the richness of communication. Evidence here is diverse, extending from the use of messengers in ancient Greece (Marathon) and any kind of drum, horn, smoke or fire based communications systems to the very sophisticated system of today's multipurpose telecommunication networks. In modern history of telecommunication, which probably started with the invention of the telegraph and later the telephone, the last twenty years especially mark an important transition phase – on the background of a set of mutually re-enforcing technological and political changes.

Following an individual technological trajectory, the telecommunication industry used to be a rather *innovation* poor industry. In many cases the main and most important steps occurred decades apart from one another. It was not before the telecommunication industry became influenced by micro-electronics, that the innovation rate increased. Today multiple

influences, both bottom-up from microelectronics, optoelectronics, new materials, space- and defence etc. and top down from application fields such as the media industry, keep the innovation rate high. As a result the telecommunications industry today has a very high R&D-intensity. This is very likely to persist with the realisation of ever greater bandwidth, and the introduction of mobility as standard option as the two main long term goals in telecommunications.

In addition to technological changes, a big shift in the *political regulation* of the sector occurred. Following an initial phase of variety in regulating telecommunications, almost the first eighty years of the 20th Century were marked by monopoly regulation.[6] However, since the late 70s we have been witnessing a profound transition from the monopoly to more or less regulated competition in telecommunications. This shift is caused by three partly interdependent factors:

- The first factor is related to the microelectronics revolution and its impact on established group interests. Here we find growing conflicts between large commercial users such as banks or insurance companies increasingly relying on information and communications technologies and national telecommunications operators providing the necessary infrastructure. Conflicts here mainly centre on the quality and the prices of services. Another line of conflict occurred between companies that (enabled by the new technologies) intended to enter the telecommunications service market and the incumbent monopoly operators. Conflicts here were mainly about market access and the conditions of market access. (Coll, 1986; Dörrenbächer, 1989).

- The second factor is the deep crisis of the world economy in the mid 70s, that led to massive structural adjustments in all developed economies. During that process the interventionist compromise of Keynesian economic policy collapsed and was increasingly

replaced by neo-liberal economic concepts. However, this turn of economic thought should not be seen as an exclusive (and automatic) result of the crisis. Recent studies dealing with the history of political ideas bring strong evidence on the importance liberal epistemological communities such as the Mont Pellerain Society had on the change that occurred in the belief systems of many political actors (Cockett, 1995; Stone, 1996; Plehwe/Walpen,1999).

- The third factor is the political pressure that the UK and especially the USA, both forerunners in the liberalisation of their telecommunication markets, put on other countries to liberalise their telecommunications markets. Intentions here have been twofold: market access in telecommunication services and equipment (Hills, 1986)

Technical change and political liberalisation together led to a another important change in telecommunications: the question of *standardisation*. In a historical perspective, telecommunications standards served to connect technically different networks. Thus only the interfaces between the different national networks were standardised. However, in the age of opening markets and new technological possibilities such compatibility standards proved to be insufficient. A big coalition formed by different national operators, users and equipment suppliers favoured the transnational harmonisation of technical standards that build (or constitute) networks. Here mobile communications has been the forerunner (Dörrenbächer, 1993).

What kind of impact does sector transformation described so far have on equipment suppliers and more precisely on their internationalisation strategy? First of all, business as usual is over for all players in the equipment industry, even though there are quite important differences in the way individual corporations are able to cope with the challenges of change (cf. below). Traditionally, the telecommunications industry was characterised by a close co-

operation between national service operators and their preferred equipment supplier(s). As the example of Germany demonstrates, the Deutsche Bundespost (later called Telekom) was planning its investments on a long term basis. Plans were both detailed and reliable. Beginning in October the Bundespost subsequently started to fine tune its plans with the suppliers for the year after next. The final decisions were then made in December. Following the words of an industry spokesman „... the suppliers had nothing to do but to translate the plans into action". (Reich, 1996, p. 31). However, this kind of co-operation is fading out. The subsequent introduction of competition in former monopoly markets forces the operators to lower the prices for their services and to increased demand-led investments in their networks. In cases where liberalisation is combined with privatisation, profit motives become increasingly important. A natural reaction of the operators in this situation is to loosen their close relationship with their former equipment suppliers aiming at better prices by introducing competition into their procurement policy. This development includes two major challenges for equipment suppliers. The first challenge is to defend the home market, by price reductions, political influence or the active use of established contacts with the national operators. The second challenge, which I will discuss a little more extensively, is internationalisation.

As a countermove to the loss of market shares at home, new market opportunities for telecommunication equipment suppliers arise abroad. One strategic move here is to follow the own national operator abroad. However, even when the home market is defended successfully (which is not very likely in the long run), an international market orientation is inevitable, since an exclusive national marketing is not sufficient to pay back the strongly increasing R&D investments suppliers have to make in new switching and transmission technology. This fact is reinforced by a strong pressure on prices and the shortening of life cycles in the two core technologies just mentioned. All in all there are projections that, entering a global race for growth, in the long run only five full-range suppliers will survive.

In this global race for growth, in which - according to the CEO of an important supplier -„Speed is god and time is the devil„ (Monty, 1996), two items are critical.

- First, equipment suppliers have to draw on outside resources: Despite strong tendencies to the contrary, local content requirements and national standards still exist in telecommunications. Due to this fact efficient market access abroad is very often only possible by the acquisition of or the co-operation with indigenous firms (Garette/Quelin, 1994). A further rationale to join forces with other corporations (either by co-operation or take-overs) is the high technological complexity of telecommunications, that makes it impossible (or inefficient) to follow all important developments in-house.

- Second, equipment suppliers have to restructure their production and R&D networks across borders since their configuration usually is sub-optimal compared to the state of liberalisation and standardisation. On the one hand this is due to the importance of external growth in the industry just mentioned, where the companies taken over are not tailor-made, which in many cases leads to strong geographical disproportions and/or excess capacities. On the other hand sub-optimal configurations are (still) a legacy of historically closed markets, that did not allow economies of scale. As a matter of fact, until the late 70s only markets in developing countries as well as smaller triadic countries, lacking a national industry (such as Austria) were accessible at all.

Empirical evidence on corporate internationalisation in the telecommunications industry

A look at different rankings of the top players in telecommunications equipment shows that world wide supply of telecommunications equipment is highly concentrated. In 1995 the top ten companies that form the sample of this study (cf. table 1) alone account for more than 60% of the world market. The sample is composed of corporations from North America,

Europe and Japan. Usually these corporations are more or less diversified electronics corporations. Only two of them exclusively produce telecommunications equipment. To make the data on the examined companies comparable and to avoid the methodological problems of the approaches discussed above, all information given below strictly refers to the telecommunication equipment activities of the companies.

Spanning from 1980 to 1995 (a first marked liberalisation phase) and based on ten individual company profiles as well as on a more formalised comparison of company related data (Dörrenbächer, 1999, pp 85-134, pp. 147-150), we find both convergence and divergence in the internationalisation of telecommunication equipment suppliers.

Convergence

All companies studied undertook great efforts to increase their international market presence between 1980 and 1995 and all of them more or less succeeded. On average, turnover growth abroad was double the growth in the home market. Furthermore, all companies showed the same orientation towards triadic markets and, more specifically, towards the core countries. A major exception here is Asia with the „tiger„ countries and later China being the main targets. Another convergence is the sequencing of internationalisation steps. All companies first increased internationalisation within the triad they are based in (home triad) and then turned to a second (foreign) triad. Here we found a clear hierarchy of triads, with companies from Europe and Japan both choosing North America and more precisely the USA as major internationalisation target outside their home triad. This pattern is due to the lead function of the US market, based on a specific combination of its large volume, its early liberalisation as well as its sophisticated demand structure. All in all the striking time-space convergence of international market orientation sheds light on the

intensity of competition in the industry. Nevertheless the uniforming power of competitive pressure remains restricted to the market orientation as described. As we will see in the next section, all more process or style oriented aspects of internationalisation show strong divergence.

Divergence

First there is the question of *partnering*. Two basic strategies are possible, a dominance strategy, exclusively relying on internal processes and routines as well as a co-operative strategy aiming at the integration of external resources and routines. Companies following a dominance strategy are usually oriented toward the take-over of the majority shares of a foreign corporation and they by and large refuse to co-operate with local partners when establishing a new venture abroad.[7] On the contrary, companies that are following a co-operative strategy also take minority stakes and let foreign partners take part in the establishment of new ventures. Furthermore, non-capital forms of co-operations are much more frequent at companies following a co-operative strategy. Looking at our sample, only four companies showed a co-operative orientation (cf. table 2). However, the patterns of co-operation have been manifold. Nortel, for instance, only co-operated in non-English speaking countries, while Ericsson showed a co-operative attitude only in foreign markets that have a strong indigenous telecommunications industry. Motorola restricted its co-operative behaviour to a specific market segment (i.e. switching equipment) and Nokia, the company with the most co-operative attitude in the sample, mainly used co-operations to access markets and to acquire technology.

Closely related to the issue of partnering is *the style of international management*. Here we find all types of Perlmutter's well-known typology (ethnocentric, polycentric,

geocentric style) (Perlmutter, 1969). Criteria used to classify the style of the international management are mainly derived from Heenan/Perlmutter (1979: 15-26): All criteria refer to the headquarter/subsidiary relation in a multinational corporation. Individual criteria that were used include: "authority and decision making", evaluation and control", "communication and information flow" as well as "recruitment and staffing". As an industry specific indicator I further included the "policy towards foreign technical standards".[8] In sum we find a clear dominance of the ethnocentric style with all important decisions made at headquarters and all norms and rules transferred unilaterally from the headquarter to the foreign subsidiaries (cf. table 3). Among the seven companies that show clear signs of ethnocentric behaviour, two companies show a much more moderate level of ethnocentrism. Here we find for instance a strong attempt to bring an international mindset in headquarter decisions (Ericsson) or the partial transfer of important decisions outside the headquarter (Nortel). Only one company, Alcatel, followed a polycentric approach, where integration is low and the foreign subsidiaries have a high autonomy. This is mainly due to the extraordinary concentration on external growth (cf. below) that made Alcatel more like a loose net of independent corporations that all had their own corporate culture, management style and technical heritage. However since the beginning of the 90s there are strong attempts to integrate the corporation under a French (headquarter) regime. A geocentric approach, that is, in short, the application of the best solution company-wide irrespective of its origin within the company, was found at Motorola and Nokia.

Another divergent pattern occurred in the way the companies entered foreign markets, or, in other words, whether they used external or internal growth to increase their international presence. The two different ways have specific opportunities and constraints. For instance, a strategy of external growth abroad (by acquisitions), makes market access much more efficient than a strategy of internal growth (by the foundation of new ventures). This is

especially true in a sector that was politically and technically secluded for a long time, such as telecommunications. However, problems of integration are much more prominent, too. In our sample the vast majority showed a clear preference for either one or the other way. Only two corporations used both internal and external growth to more or less the same extent (cf. table 4).

Since external growth is not as tailor made as internal growth, the way international markets are entered is one factor that defines the specific need for international restructuring within the corporation. The second important factor, as discussed above, is whether a corporation had a wide-spread network of international subsidiaries before the liberalisation phase. In our sample, the vast majority of corporations that followed a strategy of external growth were confronted with a high need for international restructuring, with Siemens (large number of acquisitions and a long internationalisation history) and Alcatel (extraordinary number of acquisitions) having a very high need. Compared to those corporations, Ericsson, Nortel, NEC and Fujitsu faced a moderate restructuring pressure, even though the underlying causes were different. Only Nokia and Motorola, both companies with a historically moderate international presence and on the stream of a strong growing market segment (mobile communications) had no need for international restructuring during 1980-95 (cf. table 5).

Not very surprisingly, neither Motorola nor Nokia cut their workforce in telecommunication equipment production. However, in both companies a noteworthy transfer of jobs from low to high growth divisions occurred. At Ericsson both job transfers and massive job reductions took place. All other companies had to concentrate on workplace reductions in telecommunications equipment, with the Japanese corporations NEC and Fujitsu being much more moderate than European and North American companies (cf. table 6).

A final difference is in the increase in internationalisation, which the companies

realised between 1980 and 1995. Table 7 shows the proportion of turnover abroad in 1980 and 1995. The biggest increase occurred with Nokia, Nortel, Alcatel, and Motorola. Next to Ericsson a traditionally highly internationalised company, those four had the highest internationalisation ratio in 1995, followed by Siemens, and then Fujitsu, NEC, Bosch and AT&T/Lucent.

Typology

Taking all differences together, two basic types of corporate internationalisation are emerging in the telecommunications equipment industry.

- Companies belonging to the first type (i.e. Fujitsu, NEC, Bosch, A&T/Lucent, Siemens, Alcatel) follow a stand-alone strategy combined with an ethnocentric style of international management. No matter whether they relied on external or internal growth, their need for international restructuring was medium to high, and their reaction on that was exclusively workplace reduction. In addition, the increase in internationalisation at those companies was very moderate, with the result that in 1995 all belonged to the companies with a low or medium rate of turnover abroad.[9]

- Companies belonging to the second type (i.e. Nokia, Ericsson, Motorola, Nortel) met the challenge of internationalisation by a co-operative strategy combined either with a geocentric or at least a moderate ethnocentric management style. Due to the dominance of internal growth, their need for international restructuring was medium to low and to a large extent resolved by job transfers. Furthermore all companies showed a remarkable increase in their foreign presence[10] and belonged in 1995 to the companies with a high ratio of foreign turnover.

Before turning to the next chapter, some comments on the success of the two types in internationalisation should be made. Unfortunately, a full set of data is only available for the development of market shares and not for the profitability of the telecommunications divisions (cf. Table 8).

The data available shows, that all companies that follow type two gained market shares, while the picture for type one corporations is disparate. However the two companies of type one that won market shares (Alcatel and Bosch) showed by far the strongest external growth in relation to their original telecommunications business.

Triggers of internationalisation behaviour in the telecommunications industry

What shapes convergence and divergence in the internationalisation of the telecommunication equipment suppliers? Following the market-, institution-, actor- approach specified above, we have to look for market constraints that generate best practices, as well as for national path dependencies and corporate idiosyncrasies.

Two criteria tell us whether market constraints have led to a compulsory *best practice* and if so what it looks like. Taking the first criterion, i.e. identical or similar behaviour of all companies, the best practice in internationalisation in the telecommunications equipment industry between 1980 and 1995 is as follows: „All companies have to grow abroad, also in countries that have a strong equipment industry of their own. They first have to increase their internationalisation in their home triad and then approach a second triad. For companies from Europe and Japan the second triad is North America, and especially the US-market, that is the lead market in telecommunications equipment."[11] If one compares this best practice with the ones given in the literature, big differences show up. For instance, according to Ohmae (1985, 1990) a more or less equal presence in all three regions of the triad is seen as prerequisite for

survival. Furthermore Ohmae's best practice includes that all triads have more or less the same importance, which is not true in the telecommunications equipment industry with the lead function of the US market. Another important point to stress here is that the empirical results of this study did not show any further best practice, other than the one just described. This is especially true for the co-ordination style. Although companies of type two, following a co-operative strategy combined with geocentric or moderate ethnocentric management style, resemble more the idea behind Bartlett/Ghoshal's (1989) transnational solution, this does not mean that all type two companies were threatened by market exit - that is the second criterion to determine compulsory best practices. The most important market exit during the period of time studied here, was the sale of the European telecommunications equipment activities of ITT to Alcatel in 1986, including some 60.000 employees. However, this sale was not due to co-ordination and management problems at the introduction of digital switching technology at ITT, as Bartlett/Ghoshal argued. If that were true only two or three companies might exist today, since all others faced major problems with the introduction of this technology. The real causes lie in the strict portfolio policy of ITT, a very heterogeneous conglomerate, with telecommunications being only one industry among many others.[12]

While best practices explain convergence, one point that might explain divergence is *national path dependency*. The impact the country of origin (or say national path dependency) has on the internationalisation behaviour of corporations can be traced back to two somewhat overlapping items: first, specific shortcomings in the home market, and second the influence of national institutional arrangements.

- Shortcomings in the home market: Referring to Porter's national diamond, we find no big differences both in factor conditions and the availability of related and supporting industries among the countries in which the companies studied are based. However, big

differences occur in demand conditions, with all companies of type two, except Motorola, being based in small countries, with low volume markets. Another big difference is the structure and competition in the different national telecommunications industries. However, these differences are a result of the divergent national institutional arrangements and thus are dealt with in the next paragraph.

- Differences in national institutional arrangements: Looking at the telecommunications industry, the most important institutional influence is the specific relationship between the main equipment suppliers and the national service operator, respectively the regulatory body (in the case of private monopolies). This relationship, which is more than just „structure and competition of the industry„, evolved over a long period of time, and incorporates national technological, infrastructural and labour market aims. Looking at the seven countries in which our companies are based, we find two distinct patterns of relationships, that are both varying in the tightness of the supplier-operator relationship and in the orientation of the operator's or regulator's policy (national vs. global orientation, for instance in technical network requirements, procurement policies incl. prices and conditions of payment). The first pattern is that of a historically tight supplier-operator relationship that is more (USA, Germany, France) or less (Japan) loosening, combined with an operator policy that is more (USA, Germany, France) or less (Japan) changing from a national to a global orientation. All companies coming from the countries mentioned so far are type one companies. [13] The second pattern is to be found in Sweden, Canada and Finland and combines a traditionally more (Finland) or less (Canada, Sweden) loose supplier-operator relationship combined with a strong global orientation of the operator policies. All companies that are rooted in this institutional environment follow type two in their internationalisation.

Another factor that might explain the divergence in internationalisation behaviour *is corporate idiosyncrasies*. According to this approach idiosyncrasies were restricted to structural differences among the corporations (and thus excluding personal preferences of decision makers). However, neither the size of the telecommunications business, nor the age thereof gave a useful correlation. Big and small firms as well as young and old firms can be found among both types of internationalisation. However, a clear correlation showed up according to the degree of diversification (no concentration on telecommunication equipment, concentration on the telecommunication equipment, concentration on a specific segment in telecommunication equipment) with all companies of type two being focused companies (with at least a concentration on telecommunication equipment) and all companies of type one being diversified companies.

In conclusion the two types of internationalisation show a striking correlation with the volume of the market, the type of institutional arrangement and the degree of corporate diversification. This means in our interpretation that diversified companies, active in large home markets, that are characterised by a historically tight supplier-operator relation (incl. a more or less national orientation of the operator) have no or low incentives to grow abroad. This explains the relatively low degree of internationalisation of companies from Germany (Siemens), the United States (AT&T Lucent) and Japan (NEC Fujitsu). Furthermore, their strong implantation in the home market also shapes the style and process aspects of their internationalisation. Here foreign markets are only seen as an enlargement of the home market and thus are developed with the same policy (dominance strategy and ethnocentric style). On the contrary, focused companies, based in small markets, that were characterised by a rather loose supplier-operator relationship (incl. a global orientation of the operator) have high incentives to grow abroad. This explains the relatively high degree of internationalisation of companies from Canada (Nortel), Sweden (Ericsson) and Finland (Nokia). They see foreign

markets much more as a source of strategic assets, they try to integrate by means of a co-operative strategy and a less ethnocentric or even geocentric management style.

Policy implications

To summarise the findings so far: The internationalisation behaviour of a corporation is not a uniform thing but rather a complex phenomenon that encompasses at least three different aspects: geographical market orientation, style and process aspects. In sharp contrast to both the market constraints approach and the structural dependency approach we found that different aspects of internationalisation follow different rationales. There is a clear indication that all telecommunication equipment manufacturers – irrespective of their national origin - follow an industry wide best practice both in time and location of their internationalisation. However, all internationalisation aspects that are more process and style oriented (e.g. market entry patterns, management styles, degree of diversification) show a strong correlation with the specific design of the national institutional context (i.e. the dominant supplier-operator relation).

However, what does this pattern mean for national telecommunications policy? It is obvious that the telecommunications policy of the examined small countries Finland, Canada and Sweden, which are characterised by a loose supplier-operator relationship and a global orientation of the operators, has allowed the suppliers from these countries to adapt much better to the liberalisation process. This is illustrated by the fact that over the period examined all these corporations increased their market share (cf. table 8), and by the model character which the small countries' sectoral policy has had for policy changes in larger countries over the last 20 years. With the exception of Japan all big countries have initiated a more or less pronounced loosening of the supplier-operator relationship and oriented their supporting

measures more towards the requirements of the world market. Yet even two decades after the initial opening of the sector, the convergence to the industrial policy of small countries, which Katzenstein as early as 1985 (p. 9) described as having model character, is nowhere near complete. It would seem more appropriate to speak of a partial integration.

How the integration of these different policy models will develop in future largely depends on changes in the sector itself and their impact on the companies. Three trends determine the current change in telecommunications:

- The first trend is the growing uncertainty of how to technically implement the current two basic changes in telecommunications - namely the introduction of mobility as a standard option of any communication and the systematic integration of voice and data.

- The second trend is the increasing disembedding of technological developments from a national or narrowly operator-oriented context. The most important step in Europe was the development of the digital mobile communication standard GSM, which simultaneously facilitated the establishment of new institutional structures for technology development in the European telecommunications sector. Changes occurred, among other things, in the steering mode, leaving behind the hierarchical co-ordination through operator-dominated projects of the past for flexible negotiations in a network of actors from international telecommunications organisations (e.g. ETSI or ITU), as well as suppliers and operators from different countries (Bender 1996, p. 196-204). The increasing disembedding of technology development from a national context is by no means a European phenomenon, as can be seen from the development of UMTS, the world-wide standard that followed GSM. It is not restricted solely to mobile communication, but increasingly affects the fixed networks as well.

- The third important trend is the dramatically increased importance of trade policy as a

result of the gradual opening of the triad's markets for foreign telecommunications goods. Trade policy in this context aims at creating reciprocal market access and turns mainly against R&D subsidies, discriminating technical standards and procurement policies, as well as against restrictive measures concerning investments (Zampetti/Sauvé 1996, p. 18). Examples for the growing importance of trade policy are the massive market opening policy of the US government vis-à-vis Japan from the mid-80s onwards, or the strongly politicised conflict between AT&T and Siemens concerning the investment in the second biggest French telecommunications supplier CGCT in 1987. Other highly publicised cases were the French government's criticism of AT&T's procurement policy in 1991 and the conflict between the United States and the European Community concerning the procurement guidelines of the EC (1993/94).

The sector change illustrated by these trends does by no means affect all companies in the same way. For companies from small countries the increasing technological uncertainty represents a considerable threat, since they have a much higher degree of technological specialisation and certain specific disadvantages with regard to clustering, due to the generally more strongly concentrated industrial structure of their countries. Furthermore, they cannot count on any specific support in conflicts concerning trade policy, since even in a posthegemonic system of international trade blocks their countries' political status is comparatively low (Gilpin 1987, p. 406). On the other hand, the traditionally loose supplier-operator relationship gives companies from small countries a distinctive advantage when it comes to utilising chances occurring from the increasing denationalisation of technology development. This is a particular weakness of firms from large countries, who traditionally had – or, in the case of Japan, still have - strong ties to a national operator. On the other hand, companies from large countries usually have a comparatively strong political representation, a broad technology portfolio and advantages with regard to clustering.

For national industrial policy strategies these findings point to a path dependent development in the future. However, not only small countries will serve as models for larger ones, as described by Katzenstein (1985), but vice versa, too. In how far small countries will manage to incorporate aspects of larger countries' industrial policy to any noticeable degree remains to be seen. And while small countries can use industrial policy to improve the technological basis of their companies and their economy as a whole, they have no means of fundamentally changing the country's (trade) political power, even if the integration into large supranational trade blocks has somewhat improved their position.

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Table 1: The top ten telecommunication equipment suppliers 1995
(in Billion US-Dollar and %)

	total turn-over	Turnover telecommunication equipment	Ratio: turnover telecommunication equipment to total turnover
AT&T/Lucent[1]	32,3	21,4	66,3%
Motorola[2]	27,0	17,9	66,3%
Siemens[3]	62,1	17,1	27,5%
Alcatel Alsthom[4]	33,9	16,3	48,1%
Ericsson	13,9	13,9	100,0%
NEC[5]	41,1	11,5	28,0%
Nortel	10,7	10,7	100,0%
Nokia[6]	8,4	6,1	72,6%
Fujitsu[7]	35,5	5,9	16,6%
Bosch[8]	25,0	3,7	14,8%

Sources: annual reports, company information

1 total turnover = without telecommunication servives; turnover telecom. equipm. = incl. microelectronics
2 turnover telecom. equipm = divisions: „General Systems Products„/ „Messaging, Information and Media Products„ / „Land Mobile Products„
3 financial year 94/95, (31.9.); turnover telecom. equipm = divisions: „Öffentliche Netze (ÖN)„ / „Private Kommunikationssysteme (PN)„ (both including minority stakes consolidated at equity)
4 turnover telecom. equipm =divisions: „Telecom„ / „Telecom Cables„
5 financial year 95/96, (31.3); turnover telecom. equipm =divisions „Communications Systems and equipment„
6 turnover telecom. equipm =divisions: „Nokia Telecommunications„ / „Nokia Mobile Phones„
7 financial year 95/96, (31. 3), turnover telecom. equipm = divisions: „Communications systems„

8 turnover telecom. equipm = division „Kommunikationstechnik„

Table 2: Partnering

Dominance strategy	Co-operative strategy
Alcatel	Nortel
Siemens	Ericsson
AT&T/Lucent	Motorola
Bosch	Nokia
NEC	
Fujitsu	

The classification of the partnering behaviour is based on the type, amount and significance of take-over activities and strategic alliances. For detailed company specific empirical evidence cf. Dörrenbächer S. 185-134.

Table 3: Style of international management

Ethnocentric	Moderate Ethnocentric	Polycentric	Geocentric
AT&T/Lucent	Nortel	Alcatel	Motorola
Bosch	Ericsson		Nokia
NEC			
Fujitsu			
Siemens			

Table 4: Internal vs. external growth abroad

Internal growth	Internal and external growth	External growth
NEC Fujitsu Motorola Nokia	Nortel Ericsson	Alcatel Siemens AT&T/Lucent Bosch

Table 5: Need for international restructuring

Very high	High	Medium	low
Alcatel Siemens	Bosch AT&T/Lucent	NEC Fujitsu Ericsson Nortel	Motorola Nokia

Table 6: Job reduction and job transfer

Job reduction	Moderate job reduction	Job reduction and job transfer	Job transfer
Alcatel Siemens AT&T/Lucent Bosch Nortel	Fujitsu NEC	Ericsson	Motorola Nokia

Table 7:Ratio of turnover abroad to total turnover 1980 and 1995

High	Medium	Low
1980		
Ericsson (78%)	Siemens (46%) Nortel (34%) Motorola (30%) Alcatel (29%)	NEC (25%) Nokia (25%) Fujitsu (20%) Bosch (5%) AT&T/Lucent (0%)
1995		
Nokia (93%) Ericsson (91%) Nortel (90%) Alcatel (77%) Motorola (65%)	Siemens (55%)	Fujitsu (30%) NEC (30%) Bosch (22%) AT&T/Lucent (17%)

Table 8: Change in marketshare in the world telecommunications equipment industry

	Turnover Telecomm. Equipment 1980 (Billions of US-$)	Marketshare 1980	Turnover Telecomm. Equipment 1980 (Billions of US-$) in Prices of 1980	Marketshare 1995 in Prices of of 1980	Change in Marketshare. 1980/1995
Motorola[1]	1,40	5,1%	22,78	16,2%	**+11,1%**
Alcatel[2]	1,90	6,9%	19,18	13,6%	**+6,7%**
Nokia[3]	0,03	0,1%	6,93	4,9%	**+4,8%**
Bosch	0,07	0,3%	4,71	3,4%	**+3,1%**
Nortel	1,80	6,6%	12,46	8,9%	**+2,3%**
Ericsson	3,10	11,3%	18,54	13,2%	**+1,9%**
Fujitsu[4]	0,50	1,8%	2,39	1,7%	**-0,1%**
NEC[4]	1,50	5,5%	4,67	3,3%	**-2,2%**
Siemens[5]	5,10	18,6%	21,76	15,5%	**-3,1%**
AT&T/Lucent[6]	12,00	43,8%	27,23	19,4%	**-24,4%**
	27,40		140,65		

Sources: annual reports , company information, OECD (1983, S. 130), US-Department of Commerce (1983, S. 18), own compilation and calculations

1 Turnover 1980 = estimation on the basis of turnover 1981   2 Earlier called CGE
3 Turnover 1980 = estimation on the basis of turnover 1981   4 Financial years 80/81 and 95/96, (31.3.)
5 Financial years 79/80 and 94/95, (31. 9)   6 Earlier called AT&T/Western Electric

Note: Market share = Share among the top ten

[1] Globalisation describes a path in which a company aims at world wide intra-firm division of labour with high co-ordination requirements and direct control. Following the glocalisation path, the geographic spread of corporate activities is much more narrow, however it often transcends firm borders (network production). There are less co-ordination requirements here and co-ordination generally follows a bargaining logic (Ruigrok/van Tulder 1995, p. 178).

[2] An opposite analytical hierarchy is used by the global commodity chain approach (Gereffy 1996). Here the individual position (or power) of a company in the commodity chain is the main explanatory factor, with national institutional factors being of minor importance. According to my view, there should be no general rule, as to which analytical hierarchy has to be used, but the specific industry and the a priori evidence of national institutional impact. In the case of this study I chose the above mentioned analytical hierarchy since, despite a strong trend towards deregulation, the national institutional legacies in the telecomunications industry are still very prominent.

[3] It is obvious that the fulfilment of this criteria is heavily dependent on the lengh of the period of time chosen.

[4] That is shortcomings in the following four broad national attributes: factor conditions, demand conditions, related and supporting industries as well as firm strategy, structure and rivalry.

[5] GERPISA (Groupe d´Etude et de Recherche Permanate sur l´Industrie et les Salariés de L´Automobile) is an association of roughly 130 social scientitists from about 20 countries with research interests in the automotive industry.

[6] However there were different kinds of monopolies such as state monopolies (e.g. in Germany) or private monopolies controlled by the state (e.g. in the USA). Another difference refers to the scope of the monopoly. In some cases the monopoly encompassed the whole territory of the state (e.g. in Germany) in other countries there were several regional monopolies (e.g,. in Finland). Finally there are countries in which the monopoly extended to all telecommunications services (again in Germany), with other countries having several service-specific monopolies (e.g. Canada).

[7] With the exception of markets that formally or informally require co-operation with local partners, such as India or China

[8] To give an example: A company was classified as ethnocentric, when there were clear signs that (1) authority and decision making are strongly concentrated at the headquarter, that (2) evaluation and control are exercised by the headquarter on the basis of norms and standards of home country, that (3) the communication flow includes a high volume of orders and advices from the headquarter to the subsidiaries, that (4) the management in the subsidiaries is mainly composed by nationals from the home country and (5) that there was a general attitude not to accept local technical standards.

[9] Exception here is Alcatel, whose high ratio of turnover abroad is due to one exceptionally big take over abroad (the take over of all European subsidiaries of ITT-telecommunications in Europe in 1986).

[10] Exception here is Ericsson, that was already highly internationalised in 1980.

The second triad for North American Companies is Europe

A second noteworthy case is the sale the British telecommunications industry (i.e. the de facto sale of GPT to Siemens and the sale of STC to Nortel and Fujitsu). However here we have an important contingent impact with an institutional change in the UK, that was extraordinary anti-supplier oriented (Weinstein 1992).

Exception here is Motorola. This is due to the fact that Motorola histrically never concentrated on public infrastructure, but on the heavily fragmented mobile communications market.